



Cutting Tool Solutions

2018/19 Product Catalog



50 YEARS OF INNOVATION IN THE USA



CELEBRATING 50 YEARS OF INNOVATION IN THE USA!

The year 2018 marks OSG USA's 50th anniversary and 80th anniversary for OSG globally. We would like to express our gratitude for the support of our customers and business partners for making these milestones possible.

OSG originally began its operation manufacturing taps. Over the years, OSG has grown into a comprehensive cutting tool manufacturer, with an expansive line of products to meet and exceed our customers' needs, offering taps, end mills, drills, dies, gauges, and indexable tooling.

From the beginning, OSG has always strived to contribute to the advancement of the manufacturing industry with superior quality products and outstanding service. Our commitment will carry forward as we aim to expand operations, develop advancements in our cutting tools and create new innovative products.

OSG will continue to challenge the status quo and commit ourselves to transforming each, and every one of our customers' dreams into reality.

- Your OSG Team -

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Icon Descriptions









Tool Materials

CBN	CBN	CERMET	CERMET	HSS	HSS
HSSE	High Vanadium HSS	PCD	PCD	VC10	Powder Metallurgy HSS
CARBIDE	Tungsten Carbide	HSS-Co	Cobalt HSS	XPM	High Grade Powder Metallurgy HSS

Surface Treatment

BR	Bright	N	Nitride Coating	DLC	DLC Coating
EXO	Multi-Layer TiAlN Coating	TiCN	TiCN Coating	WD1	WD1 Coating
TiAlN	TiAlN Coating	WXS	WXS [®] Coating	HR	HR Coating
WXL	WXL [®] Coating	V	OSG Special Multi-Layer TiCN Coating	EgiAs	EgiAs Coating
S/O	Steam Oxide Coating	DIA	OSG Patented Diamond Coating	DUR	Duarise Coating
SS	Super Smooth	N S/O	Nitride/Steam Oxide Coating		
CrN	CrN Coating	TiN	TiN Coating		

Tool Dimensions

EXTRA LONG	Extra Long Length	LH	Left Hand		Milling Diameter Tolerance
LONG	Long Length	LHS	Left Hand Spiral		Coolant-Through
JOBBERS	Jobbers Length	STI	Screw Thread Insert		Straight Shank
MED	Medium Length		Center Cutting		Taper Shank
REG	Regular Length		Non-Center Cutting		Helix Angle
STUB	Stub Length		Radius Tolerance		

Other Icons

	Speeds & Feeds		Shrink Fit		New		New Sizes
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Tour the New Catalog

Finding Your Tooling Needs

Master Index: P1

A snapshot of the entire catalog.

Surface Treatment Guide: P16-17

A complete list of all OSG surface treatments, their features and recommended applications.

Brand Index: P18-45

A complete list of all stocked OSG products organized by brand.

Featured Drilling Products: P48-49

A snapshot of OSG's featured drilling products to make tooling selection for any material fast and easy.

Drilling Application Guide: P50-51

Each of OSG's drill series recommendations according to materials

Drilling Illustrated Index: P52-59

All of OSG's drills listed according to length alongside their material recommendations.

Featured Threading Products: P334-335

A snapshot of OSG's featured threading products to make tooling selection for any material fast and easy.

Threading Application Guide: P336-337

OSG's threading products recommended according to materials with recommended SFM ranges. Compare tap performance to select your perfect tap.

Threading Illustrated Index: P338-357

All of OSG's threading products listed according to style alongside their material recommendations.

Featured Milling Products: P686-687

A snapshot of OSG's featured Milling products to make tooling selection for any material fast and easy.

Milling Illustrated Index: P688-719

All of OSG's Milling products listed according to brand alongside their material recommendations.

Indexable Illustrated Index: P1144-1147

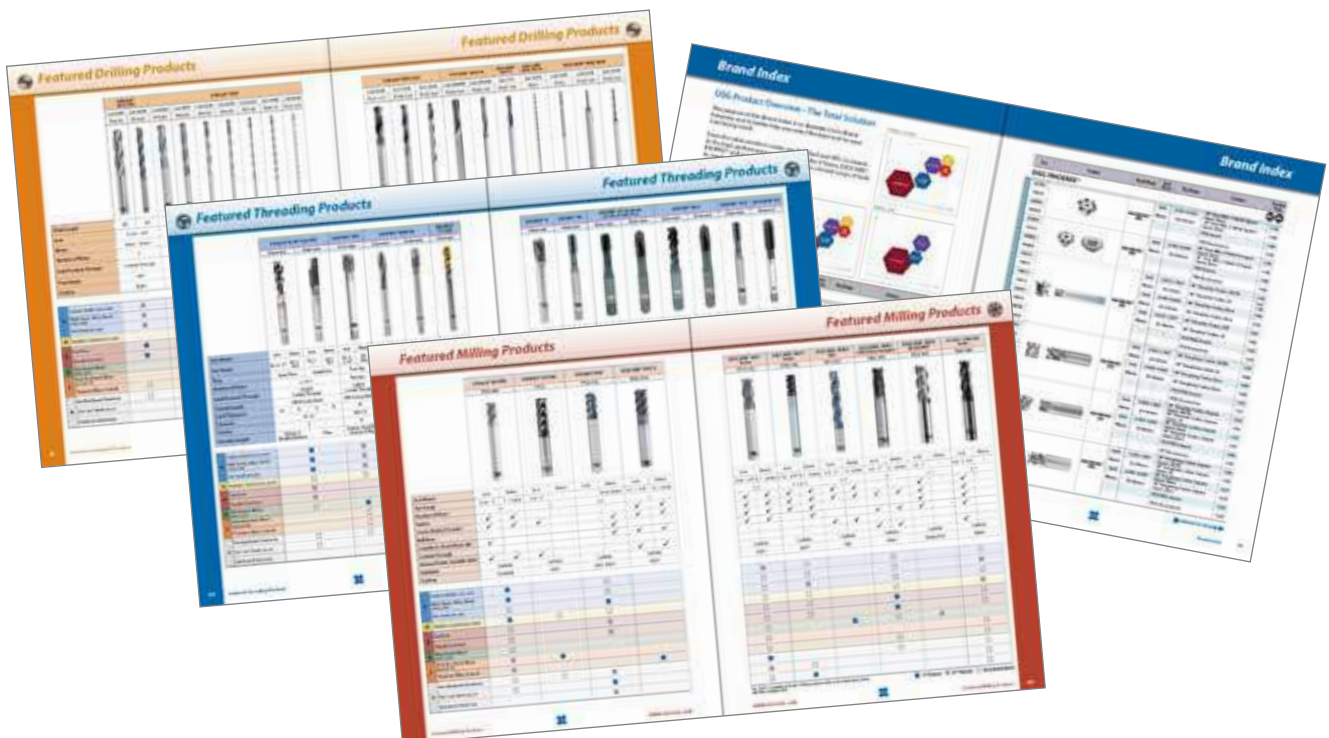
All of OSG's Indexable products and their material recommendations.

List Number Index: P1337-1340

A complete list of all stocked OSG products organized by list number.

EDP Numerical Index: P1341-1480

A complete list of all stocked OSG products organized by EDP number.



OSG Online

www.osgtool.com

OSG is constantly striving to help you find what you need when you need it. Our website includes features that focus on functionality, usability and even appearance to make your experience as enjoyable as possible. We have recently updated the website so it is responsive across all your favorite devices!



OSG News: *See What's New at OSG*

- Press Releases
- New Products
- Social Media Blog

Products: *Explore the Full OSG Offering*

- Discover why OSG is the industry leader in *Threading • Drilling • Milling*

Industries: *OSG'S Industry-Specific Solutions*

Resources: *Tools to Make it Easier*

- Product Search
- Tool Selector
- Tool Reconditioning
- Find a Distributor
- Competitor Crossover
- Fast Service Taps

OSG's Tool Selector: *The Right Tool Right Now*

- With OSG's new tool selector, you are never more than 5 simple steps away from the right tool for your job.

Online Live Chat

- During regular business hours, OSG provides online support for customers looking for an alternative way to get their technical product assistance.

OSG Ozone: *Save BIG on Overstock*

- Browse through an array of premium OSG products being offered at special prices!

Social Media

Connect with OSG

Follow and interact with OSG on popular social media sites including Facebook, Twitter, LinkedIn, Google+, Instagram, Pinterest and YouTube.

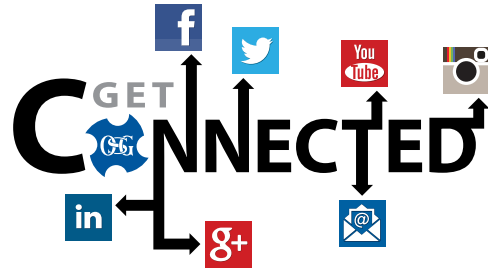
Facebook: facebook.com/osgtool

Twitter: twitter.com/OSGTOOL

LinkedIn: linkedin.com/company/osg-usa-inc

YouTube: youtube.com/osgtool

OSG E-CLUB: Subscribe: eclub@osgtool.com



OSG at Your Fingertips

Mobile Apps

Tool Selector: *The Right Tool Right Now*

- Access the OSG tool selector from your mobile device and never be more than 5 simple steps from the right tooling for your application!

OSG Calculator: *Assistance in the Palm of Your Hand*

- The "OSG Calculator" mobile app can assist in calculating a variety of cutting parameters for taps, drills and end mills. Visit the iTunes® store for details and to download the app for your iPhone® and iPad®.



iPad, iPhone, and iTunes are trademarks of Apple Inc., registered in the U.S. and other countries.

OSG Connect App (Android & iOS): *Get the information you need whenever you need it!*

With OSG's **NEW** Connect App, you can receive notifications about important updates in real time, all in one place!

- Literature
- Catalogs
- Videos
- Announcements
- And More...

Talk to your local sales representative for more information on how to gain access to the NEW OSG Connect App!



Philosophy & Business Model

Corporate Philosophy: Global Presence

As a comprehensive cutting tool manufacturer, we make products that at a fundamental level contribute to enhancing people's quality of life. Through continuous growth, we have established a production, sales and technical support network spanning 33 countries.

Our corporate aim is to continue to expand our operations globally and strengthen our contribution to manufacturing industries worldwide.

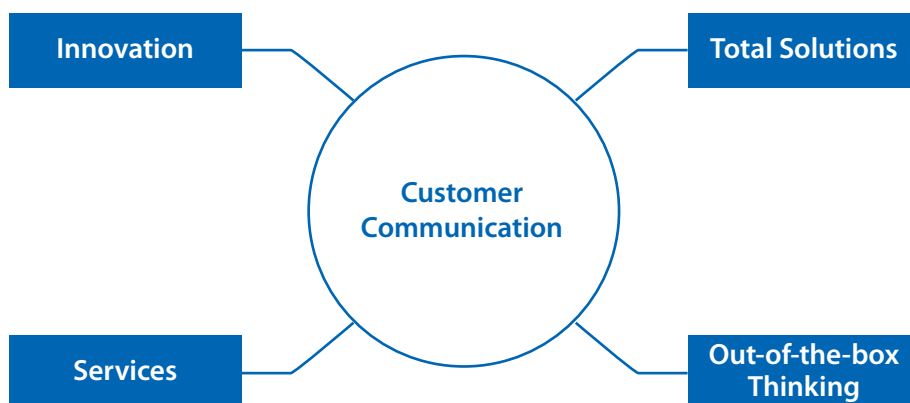
Business Model

Customer communication is at the heart of the OSG brand. We anticipate, listen and actively react to customer needs through on-site face-to-face support. OSG's vast global network provides our production sites with accurate feedback about user needs so that they can quickly design, develop, manufacture and deliver products that precisely meet those needs.

shaping your dreams

The power of OSG lies in our assured innovative technological know-how for producing high-quality and high-performance products; our exceptional services to respond to situations diligently; and our out-of-the-box thinking to provide total solutions that anticipate our customers' needs. We are committed to contribute to the advancement of the manufacturing industries by shaping our customers' dreams into reality.

The Power to Exceed Customers' Expectations



Message from the President

Shaping Customers' Dreams as a Comprehensive Cutting Tool Manufacturer

OSG Corporation has succeeded in maintaining steady growth over the past 80 years. We would like to express our heartfelt gratitude to the support of our customers, business partners and shareholders for contributing to OSG's tremendous global success today.

Ever since the company's establishment in 1938, OSG has been committed to developing quality products that truly exceed the expectations of each customer. This spirit remains alive in all facets of our operation today, and has given OSG the strength to challenge the status quo and deliver products and services in sync with manufacturing needs of the times. Our corporate tagline "shaping your dreams" summarizes this passion for new challenges and commitment to transforming each and every one of our customers' dreams into reality.

While the manufacturing industry is consistently evolving through the new discovery of materials and technologies, OSG is poised for continued growth by responding with new innovations. OSG will continue to support the global manufacturing industries while living up to our stakeholders' trust and expectations. We thank you for your continuous and enthusiastic support for OSG Corporation, a company that keeps evolving without forgetting its origin.



*Mike Grantham
President of OSG USA*

OSG USA's Mission

It is the roll of OSG USA, as well as its subsidiary companies, to carry out the core philosophy of our parent company.

OSG USA's mission is to contribute to the advancement of the manufacturing industry and society through innovative technology and superior quality products.

At OSG we are committed to providing our customers with the most cost effective quality products and the best service in the industry.

Our experienced staff strives to not only provide solutions but also works with our customers to improve processes through innovative strategies.

A Commitment to Quality that Withstands the Test of Time

In March 1938, Hideo Osawa established OSG Grinding Co., Ltd. to achieve domestic production of high-quality taps. Thirty years later, OSG's first overseas subsidiary was established in the United States. Based on the corporate philosophy of "global presence," OSG has since then built a production, sales and technical support network spanning 33 countries. With over 50 years of experience in developing new markets and human assets, OSG will continue its global expansion and contribute to the advancement of the manufacturing industry worldwide.



March 1938

- Hideo Osawa established OSG Grinding Co., Ltd. in Tokyo
- Began manufacturing taps and dies

May 1942

- Began manufacturing and sales of screw gauges

May 1943

- Established Aichi Factory (now OSG Academy)



May 1963

- Began manufacturing and sales of flat rolling dies

August 1956

- Began manufacturing and sales of cylindrical rolling dies

April 1961

- Toyokawa Factory began operation

August 1970

- Began manufacturing and sales of HSS end mills

December 1971

- Toyohashi Factory began operation

June 1968

- First overseas subsidiary, OSG Tap & Die, Inc., opens in the USA

March 1967

- Oike Factory began operation

June 1963

- Changed the company name to OSG MFG. Company

December 1963

- Separated sales department and established OSG Corporation





March 1984

- Began manufacturing and sales of drills

February 1987

- Began manufacturing and sales of cutter bodies

September 1980

- Began manufacturing and sales carbide end mills

1990

November 1990

- Yana Factory began Operation

June 1982

- Shinshiro Factory began operation

1980

2000

June 2010

- Began sales of OSG Phoenix, an indexable tooling series

2010

September 2014

- Introduces "The A Brand" product brand

November 2014

- Achieved consolidation net sales of 100 billion yen in FY2014

December 2004

- Established Design Center

January 1998

- Established Hongu Center

December 2006

- Established Global Technology Center

September 2017

- Established D-Lab

December 1992

- OSG MFG. Company and OSG Corporation were merged into OSG Corporation

February 1993

- Relocated corporate headquarters to Toyokawa, Aichi

December 1998

- Established CS Center



2018

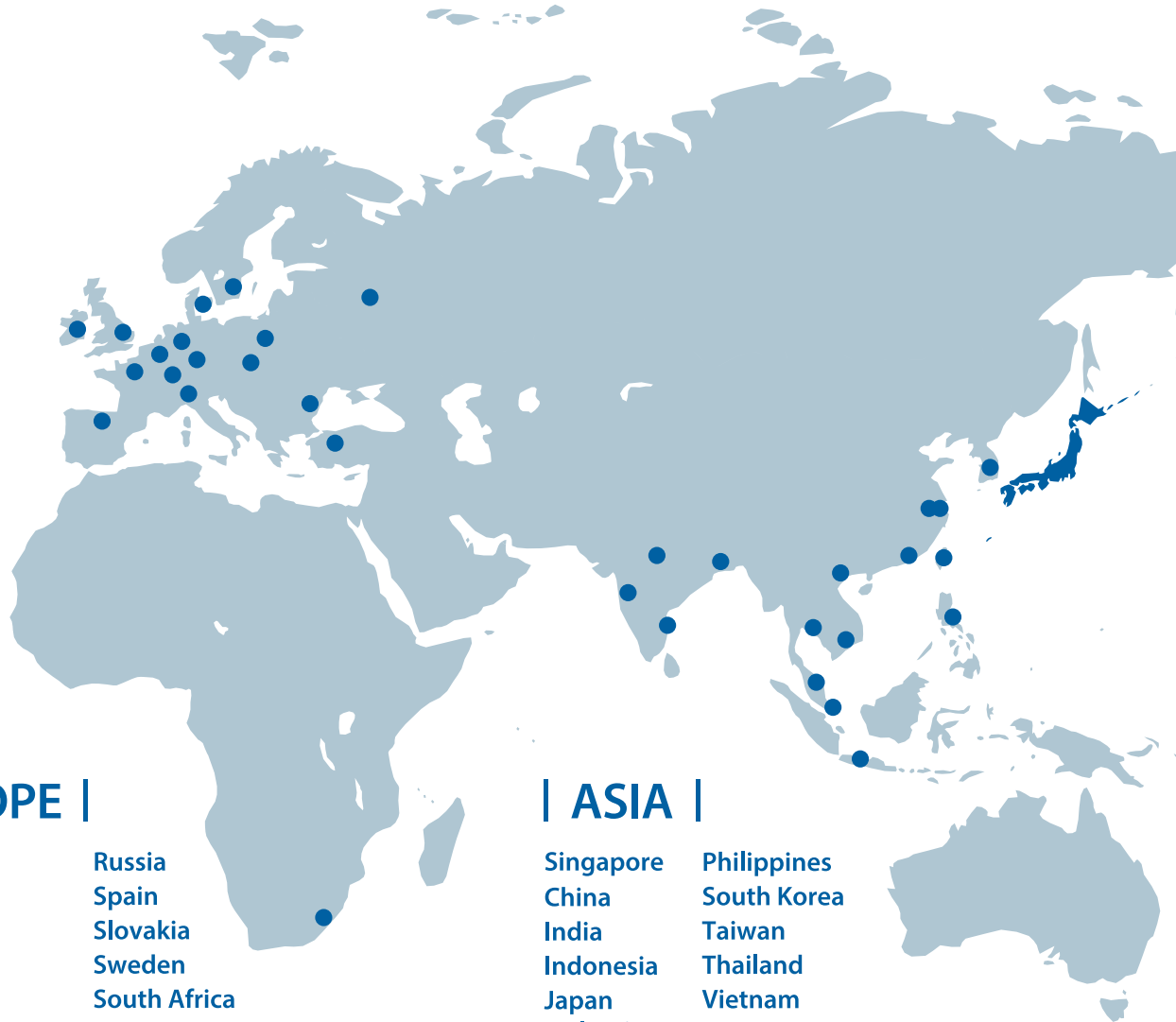
- OSG celebrates its 80th anniversary
- OSG USA, Inc. celebrates its 50th anniversary



Anniversary



Global Network



| EUROPE |

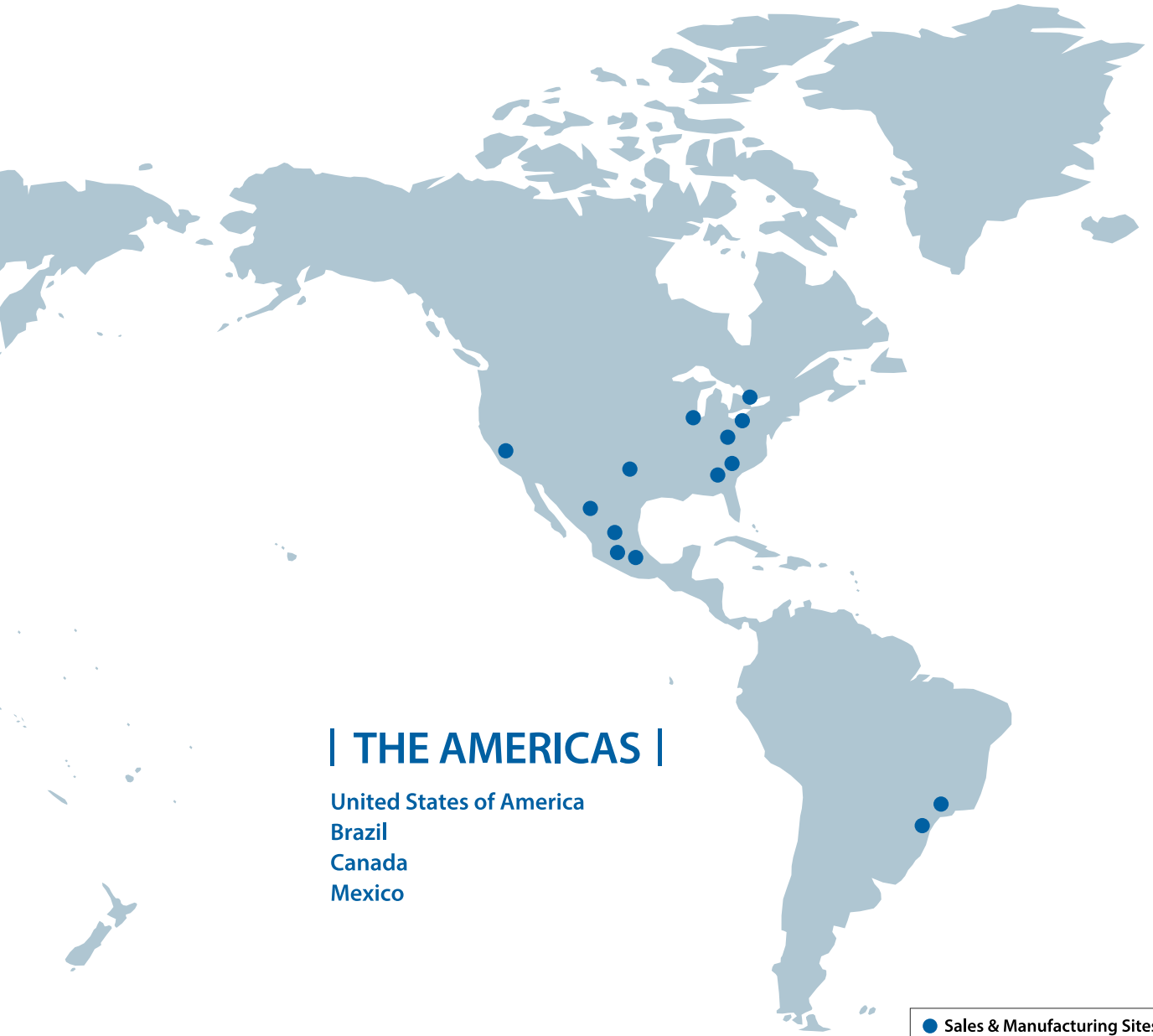
Belgium	Russia
Denmark	Spain
France	Slovakia
Germany	Sweden
Italy	South Africa
Ireland	Switzerland
The Netherlands	Turkey
Poland	United Kingdom
Romania	

| ASIA |

Singapore	Philippines
China	South Korea
India	Taiwan
Indonesia	Thailand
Japan	Vietnam
Malaysia	

A Global Network that Accelerates International Business Development

In 1968, OSG Corporation established its very first overseas subsidiary in the United States. Since then, OSG has dynamically expanded its global presence, establishing a production, sales and technical support network spanning 33 countries.



| THE AMERICAS |

United States of America
Brazil
Canada
Mexico

● Sales & Manufacturing Sites

As of January 31, 2018

United States of America (OSG USA, Inc.)



Singapore (OSG Asia Pte Ltd.)



Belgium (OSG Europe Logistics S.A.)



North America Locations

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Canada



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Mexico

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**Premium Grinding,
S de R.L. de C.V.**
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Primus Coating S.A. DE C.V.
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Core Products

Supporting Global Manufacturing with Top Class Products and Technology

OSG maintains absolute control over every aspect of its manufacturing capabilities. OSG products are produced in-house - from the production of tool material, creation of tool geometry, to the development of its own proprietary coatings - the 3 vital elements in the manufacturing of superior cutting tools.



Taps

Taps are used to cut screw threads on the inside surfaces of holes, creating the "female" half (nut) of the screw. High precision is of vital importance, particularly in areas such as automobile engines, which require precision screws. OSG offers a lineup of taps with diameters in various sizes and with specifications suitable for a wide variety of uses.



Drills

Drills are used to make holes in a wide range of surfaces. OSG has received high acclaim for the development of high-precision, high-value-added products for its use in automotive and aircraft part manufacture, which demands advanced processing techniques and zero margin of error.

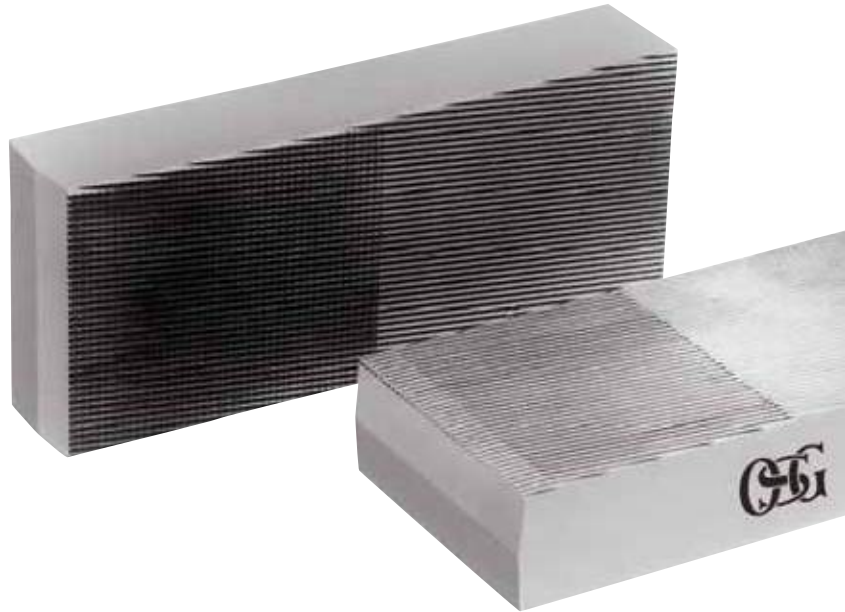
End Mills

End Mills are used to cut and contour molds for plastic parts, which include electric home appliances, die-casting dies for automotive parts and stamping molds. To meet today's demanding requirements (smaller size, lower weight and reduced cost), OSG has developed many carbide end mills that are excellent in both processing accuracy and durability.



Rolling Dies

Thread rolling dies are used to copy threading onto "Male" screws (bolts); the process consists of rolling a metal bar between two thread rolling dies tightly pressed to each side. OSG manufactures cylindrical and flat rolling dies for screws, worms and serrations, thread rolling planetary dies and contour-flow rolling dies, in accordance with their intended use.



Indexable Tools

Indexable tools are used to shape metal molds and machine parts. While end mills are used for finishing, indexable tools are intended for rough cutting and contouring, and use disposable inserts attached to the tool body.

Gauges

Gauges are used to inspect the final dimensions of screw threads and holes. OSG was an early adopter of changes in the Japan Industrial Standards (JIS). Today, we offer a range of screw gauges based on ISO standards. Precision checking is an extremely important process because of the trend toward increasing product precision and compliance with international standards.



Surface Treatments

OSG Product Treatments

OSG's surface treatments are designed to meet customer needs through comprehensive technology by providing wear resistance, seizure resistance, corrosion resistance and mold release. OSG proprietary treatments provide a range of thicknesses, hardnesses and oxidation temperatures so you are sure to find the best match for any application.



Coating	Coating Color	Type	Thickness (µm)	Hardness (HV)	Oxidation Temp. (°C)	Application
DUR	Black Gray	Cr multilayer	1~5	3100	1100	For milling steel, stainless steel & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion.
WD1	Iridescent Blue	Cr multilayer	3~5	3300	1100	For drilling steel, stainless steel, cast iron & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion.
EgiAs	Iridescent Red	Nano multilayer	3~5	3200	1100	For drilling steel, stainless steel, cast iron, aluminum & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion.
WXS	Black Gray	SiC	1~5	3500	1300	For drilling, tapping & milling steel, stainless steel & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion.
WXL	Black Gray	Cr	1~5	3100	1100	For drilling & milling steel, stainless steel & hardened steel. A PVD coating with excellent surface hardness and wear resistance, excellent heat resistance and low coefficient of friction to reduce material adhesion.
EXO	Black Violet	TiAlN multilayer	3	2800	850	For drilling, tapping & milling steel, stainless steel, cast iron & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, very good heat resistance and low coefficient of friction to reduce material adhesion.
TiAlN	Black Violet	TiAlN	3	2800	800	For drilling, tapping & milling steel, stainless steel, cast iron & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, very good heat resistance and low coefficient of friction to reduce material adhesion.
V	Blue Gray	TiCN multilayer	3	2700	400	For drilling & tapping steel, stainless steel, aluminum & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, good heat resistance and low coefficient of friction to reduce material adhesion.
TiCN	Blue Gray	TiCN	3	2700	400	For drilling, tapping & milling steel, stainless steel, aluminum & heat resistant alloys. A PVD coating with high surface hardness and wear resistance, good heat resistance and low coefficient of friction to reduce material adhesion.

CVD Process

Chemical Vapor Deposition Process






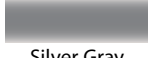





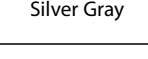

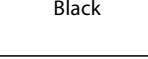

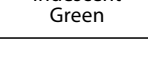

This method is used to apply OSG's patented diamond coating and provides excellent wear resistance.

PVD Process

Physical Vapor Deposition

Arc Ion Plating Method

This method creates coatings with excellent wear and oxidation resistance, by applying a compound substance.

Coating	Coating Color	Type	Thickness (µm)	Hardness (HV)	Oxidation Temp. (°C)	Application
 TiN	 Gold	TiN	3	2000	500	For drilling, tapping & milling steel, stainless steel, tool & die steel & aluminum. A PVD coating with good surface hardness and wear resistance, good heat resistance and low coefficient of friction to reduce material adhesion.
 SS	 Black Violet	TiAlN	1	2800	800	For drilling & tapping steel, stainless steel, & heat resistant alloys. A PVD coating with high wear & abrasion resistance, very good heat resistance and high surface smoothness to reduce material adhesion.
 HR	 Silver Gray	Ti	2	2800	700	For tapping stainless steel & heat resistant alloys. A PVD coating with high wear & abrasion resistance, very good heat resistance and high surface smoothness to reduce material adhesion.
 S/O	 Black	Steam-Oxide	-	-	-	For tapping steel, stainless steel, tool & die steel & nickel-alloys. The oxidized surface layer is porous and increases lubricity by retaining cutting fluid on the working area of the tool.
 Ni	 Silver Gray	Nitride	30~50	1000	-	For tapping cast iron, cast aluminum, & plastic. The case-hardened surface layer increases wear resistance in abrasive and tough materials.
 CrN	 Silver Gray	CrN	3	1800	700	For tapping non-ferrous materials. A PVD coating with high surface lubricity to reduce material adhesion applied over a case-hardened surface layer with increased wear resistance.
 DIA	 Black	DIA	20, 12	9000	600	For drilling, tapping & milling non-ferrous & composite materials. A CVD coating with superior surface hardness and wear resistance, outstanding durability, and excellent smoothness to reduce material adhesion.
 DLC	 Iridescent Green	DLC	0.2	6000	550	For milling non-ferrous materials. A PVD coating with excellent surface hardness and wear resistance, and very low coefficient of friction to reduce material adhesion.
 BR	-	-	-	-	-	For general machining of all materials. The uncoated substrate provides good wear resistance and durability in general machining applications.

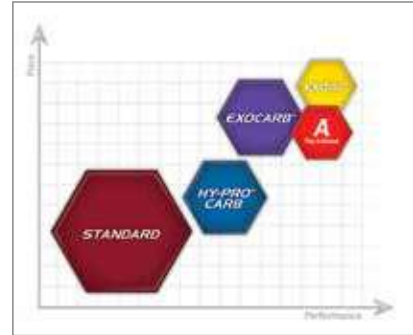
Brand Index

OSG Product Overview - The Total Solution

The purpose of this Brand Index is to illustrate OSG's Brand hierarchy and to better help you select the best tool for your machining needs.

From the value products under our Standard and HSS-Co brands to the high performance products under the V-Series, EXOCARB®, EXOPRO® and our new A Brand®, OSG offers a broad range of tools to meet your application requirements.

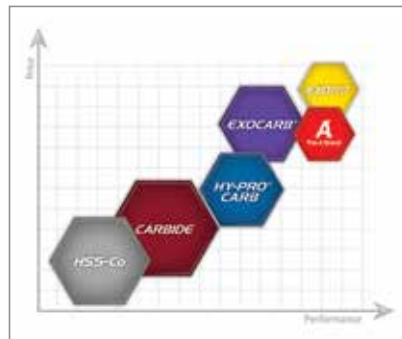
Drilling - Carbide



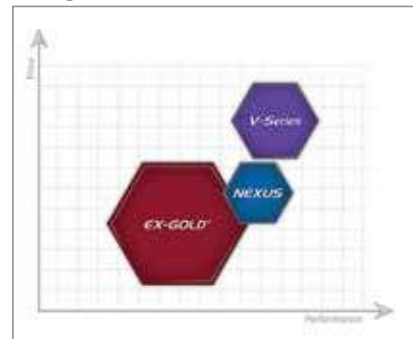
Threading



Milling



Drilling - HSS



List	Product	Brand/Name	Inch/Metric	Size Range	Features	Product Page
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OSG PHOENIX®



INDEXABLE DRILLING	List	Product	Brand/Name	Inch	Size Range	Features	Product Page
				Metric	Size Range		
	52400		OSG PHOENIX® PKD	Inch	0.551-1.023"	Exchangeable Head Drill, 3D & 5D	1154
	78310			Metric	14.00-25.99mm	Exchangeable Head Drill, 3D & 5D	1155
	78PXD			-	-	PXD Exchangeable Heads	1156-1160
	7808H			-	-	PXD Accessories	1161
	52502		OSG PHOENIX® PD	Inch	0.594-2.500"	Indexable Drill, 2D	1163-1164
	78031			Metric	15.00-63.00mm	Indexable Drill, 2D	1165-1166
	52503			Inch	0.594-2.500"	Indexable Drill, 3D	1167-1168
	78032			Metric	15.00-63.00mm	Indexable Drill, 3D	1169-1170
	52504			Inch	0.594-2.500"	Indexable Drill, 4D	1171-1172
	78033			Metric	15.00-63.00mm	Indexable Drill, 4D	1173-1174
	52505			Inch	0.594-2.500"	Indexable Drill, 5D	1175-1176
	78027			Metric	15.00-63.00mm	Indexable Drill, 5D	1177-1178
	78P5D			-	-	PD Inserts	1179
	7808H			-	-	PD Accessories	1180
	78001		OSG PHOENIX® PHP	Metric	14.00-40.00mm	High Performance Drill, 3D	1185
	78PHP			-	-	PHP Inserts	1186
	7808H			-	-	PHP Accessories	1186



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OSG PHOENIX®



INDEXABLE MILLING	52700		OSG PHOENIX® PAS	Inch	2.000-6.000"	45° Face Mill, 2-Sided Square Insert, Bore	1188
	78020			Metric	50-125mm	45° Face Mill, 2-Sided Square Insert, Bore	1188
	78PAS			-	-	PAS Inserts	1189
	7808H			-	-	PAS Accessories	1189
	52800		OSG PHOENIX® PAO	Inch	2.000-8.000"	45° Face Mill, 2-Sided Octagon Insert, Bore	1191
	78120			Metric	50-200mm	45° Face Mill, 2-Sided Octagon Insert, Bore	1192
	78PAO			-	-	PAO Inserts	1193
	7808H			-	-	PAO Accessories	1194
	78013		OSG PHOENIX® PSE	Inch	0.625-1.500"	90° Shoulder Cutter, SA/FA	1196
	78011			Metric	16-36mm	90° Shoulder Cutter, SS	1197-1198
	78012			Inch	2.000-6.000"	90° Shoulder Cutter, Bore	1199
	78010			Metric	40-125mm	90° Shoulder Cutter, Bore	1200
	52601			Inch	0.625-1.500"	90° Shoulder Cutter, ASF	1201
	78016			Metric	16-40mm	90° Shoulder Cutter, SF	1202
	78PSE			-	-	PSE/PSEL Inserts	1203
	7808H			-	-	PSE Accessories	1204
	53000		OSG PHOENIX® PSEL	Inch	1.000-1.500"	90° Roughing Cutter, SA/FA	1207
	78029			Metric	25-50mm	90° Roughing Cutter, SS	1208
	53001			Inch	2.000-3.000"	90° Roughing Cutter, Bore	1209
	78028			Metric	50-80mm	90° Roughing Cutter, Bore	1209
78PSE	-			-	PSE/PSEL Inserts	1210	
7808H	-			-	PSEL Accessories	1211	
52900		OSG PHOENIX® PSF	Inch	1.000-1.500"	90° Shoulder Cutter, Square Insert, SA/FA	1214	
78030			Metric	25-40mm	90° Shoulder Cutter, Square Insert, SS	1214	
52901			Inch	2.000-3.000"	90° Shoulder Cutter, Square Insert, Bore	1215	
78130			Metric	50-80mm	90° Shoulder Cutter, Square Insert, Bore	1215	
78PSF			-	-	PSF/PSFL Inserts	1216	
7808H			-	-	PSF Accessories	1216	
53200		OSG PHOENIX® PSFL	Inch	1.250-1.500"	90° Roughing Cutter, Square Insert, SA/FA	1218	
78037			Metric	32-40mm	90° Roughing Cutter, Square Insert, SS	1218	
53201			Inch	2.000-4.000"	90° Roughing Cutter, Square Insert, Bore	1219	
78137			Metric	50-80mm	90° Roughing Cutter, Square Insert, Bore	1219	
78PSF			-	-	PSF/PSFL Inserts	1220	
7808H			-	-	PSFL Accessories	1220	

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OSG PHOENIX®

PXT PXI




INDEXABLE MILLING	53100		OSG PHOENIX® PSTW	Inch	2.000-6.000"	90° Shoulder Cutter, 2-Sided Triangle Insert, Bore	1222	
	78131			Metric	50-125mm		1223	
	78PSTW			-	-		PSTW Inserts	1224
	7808H			-	-		PSTW Accessories	1224
	78005		OSG PHOENIX® PRC	Inch	1.000-1.500"	Radius Cutter, SA	1226	
	78003			Metric	20-63mm	Radius Cutter, SS	1227	
	78004			Inch	2.000-6.000"	Radius Cutter, Bore	1228	
	78002			Metric	50-100mm	Radius Cutter, Bore	1229	
	52602			Inch	1.000-1.500"	Radius Cutter, ASF	1230	
	78017			Metric	20-40mm	Radius Cutter, SF	1230	
78PRC	-			-	PRC Inserts	1231		
7808H	-			-	PRC Accessories	1231		
78009				OSG PHOENIX® PHC	Inch	0.625-1.500"	High Feed Radius Cutter, SA/FA	1234-1235
78007		Metric	16-63mm		High Feed Radius Cutter, SS	1236-1237		
78008		Inch	2.000-6.000"		High Feed Radius Cutter, Bore	1238		
78006		Metric	40-100mm		High Feed Radius Cutter, Bore	1239		
52603		Inch	0.625-1.500"		High Feed Radius Cutter, ASF	1240		
78015		Metric	16-40mm		High Feed Radius Cutter, SF	1241		
78PHC		-	-		PHC Inserts	1242		
7808H		-	-		PHC Accessories	1242		
6420		OSG PHOENIX® PDR	Metric	40-50mm	Deep Feed Radius Cutter, SS	1245		
6450			Metric	63-125mm	Deep Feed Radius Cutter, Bore	1245		
78PDR			-	-	PDR Inserts	1246		
7808H			-	-	PDR Accessories	1246		
78036		OSG PHOENIX® PFAL	Metric	50-160mm	Finishing Cutter for Aluminum, Bore	1248		
78PFAL			-	-	PFAL Inserts	1249		
7808H			-	-	PFAL Accessories	1249		
52100		OSG PHOENIX® PFB	Inch	0.250-1.250"	Finishing Ball End Mill, SA	1251-1252		
78014			Metric	6-32mm	Finishing Ball End Mill, SS	1253		
52604			Inch	0.375-1.000"	Finishing Ball End Mill, ASF	1254		
78114			Metric	10-32mm	Finishing Ball End Mill, SF	1254		
78PFB			-	-	PFB Inserts	1255-1256		
7808H			-	-	PFB Accessories	1257		



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OSG PHOENIX®

PXT PXI

INDEXABLE MILLING	52200		OSG PHOENIX® PFR	Inch	0.250-1.250"	Finishing Radius End Mill, SA	1260
	78320			Metric	6-32mm	Finishing Radius End Mill, SS	1261
	52605			Inch	0.375-1.000"	Finishing Radius End Mill, ASF	1262
	78220			Metric	10-32mm	Finishing Radius End Mill, SF	1262
	78PFR			-	-	PFR Inserts	1263-1267
	7808H			-	-	PFR Accessories	1268
	52601		OSG PHOENIX® SF	Inch	0.625-1.500"	Screw Fit Cutter, PSE ASF	1271
	78016			Metric	16-40mm	Screw Fit Cutter, PSE SF	1272
	52602			Inch	1.000-1.500"	Screw Fit Cutter, PRC ASF	1273
	78017			Metric	20-40mm	Screw Fit Cutter, PRC SF	1273
52603	Inch			0.625-1.500"	Screw Fit Cutter, PHC ASF	1274	
78015	Metric			16-40mm	Screw Fit Cutter, PHC SF	1275	
52604	Inch			0.375-1.000"	Screw Fit Cutter, PFB ASF	1276	
78114	Metric			10-30mm	Screw Fit Cutter, PFB SF	1277	
52605	Inch			0.375-1.000"	Screw Fit Cutter, PFR ASF	1278	
78220	Metric			10-32mm	Screw Fit Cutter, PFR SF	1278	
52600	Inch			-	Screw Fit Cutter, SF Arbor SA	1279	
78019	Metric			-	Screw Fit Cutter, SF Arbor SS	1280	
78025	-			-	Screw Fit Cutter, SF Arbor BT	1281	
78125	-			-	Screw Fit Cutter, SF Arbor HSK	1282	
78PXSE		OSG PHOENIX® PXM	Inch/ Metric	0.500-1.000" 12-25mm	PXSE, 4 Flute, Square & Corner Radius	1283	
78PXVC			Inch/ Metric	0.500-1.000" 12-25mm	PXVC, 4 Flute, Square & Corner Radius	1284	
78PXSM			Inch/ Metric	0.500-1.000" 12-25mm	PXSM, Multiple Flute, Square & Corner Radius	1285	
78PXNL			Inch/ Metric	0.500-1.000" 12-25mm	PXNL, 4 Flute, Roughing, Low Helix	1286	
78PXNH			Inch/ Metric	0.500-1.000" 12-25mm	PXNH, 4 Flute, Roughing, High Helix	1286	
78PXRE			Inch/ Metric	0.500-1.000" 12-20mm	PXRE, Multiple Flute, Straight Flute, Corner Radius	1287	
78PXDR			Inch/ Metric	0.500-1.000" 12-20mm	PXDR, 3 Flute, Helical Flute, Corner Radius	1287-1288	
78PXBE			Inch/ Metric	0.500-1.000" 12-20mm	PXBE, 3 Flute, Ball End	1288-1289	
78PXB			Inch/ Metric	0.500-1.000" 12-20mm	PXB, Multiple Flute, Ball End	1289	
52300			Inch	0.500-1.000"	PXM SA/TPA	1290-1292	
78018			Metric	12-25mm	PXM SS/TP	1290-1292	
78340			Metric	12-25mm	PXMC	1293	
7808H			-	-	PXM Accessories	1292	

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A Brand®



















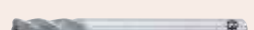

DRILLS	6600		A Brand® ADO-TRS	Inch & Metric	Carbide	EgiAs	4mm - 20mm	3D, Coolant-Through, 3 Flutes	60-63	
	6610		A Brand® ADO-TRS	Inch & Metric	Carbide	EgiAs	4mm - 20mm	5D, Coolant-Through, 3 Flutes	64-66	
	5720		A Brand® ADFO	Inch & Metric	Carbide	EgiAs	3mm - 20mm	3D, Coolant-Through, Flat Drill	67-70	
	5700		A Brand® ADF	Inch & Metric	Carbide	EgiAs	2mm - 20mm	2D, Solid, Flat Drill	71-75	
	5705		A Brand® ADFLS	Inch & Metric	Carbide	EgiAs	3mm - 20mm	2D, Solid, Flat Drill, Long Shank	76-78	
	6500		A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 20mm	3D, Coolant-Through	79-84	
	6510		A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 20mm	5D, Coolant-Through	85-89	
	6520		A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 15.88mm	8D, Coolant-Through	90-93	
	6530		A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 14.29mm	10D, Coolant-Through	94-96	
	6535		A Brand® ADO	Inch & Metric	Carbide	EgiAs	3mm - 14.29mm	15D, Coolant-Through	97-98	
	6540		A Brand® ADO	Inch & Metric	Carbide	EgiAs	3mm - 14.29mm	20D, Coolant-Through	99-100	
	6550		A Brand® ADO	Inch & Metric	Carbide	EgiAs	3mm - 14.29mm	30D, Coolant-Through	101-102	
	6300		A Brand® AD	Inch & Metric	Carbide	EgiAs	2mm - 20mm	2D, Solid	103-106	
	6310		A Brand® AD	Inch & Metric	Carbide	EgiAs	2mm - 20mm	4D, Solid	107-110	
	5200		A Brand® ADO-SUS	Inch & Metric	Carbide	WXL®	2mm-20mm	3D, Coolant-Through	111-117	
	5210		A Brand® ADO-SUS	Inch & Metric	Carbide	WXL®	2mm-20mm	5D, Coolant-Through	118-124	
	5220		A Brand® ADO-SUS	Inch & Metric	Carbide	WXL®	2mm - 12.7mm	8D, Coolant-Through	125-129	
	5190		A Brand® AD-LDS	Inch & Metric	Carbide	EgiAs	3mm - 25mm	Solid 90°, 120°, 140° Spot Drill	130-131	
	TAPS	16625		A BRAND® AT-1	Inch	Carbide	EgiAs	1/4" - 1"	Thread Mill, Helical Flute	358
		16620		A BRAND® AT-1	Metric	Carbide	EgiAs	M6 - M24	Thread Mill, Helical Flute	359
16630			A BRAND® AT-1	Inch	Carbide	EgiAs	1/16" - 2"	Thread Mill, NPT, Helical Flute	360	
16631			A BRAND® AT-1	Inch	Carbide	EgiAs	1/16" - 2"	Thread Mill, NPTF, Helical Flute	361	
16605			A BRAND® A-CSF	Inch	Carbide	Bright	1/4" - 1/2"	Spiral Flute, Coolant-Through, DIN OAL	412	
16600			A BRAND® A-CSF	Metric	Carbide	Bright	M5 - M12	Spiral Flute, Coolant-Through, DIN OAL	413	
16615			A BRAND® A-CHT	Inch	Carbide	Bright	No. 12 - 1/2"	Straight Flute, Coolant-Through, DIN OAL	554	



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A Brand® (Continued)



TAPS	16610		A BRAND® A-CHT	Metric	Carbide	Bright	M5 - M12	Straight Flute, Coolant-Through, DIN OAL	555
	16545		A BRAND® A-OIL-SFT	Inch	VC-10	V	¼" - 2"	Spiral Flute, Variable Helix, Coolant-Through, DIN OAL	420
	16540		A BRAND® A-OIL-SFT	Metric	VC-10	V	M6 - M56	Spiral Flute, Variable Helix, Coolant-Through, DIN OAL	421
	16555		A BRAND® A-OIL-POT	Inch	VC-10	V	¼" - 1"	Spiral point, Coolant-Through, DIN OAL	487
	16550		A BRAND® A-OIL-POT	Metric	VC-10	V	M6 - M24	Spiral point, Coolant-Through, DIN OAL	488
	16505		A BRAND® A-SFT	Inch	VC-10	V	No. 4 - 2"	Spiral Flute, Variable Helix, DIN OAL	414-416
	16500		A BRAND® A-SFT	Metric	VC-10	V	M1.4 - M56	Spiral Flute, Variable Helix, DIN OAL	417-419
	16515		A BRAND® A-POT	Inch	VC-10	V	No. 2 - 1"	Spiral point, DIN OAL	483-484
	16510		A BRAND® A-POT	Metric	VC-10	V	M1.4 - M24	Spiral point, DIN OAL	485-486
	16525		A BRAND® A-LT-SFT	Inch	VC-10	V	No. 4 - 1"	Spiral Flute, Variable Helix, Long Shank	422
	16520		A BRAND® A-LT-SFT	Metric	VC-10	V	M3 - M24	Spiral Flute, Variable Helix, Long Shank	423-424
	16535		A BRAND® A-LT-POT	Inch	VC-10	V	No. 4 - 1"	Spiral point, Long Shank	489
	16530		A BRAND® A-LT-POT	Metric	VC-10	V	M3 - M24	Spiral point, Long Shank	490-491
	END MILLS	8200		A BRAND® AE-VMS	Inch	Carbide	Durise	3/16" - 1"	Anti-Vibration
8205			A BRAND® AE-VMS	Metric	Carbide	Durise	3mm - 12mm	Anti-Vibration	721
8210			A BRAND® AE-CR-VMS	Inch	Carbide	Durise	3/16" - 1"	Anti-Vibration, Corner Radius	722
8215			A BRAND® AE-CR-VMS	Metric	Carbide	Durise	3mm - 12mm	Anti-Vibration, Corner Radius	723
8220			A BRAND® AE-LN-CR-VMS	Inch	Carbide	Durise	1/4" - 1"	Anti-Vibration, Long Neck, Corner Radius	724

EXOPRO®



DRILLS	5600		EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	4mm - 20mm	3D, Coolant-Through, 3 Flutes	132-135
	5610		EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	4mm - 20mm	5D, Coolant-Through, 3 Flutes	136-139
	5630		EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	5mm - 15.88mm	10D, Coolant-Through	140-142
	5950Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm - 12.7mm	3D, Coolant-Through	143-144
	5955Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm - 12.7mm	5D, Coolant-Through	145-146
	7501		EXOPRO® AERO-STAD	Inch	Carbide	Dia.	#40 - 1/2"	Composite, Triple Angle	167

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DRILLS	7520		EXOPRO® AERO-LHX	Inch	Carbide	Dia.	#40 - 1/2"	Composite, Low Helix	168
	7500		EXOPRO® AERO-D-REAM	Inch	Carbide	Dia.	#40 - 1/2"	Composite, Tapered Reamer	169
	7530		EXOPRO® AERO-S	Inch	Carbide	Dia.	#40 - 1/2"	Composite, High Helix, Stack Drill	170
	7532		EXOPRO® AERO-H	Inch	Carbide	Dia.	#40 - 1/2"	Composite, Stack Drill for All Stacks	171
TAPS	16050		EXOPRO® XPF-OIL	Inch	HSS-Co	V	1/4" - 1 3/4"	Forming Tap, Coolant-Through, DIN OAL	370-371
	16150		EXOPRO® XPF-OIL	Metric	HSS-Co	V	M6 - M45	Forming Tap, Coolant-Through, DIN OAL	372-374
	16250		EXOPRO® XPF	Inch	HSS-Co	V	No. 0 - 1 3/4	Forming Tap, DIN OAL	375-378
	16350		EXOPRO® XPF	Metric	HSS-Co	V	M1 - M45	Forming Tap, DIN OAL	379-382
	16260		EXOPRO® XPF	Inch	HSS-CO	V	No. 2 - 1"	STI, Forming Tap, DIN OAL	599-600
	16360		EXOPRO® XPF	Metric	HSS-CO	V	M2 - M24	STI, Forming Tap, DIN OAL	601
	16255		EXOPRO® XPF-LS	Inch	HSS-Co	V	No. 5 - 1"	Forming Tap, Long Shank	383-384
	16355		EXOPRO® XPF-LS	Metric	HSS-Co	V	M3 - M20	Forming Tap, Long Shank	385-386
	16450		EXOPRO® CC-SUS	Inch	HSSE	TiN	No. 2 - 1"	Spiral Flute, Variable Helix, DIN OAL	425-426
	16455		EXOPRO® CC-SUS	Metric	HSSE	TiN	M2 - M24	Spiral Flute, Variable Helix, DIN OAL	427
	335Ni		EXOPRO® WHR-Ni	Inch	VC10	HR	No. 2 - 1"	Spiral Flute, DIN OAL	428-429
	336Ni		EXOPRO® WHR-Ni	Metric	VC10	HR	M2.5 - M24	Spiral Flute, DIN OAL	430
	337Ni		EXOPRO® WHR-Ni	Inch	VC-10	HR	No. 2 - 1"	Spiral Point, DIN OAL	494-495
	338Ni		EXOPRO® WHR-Ni	Metric	VC-10	HR	M2.5 - M24	Spiral Point, DIN OAL	496
	13063		EXOPRO® Ti	Inch	VC-10	V	No. 2 - 1/2"	Spiral Flute, RHC/LHS	492
	13163		EXOPRO® Ti	Metric	VC-10	V	M2.5 - M12	Spiral Flute, RHC/LHS	493
END MILLS	2055		EXOPRO® UVX-Ni	Inch	Carbide	EXO®	1/4" - 1"	Corner Radius	725
	9510		EXOPRO® PHX	Metric	Carbide	EXO®	1mm - 20mm	Deep Feed, Ball End	726
	9590		EXOPRO® PHX	Metric	Carbide	WXS®	0.06mm - 6mm	Long Neck, Ball End	727
	9581		EXOPRO® PHX	Metric	Carbide	WXS®	1mm - 12mm	Pencil-Neck, Deep Feed, Ball End	728-729
	9592		EXOPRO® PHX	Metric	Carbide	WXS®	0.8mm - 3mm	Pencil Neck, Deep Feed, Corner Radius	730



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EXOPRO® (Continued)

EP

END MILLS	9575		EXOPRO® PHX	Metric	Carbide	WXS®	6mm - 20mm	Deep Feed, Corner Radius	731
	9576		EXOPRO® PHX	Metric	Carbide	WXS®	4mm - 16mm	Long Neck, Deep Feed, Corner Radius	732
	9580		EXOPRO® PHX	Metric	Carbide	WXS®	2mm - 12mm	Pencil Neck, Deep Feed, Corner Radius	733-735
	9570		EXOPRO® PHX	Metric	Carbide	EXO®	1mm - 20mm	High-Feed, Corner Radius	736
	2061		EXOPRO® AERO-BNC	Inch	Carbide	Dia.	1/8" - 1/2"	Composite, Nicked Router	832
	2066		EXOPRO® AERO-HBC 30	Inch	Carbide	Dia.	1/8" - 1/2"	Composite, Compression Router	833
	2064		EXOPRO® AERO-HBC 45	Inch	Carbide	Dia.	1/4" - 1/2"	Composite, Compression Router	834
	2068		EXOPRO® AERO-HBC 60	Inch	Carbide	Dia.	1/4" - 1/2"	Composite, Compression Router	835
	2680		EXOPRO® AERO-REC	Inch	Carbide	Dia.	15/64" - 1/2"	Composite, Roughing Router	836
	2650		EXOPRO® AERO-MFR	Inch	Carbide	Dia.	1/4" - 1/2"	Composite, Finishing Router	837

EXOCARB®

HTE

DRILLS	5171		EXOCARB® WH70	Metric	Carbide	WXS®	2mm-18.6mm	5D	147-149
	5172		EXOCARB® XH	Metric	Carbide	Bright	2mm-12mm	Solid, Tap Extractor	150
	5275		EXOCARB® MAX-OIL AL	Metric	Carbide	Bright	3mm-10mm	15-30D, Coolant-Through	151
	5310		EXOCARB® MAX-MINI	Metric	Carbide	EXO®	1mm-3mm	10-20D, Solid, Miniature, 3 Flutes	152
	5315		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.05mm	Solid, Miniature, Pilot Drill	153
	5320		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm-0.08mm	5D, Solid, Miniature	154
	5325		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm-0.08mm	10D, Solid, Miniature	155
	5330		EXOCARB® MAX-MINI	Inch & Metric	Carbide	TiAlN	0.2mm-5mm	3D, Solid, Miniature	156-164
	5340		EXOCARB® MAX-MINI	Inch & Metric	Carbide	SS	0.5mm-3mm	10D, Solid, Miniature	165-166
	5732		EXOCARB® AERO-H	Inch	Carbide	TiAlN	#11 - 1/2"	Composite, Stack Drill for All Stacks	172
TAPS	41200		EXOCARB® Mini	Inch	Carbide	WXS® SS	No. 0 - No. 8	Thread Mill, Miniature, Helical Flute	362
	41300		EXOCARB® Mini	Metric	Carbide	WXS® SS	M1 - M5	Thread Mill, Miniature, Helical Flute	363
	41000		EXOCARB®	Inch	Carbide	EXO®	No. 10 - 1"	Thread Mill, Helical Flute	364-365
	41100		EXOCARB®	Metric	Carbide	EXO®	M6 - M24	Thread Mill, Helical Flute	366

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TAPS		EXOCARB® Oil	Inch	Carbide	EXO®	¼" - 1"	Thread Mill, Coolant-Through, Helical Flute	367	
		EXOCARB® Oil	Metric	Carbide	EXO®	M6 - M24	Thread Mill, Coolant-Through, Helical Flute	368	
		EXOCARB® Pipe	Inch	Carbide	EXO®	1/16" - 2 1/2"	Thread Mill, NPT, Helical Flute	369	
		EXOCARB® Pipe	Inch	Carbide	EXO®	1/16" - 2 1/2"	Thread Mill, NPTF, Helical Flute	369	
		EXOCARB®	Metric	Carbide	Bright	M6 - M10	Forming Tap, Carbide Inlaid, DIN/DIN	387	
		EXOCARB®	Metric	Carbide	Bright	M3 - M12	Forming Tap, JIS	388	
		EXOCARB®	Metric	Carbide	Bright	M6 - M12	Forming Tap, JIS, Long Shank	389	
		EXOCARB®	Metric	Carbide	Bright	M3 - M12	Spiral Flute, JIS	431	
		EXOCARB® VX	Inch	Carbide	V	No. 4 - 1/2"	Straight Flute, DIN OAL	556	
		EXOCARB® VX	Metric	Carbide	V	M2.6 - M20	Straight Flute, JIS	557	
		EXOCARB® Diamond	Inch	Carbide	DIA	No. 4 - 1/2"	Straight Flute, UNJC, UNJF, DIN OAL	558	
		EXOCARB® Diamond	Metric	Carbide	DIA	M3 - M12	Straight Flute, JIS	559	
		EXOCARB®	Inch	Carbide	Bright	No. 4 - 1/2"	Straight Flute, DIN OAL	560	
		EXOCARB®	Inch	Carbide	Bright	No. 10 - 3/8"	Straight Flute	561	
		EXOCARB®	Metric	Carbide	Bright	M3 - M10	Straight Flute, DIN OAL	562	
		EXOCARB®	Metric	Carbide	Bright	M1.4 - M24	Straight Flute, JIS	563	
		EXOCARB®	Metric	Carbide	Bright	M6 - M12	Straight Flute, JIS, Long Shank	564	
	END MILLS		EXOCARB® WXL	Inch	Carbide	WXL®	1/32" - 1/2"	Ball End	737
			EXOCARB® WXL	Metric	Carbide	WXL®	0.1mm - 20mm	Ball End	738
		EXOCARB® WXL	Inch	Carbide	WXL®	1/16" - 1/2"	Corner Radius	739	
		EXOCARB® WXL	Inch	Carbide	WXL®	1/16" - 3/4"	Square End	740	
		EXOCARB® WXL	Inch	Carbide	WXL®	1/64" - 1/4"	Ball End, Long Neck, ±5µm Radius Tolerance	741	
		EXOCARB® WXL	Metric	Carbide	WXL®	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	742-744	
		EXOCARB® WXL	Inch	Carbide	WXL®	1/16" - 3/4"	Square End	745	
		EXOCARB® WXL	Inch	Carbide	WXL®	1/16" - 3/4"	Square End	745	



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	3704		EXOCARB® WXL	Metric	Carbide	WXL®	1mm - 12mm	Square End	746
	3742		EXOCARB® WXL	Metric	Carbide	WXL®	3mm - 26mm	Square End	747
	3791		EXOCARB® WXL	Metric	Carbide	WXL®	0.2mm - 5mm	Long Neck	748-749
	3711		EXOCARB® WXL	Metric	Carbide	WXL®	1mm - 18mm	Ball End, Long Shank	750
	3720		EXOCARB® WXL	Metric	Carbide	WXL®	0.1mm - 6mm	Square End	751
	3721		EXOCARB® WXL	Metric	Carbide	WXL®	0.1mm - 20mm	Square End	752
	3712		EXOCARB® WXL	Metric	Carbide	WXL®	0.2mm - 6mm	Pencil Neck, Ball End	753-758
	3722		EXOCARB® WXL	Metric	Carbide	WXL®	0.1mm - 20mm	Square End	759
	3723		EXOCARB® WXL	Metric	Carbide	WXL®	0.2mm - 12mm	Square End	760
	3770		EXOCARB® WXL	Metric	Carbide	WXL®	0.6mm - 12mm	Corner Radius	761
	3771		EXOCARB® WXL	Metric	Carbide	WXL®	3mm - 12mm	Corner Radius	762
	3794		EXOCARB® WXL	Metric	Carbide	WXL®	1mm - 3mm	Long Neck	764
	4445		EXOCARB® WXL	Inch	Carbide	WXL®	1/8" - 1/2"	High Helix, Corner Radius	765
	4410		EXOCARB® WXS	Inch	Carbide	WXS®	1/32" - 1/2"	Ball End	766
	4510		EXOCARB® WXS	Metric	Carbide	WXS®	1mm - 12mm	Ball End	767
	4440		EXOCARB® WXS	Inch	Carbide	WXS®	1/16" - 3/4"	Square End	768
	4540		EXOCARB® WXS	Metric	Carbide	WXS®	1mm - 12mm	Square End	769
	4471		EXOCARB® WXS	Inch	Carbide	WXS®	1/16" - 1/2"	Corner Radius	770
	4571		EXOCARB® WXS	Metric	Carbide	WXS®	3mm - 12mm	Corner Radius	771
4470		EXOCARB® WXS	Inch	Carbide	WXS®	1/8" - 1/2"	Corner Radius, High Feed	772	
4570		EXOCARB® WXS	Metric	Carbide	WXS®	2mm - 13mm	Corner Radius, High Feed	772	
4472		EXOCARB® WXS	Inch	Carbide	WXS®	1/8" - 1/2"	Corner Radius, High Feed	773	
4572		EXOCARB® WXS	Metric	Carbide	WXS®	2mm - 12mm	Corner Radius, High Feed	774	
4592		EXOCARB® WXS	Metric	Carbide	WXS®	0.4mm - 3mm	Corner Radius, Long Neck, ±5µm Radius Tolerance	775-777	
4590		EXOCARB® WXS	Metric	Carbide	WXS®	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	778-779	

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	4430		EXOCARB® WXS	Inch	Carbide	WXS®	1/4" - 1/2"	Ball End, True 4 Flute	780
	4530		EXOCARB® WXS	Metric	Carbide	WXS®	6mm - 12mm	Ball End, True 4 Flute	781
	4513		EXOCARB® WXS	Metric	Carbide	WXS®	1mm - 12mm	Ball End, Sphere Type	782
	4581		EXOCARB® WXS	Metric	Carbide	WXS®	1mm - 2.5mm	Ball End, Tapered	783
	4541		EXOCARB® WXS	Metric	Carbide	WXS®	3mm - 12mm	Corner Radius	784
	9010		EXOCARB® MAX	Inch	Carbide	WXS®	1/32" - 1/2"	Ball End	785
	9110		EXOCARB® MAX	Metric	Carbide	WXS®	1mm - 10mm	Ball End	785
	9011		EXOCARB® MAX	Inch	Carbide	WXS®	1/32" - 3/8"	Ball End, Long Shank	786
	9111		EXOCARB® MAX	Metric	Carbide	WXS®	1mm - 10mm	Ball End, Long Shank	786
	9140		EXOCARB® MAX	Metric	Carbide	WXS®	3mm - 12mm	Square End	787
	9144		EXOCARB® MAX	Metric	Carbide	WXS®	6mm - 12mm	Corner Radius	787
	9191		EXOCARB® MAX	Metric	CBN	Bright	0.4mm - 3mm	CBN, Ball End	788
	9192		EXOCARB® MAX	Metric	CBN	Bright	0.4mm - 3mm	CBN, Super Long Neck, Ball Nose	788
	9181		EXOCARB® MAX	Metric	CBN	Bright	0.5mm - 3mm	CBN, Corner Radius	789
	9182		EXOCARB® MAX	Metric	CBN	Bright	0.5mm - 3mm	Long Neck, CBN, Corner Radius	789
	7020		EXOCARB® Diamond	Inch	Carbide	Dia.	1/64" - 1/2"	Square End	790
	7120		EXOCARB® Diamond	Metric	Carbide	Dia.	1mm - 12mm	Square End	791
	7040		EXOCARB® Diamond	Inch	Carbide	Dia.	1/16" - 1/2"	Square End	791
	7041		EXOCARB® Diamond	Inch	Carbide	Dia.	1/8" - 1/2"	Square End	792
7042		EXOCARB® Diamond	Inch	Carbide	Dia.	1/16" - 1/2"	Long Shank	792	
7072		EXOCARB® Diamond	Inch	Carbide	Dia.	1/8" - 1/2"	Long Shank, Corner Radius	793	
7010		EXOCARB® Diamond	Inch	Carbide	Dia.	1/32" - 1/2"	Ball End	793	
7110		EXOCARB® Diamond	Metric	Carbide	Dia.	1mm - 12mm	Ball End	794	
7030		EXOCARB® Diamond	Inch	Carbide	Dia.	1/32" - 1/2"	Ball End	794	
7031		EXOCARB® Diamond	Inch	Carbide	Dia.	3/16" - 1/2"	Ball End	795	



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EXOCARB® (Continued)



END MILLS	7032		EXOCARB® Diamond	Inch	Carbide	Dia.	1/16" - 1/2"	Ball End, Long Shank	795
	7173		EXOCARB® Diamond	Metric	Carbide	Dia.	0.5mm - 12mm	Ball End, Long Shank	796
	7132		EXOCARB® Diamond	Metric	Carbide	Dia.	3mm - 12mm	Long Shank, Corner Radius	797
	7140		EXOCARB® Diamond	Metric	Carbide	Dia.	0.5mm - 12mm	Square End	797
	7230		EXOCARB® Diamond	Inch	Carbide	Dia.	1/64" - 1/4"	High Precision, Ball End	798
	7231		EXOCARB® Diamond	Inch	Carbide	Dia.	1/64" - 1/4"	High Precision, Ball End, Long Reach	798
	2050		EXOCARB® AERO UVX	Inch	Carbide	EXO®	1/8" - 1"	Square End, for Exotics	799
	2052		EXOCARB® AERO UVX	Inch	Carbide	EXO®	1/8" - 1"	Corner Radius, for Exotics	800
	3815		EXOCARB® AERO UVX Silent Rougher	Inch	Carbide	WXL®	1/4" - 1"	Low Helix, Corner Chamfer	801
	3820		EXOCARB® AERO UVX Silent Rougher	Inch	Carbide	WXL®	1/4" - 1"	High Helix, Corner Chamfer	801
	3915		EXOCARB® AERO UVX Silent Rougher	Metric	Carbide	WXL®	6mm - 25mm	Low Helix	802
	3920		EXOCARB® AERO UVX Silent Rougher	Metric	Carbide	WXL®	6mm - 25mm	High Helix	802
	3825		EXOCARB® AERO UVX Silent Rougher	Inch	Carbide	WXL®	1/4" - 1"	Low Helix, Long Neck, Corner Chamfer	803
	3830		EXOCARB® AERO UVX Silent Rougher	Inch	Carbide	WXL®	1/4" - 1"	High Helix, Long Neck, Corner Chamfer	803
	2015		EXOCARB® AERO Rougher	Inch	Carbide	TiAlN	1/4" - 1"	Rougher, for Exotics	804
	2100		EXOCARB® AERO UVX-Ti	Inch	Carbide	EXO®	1/2" - 1-1/4"	Corner Radius, Rougher	805
	2106		EXOCARB® AERO UVX-Ti	Inch	Carbide	EXO®	1/2" - 1-1/4"	Corner Radius	806-807
	2104		EXOCARB® AERO UVX-Ti	Metric	Carbide	EXO®	12mm - 25mm	Reduced Neck	808
	2102		EXOCARB® AERO UVX-Ti	Inch	Carbide	EXO®	1/2" - 1-1/4"	Reduced Neck, Corner Radius	808
	2108		EXOCARB® AERO UVX-Ti	Inch	Carbide	EXO®	1/2" - 1-1/4"	Reduced Neck, Corner Radius	809
	2110		EXOCARB® AERO UVX-Ti	Metric	Carbide	EXO®	12mm - 20mm	Reduced Neck, Corner Radius	810
	2080		EXOCARB® AERO HFC-Ti	Inch	Carbide	Bright	5/8" - 1"	High Feed Radius Cutter for Titanium	811
	2081		EXOCARB® AERO HFC-Ti	Metric	Carbide	Bright	16mm - 25mm	High Feed Radius Cutter for Titanium	811
	2863		EXOCARB® AERO DLC	Inch	Carbide	DLC	1/2" - 1"	Corner Radius	812
	2963		EXOCARB® AERO DLC	Metric	Carbide	DLC	12mm - 25mm	Corner Radius	813

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END MILLS	2873		EXOCARB® AERO DLC	Inch	Carbide	DLC	1/2" - 1"	Square & Corner Radius	814
	2973		EXOCARB® AERO DLC	Metric	Carbide	DLC	12mm - 25mm	Square & Corner Radius	815
	2874		EXOCARB® AERO DLC	Inch	Carbide	DLC	5/8" - 1"	Coolant through, Square & Corner Radius	816
	2974		EXOCARB® AERO DLC	Metric	Carbide	DLC	20mm - 25mm	Coolant through, Square & Corner Radius	817
	2843		EXOCARB® AERO DLC	Inch	Carbide	DLC	1/2" - 1"	Long Length, Square & Corner Radius	818
	2943		EXOCARB® AERO DLC	Metric	Carbide	DLC	12mm - 20mm	Long Length, Square & Corner Radius	819
	2853		EXOCARB® AERO DLC	Inch	Carbide	DLC	3/4"	Extra Long Length, Square & Corner Radius	820
	2953		EXOCARB® AERO DLC	Metric	Carbide	DLC	20mm	Extra Long Length, Square & Corner Radius	821
	8120		EXOCARB® AERO	Metric	Carbide	Bright	1mm - 16mm	Square End	831
DISC CUTTERS	6440		EXOCARB® DISC CUTTER	Metric	Steel	-	3.150"-4.921" 80mm - 125mm	S for Roughing	1306
	6442		EXOCARB® DISC CUTTER	Metric	Carbide	-	9.52mm	S Inserts & Accessories	1307
	6441		EXOCARB® DISC CUTTER	Metric	Steel	-	3.150" - 4.921" 80mm - 125mm	Pro for Finishing	1308
	6541		EXOCARB® DISC CUTTER	Metric	Carbide	-	9.52mm	Pro Inserts & Accessories	1309
	6640		EXOCARB® ARBOR	Inch & Metric	Steel	-	1" / 25.4mm	Arbors & Accessories	1310

SHRINK FIT



SHRINK FIT	SHRINK FIT		HR-B Handy Type Unit	-	-	-	-	Compact hot air shrink device	1317
	SHRINK FIT		HR-B Handy Type Unit	-	-	-	-	Accessories	1318- 1319
	SHRINK FIT		Shrink Holders	Inch & Metric	-	-	-	Standard and Coolant- through	1325- 1328
	SHRINK FIT		Shrink Extensions	Inch & Metric	-	-	-	Multi Type Extensions	1329- 1336

BLIZZARD®



END MILLS	2021		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/8" - 1"	Square & Corner Radius	822
	2022		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/8" - 1"	Square & Corner Radius	823
	2023		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/4" - 1"	Reduced Neck, Square & Corner Radius	824
	2024		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/4" - 1"	Reduced Neck, Square & Corner Radius	825
	2041		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/8" - 1"	Square & Corner Radius	826



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END MILLS	2042		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/8" - 1"	Square & Corner Radius	827
	2043		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/4" - 1"	Reduced Neck, Square & Corner Radius	828
	2048		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/4" - 1"	Reduced Neck, Square & Corner Radius	829
	2010		EXOCARB® AERO BLIZZARD	Inch	Carbide	Bright	1/8" - 1"	Ball End	830

HY-PRO® CARB



DRILLS	HP243		HY-PRO® CARB	Inch & Metric	Carbide	WD1	1mm-20mm	3D, Solid	176-179
	HP253		HY-PRO® CARB	Inch & Metric	Carbide	WD1	3mm-20mm	3D, Coolant-Through	184-187
	HP245		HY-PRO® CARB	Inch & Metric	Carbide	WD1	1mm-20mm	5D, Solid	180-183
	HP255		HY-PRO® CARB	Inch & Metric	Carbide	WD1	3mm-20mm	5D, Coolant-Through	188-191
	HP258		HY-PRO® CARB	Inch & Metric	Carbide	WD1	3mm-20mm	8D, Coolant-Through	192-195
	HP700		HY-PRO® CARB NEPTUNE	Inch	Carbide	TiAlN	#40 - 1/4"	Composite, Hand Drill	173
END MILLS	VG441		HY-PRO® VGX	Inch	Carbide	TiAlN	1/8" - 1"	Square End	840
	VG434		HY-PRO® VGX	Inch	Carbide	TiAlN	1/8" - 1"	Corner Radius	841
	VG436		HY-PRO® VGX	Inch	Carbide	TiAlN	1/8" - 1"	Corner Chamfer	842
	VG446		HY-PRO® VGX	Inch	Carbide	TiAlN	1/4" - 1"	Reduced Neck, Corner Radius/Corner Chamfer	843
	VG464		HY-PRO® VGX	Inch	Carbide	TiAlN	1/4" - 1"	Extended Length, Square End/Corner Chamfer	844
	VG441BN		HY-PRO® VGX	Inch	Carbide	TiAlN	1/8" - 1 1/4"	Ball Nose	845
	VG541		HY-PRO® VGX	Inch	Carbide	TiAlN	1/8" - 1"	Square End	846
	VG534		HY-PRO® VGX	Inch	Carbide	TiAlN	3/16" - 1"	Corner Radius	847-848
	HP421		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	3/64" - 1" 3mm-25mm	Square End	849-850
	HP441		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	3/64" - 1" 3mm-25mm	Square End	849-850
	HP460		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8" - 1" 3mm-25mm	High Helix	851
	HP450		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8" - 1" 3mm-25mm	Square End	852
	HP453		HY-PRO® CARB	Metric	Carbide	TiAlN	4mm - 20mm	Super Tough Mills	853
	HP456		HY-PRO® CARB	Metric	Carbide	TiAlN	6mm - 12mm	Super Tough Mills, Corner Radius	853

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HY-PRO® CARB (Continued)



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	HP451		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/8" - 1" 4mm-20mm	Super Tough Mills	854
	HP400		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/4" - 1" 3mm - 25mm	Rougher	855
	HP410		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/32" - 3/16" 0.5mm - 2.5mm	Short Length, Long Neck	856- 857
	HP411		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/8" - 1/4" 3mm - 6mm	Short Length, Long Neck	858
	HP455		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/8" - 1" 3mm - 25mm	Corner Protection	859
	HP421BN		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	3/64" - 1" 1mm-25mm	Ball End	860- 861
	HP441BN		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	3/64" - 1" 1mm-25mm	Ball End	860- 861
	HP416		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/32" - 1/2" 1mm-25mm	Ball End	862
	HP418		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	3/22" - 3/8" 1mm-12mm	Ball End, Pencil Neck	863
	HP419		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/32" - 3/16" 0.5mm-6mm	Ball End, Long Neck	864
	HP419L		HY-PRO® CARB	Metric	Carbide	TiAIN	0.6mm - 3mm	Ball End, Long Neck	865
	HP413		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/32" - 3/16" 1mm-6mm	Ball End	866
	HP432		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/8" - 1" 3mm-12mm	Corner Radius	867- 868
	HP434		HY-PRO® CARB	Inch/ Metric	Carbide	TiAIN	1/8" - 1" 3mm-12mm	Corner Radius	867- 868
HP433		HY-PRO® CARB	Metric	Carbide	TiAIN	3mm - 12mm	Corner Radius	869	
HP435		HY-PRO® CARB	Metric	Carbide	TiAIN	3mm - 12mm	Corner Radius	870	

CARBIDE



DRILLS	List	Product	Brand/Name	Inch & Metric	Material	Coating	Size Range	Features	Product Page
	215		CARBIDE	Inch & Metric	Carbide	Bright	1mm- 12.7mm	Jobbers, Solid, Slow Spiral	198- 202
	220D		CARBIDE	Inch & Metric	Carbide	Bright	1.18mm- 12.7mm	Jobbers, Solid	203- 205
	233		CARBIDE	Inch & Metric	Carbide	Bright	3mm- 19.05mm	Jobbers, Solid, 3 Flutes	206
	200		CARBIDE	Inch & Metric	Carbide	Bright	1.18mm- 12.7mm	Jobbers, Solid, Straight Flute	207- 209
	235		CARBIDE	Inch	Carbide	Bright	3/64"- 7/32"	Solid, Drill/Countersink	210
	700		CARBIDE	Inch	Carbide	Bright	1/8"-1"	Solid, Countersink, Single Flute	217
	701		CARBIDE	Inch	Carbide	Bright	1/4"-1"	Solid, Countersink, Multiple Flutes	218
706		CARBIDE	Inch	Carbide	Bright	1/4"-1"	Solid, Countersink, Multiple Flutes	219	



List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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CARBIDE (Continued)



	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
DRILLS	300D		CARBIDE	Inch & Metric	Carbide	Bright	0.80mm-13mm	Reamer, Solid, Multiple Flutes, RH Cutting	211-215
	750		CARBIDE	Inch	Carbide	Bright	1/16"-3/8"	Solid, Grinding/Deburring	216
	257		AERO-D-REAM	Inch	Carbide	BRIGHT	#40 - 1/2"	Composite, Tapered Drill/Reamer	174-175
END MILLS	400		CARBIDE	Inch/ Metric	Carbide	Bright*	1/4" - 1" 6mm-25mm	Roughly Mills	871
	415		CARBIDE	Inch	Carbide	Bright*	1/8" - 1"	Toughy Mills, Standard Cut	872
	415C		CARBIDE	Inch	Carbide	Bright*	1/8" - 1"	Toughy Mills, Coarse Cut	872
	402		CARBIDE	Inch/ Metric	Carbide	TiAlN, TiCN, Bright*	1/32" - 1" 0.5mm-25mm	General Purpose	873-875
	403		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32" - 1" 0.5mm-25mm	General Purpose	873-875
	404		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32" - 1" 0.5mm-25mm	General Purpose	873-875
	408		CARBIDE	Inch	Carbide	Bright*	1/8" - 1"	Slow Spiral	876
	409		CARBIDE	Inch	Carbide	Bright*	1/16" - 1"	Slow Spiral	876
	452		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/16" - 1"	Plus Tolerance	877
	454		CARBIDE	Inch	Carbide	Bright*	1/16" - 1"	Plus Tolerance	877
	412		CARBIDE	Inch/ Metric	Carbide	Bright*	1/32" - 3/4" 1mm-12mm	Stub Length	878-879
	414		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32" - 3/4" 1mm-12mm	Stub Length	878-879
	462		CARBIDE	Inch/ Metric	Carbide	TiCN, TiAlN, Bright*	1/8" - 1" 3mm-25mm	Long Length	880-881
	464		CARBIDE	Inch/ Metric	Carbide	TiCN, TiAlN, Bright*	1/8" - 1" 3mm-25mm	Long Length	880-881
	482		CARBIDE	Inch/ Metric	Carbide	TiCN, TiAlN, Bright*	1/8" - 1" 3mm-25mm	Extra-Long Length	882-883
	484		CARBIDE	Inch/ Metric	Carbide	TiCN, TiAlN, Bright*	1/8" - 1" 3mm-25mm	Extra-Long Length	882-883
	495		CARBIDE	Inch	Carbide	Bright*	1/8" - 1"	Corner Radius	884
	496		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/8" - 1"	Corner Radius	884
	455C		CARBIDE	Inch	Carbide	TiCN, TiAlN, Bright*	1/8" - 1"	Corner Protection	885
	460C		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8"-1" 6mm - 25mm	High Helix	886
445		CARBIDE	Inch/ Metric	Carbide	Bright*	1/16" - 1" 1mm-20mm	RHS/RHC	887	
461		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/8" - 1" 3mm-25mm	RHS/RHC	888	

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List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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CARBIDE (Continued)








END MILLS	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
	447		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/16" - 1"	LHS/RHC	889
	492		CARBIDE	Inch	Carbide	Bright*	0.015" - 0.060"	Miniature	890
	494		CARBIDE	Inch	Carbide	Bright*	0.015" - 0.060"	Miniature	890
	402BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32" - 1" 0.5mm-25mm	Ball End	891- 893
	403BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32" - 1" 0.5mm-25mm	Ball End	891- 893
	404BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32" - 1" 0.5mm-25mm	Ball End	891- 893
	452BN		CARBIDE	Inch	Carbide	Bright*	1/16" - 1"	Ball End, Plus Tolerance	894
	412BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32" - 3/4" 1mm - 12mm	Ball End, Stub Length	895- 896
	414BN		CARBIDE	Inch/ Metric	Carbide	TiCN, TiAlN, Bright*	1/32" - 3/4" 1mm - 12mm	Ball End, Stub Length	895- 896
	462BN		CARBIDE	Inch/ Metric	Carbide	TiCN, Bright*	1/8" - 1" 3mm-25mm	Ball End, Long Length	897
	464BN		CARBIDE	Inch/ Metric	Carbide	TiCN, TiAlN, Bright*	1/8" - 1" 3mm-25mm	Ball End, Long Length	897
	482BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/8" - 1" 3mm-25mm	Ball End, Extra Long Length	898- 899
	484BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/8" - 1" 3mm-25mm	Ball End, Extra Long Length	898- 899
	497		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8" - 1" 3mm-20mm	Ball End, Long Shank	900
	442		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/8" - 1/2"	Double End	901
	444		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/8" - 1/2"	Double End	901
	422		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/32" - 1/2"	Double End, Stub Length	902
	423		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/32" - 1/2"	Double End, Stub Length	902
	424		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/32" - 1/2"	Double End, Stub Length	902
442BN		CARBIDE	Inch	Carbide	Bright*	1/8" - 1/2"	Double End, Ball End	903	
444BN		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/8" - 1/2"	Double End, Ball End	903	
422BN		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/32" - 1/2"	Double End, Ball End, Stub Length	904	
423BN		CARBIDE	Inch	Carbide	Bright*	1/32" - 1/2"	Double End, Ball End, Stub Length	904	
424BN		CARBIDE	Inch	Carbide	TiAlN, Bright*	1/32" - 1/2"	Double End, Ball End, Stub Length	904	
500		CARBIDE	Inch	Carbide	Bright	3/32" - 1/2"	2 Flute, Straight Router	905	



List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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CARBIDE (Continued)

HYE

END MILLS	502		CARBIDE	Inch	Carbide	Bright	3/32" - 1/2"	3 Flute, Straight Router	905
	640		CARBIDE	Inch	Carbide	Bright	1/16" - 1/2"	Fiberglass Routers, Diamond Cut	906
	668		AERO-HBC 60°	Inch	Carbide	Bright	1/4" - 1/2"	Compression Router	838
	641R		AERO-HFR	Inch	Carbide	Bright	3/16" - 1/2"	General Purpose Router	839
	800 - 968		CARBIDE BURS	Inch/ Metric	Carbide	Bright	-	Carbide Burs	953- 974

HY-PRO® MULTI PURPOSE

HYM

DRILL	738		HY-PRO® CARB	Inch	-	Bright	-	Indexable, Spot Drill/ Countersink/Chamfer	196- 197
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EXOTAP®

EXT

TAPS	14050		EXOTAP® NRT®	Inch	VC-10	V	No. 0 - 3/8"	Forming Tap	390- 392
	14150		EXOTAP® NRT®	Metric	VC-10	V	M1.6 - M12	Forming Tap	393- 394
	313Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1"	Spiral Flute	432- 433
	345Ti		EXOTAP® VC-10 Ti	Metric	VC-10	V	M2.5 - M12	Spiral Flute	434
	312Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1"	Spiral Point	497- 498
	344Ti		EXOTAP® VC-10 Ti	Metric	VC-10	V	M3 - M12	Spiral Point	499
	315Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1/2"	STI, Spiral Fluted	602
	314Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1/2"	STI, Spiral Pointed	614
	317Ti		EXOTAP® VC-10 Ti Oil	Inch	VC-10	V	1/4" - 1"	Spiral Flute, Coolant- Through, DIN OAL	435
	348Ti		EXOTAP® VC-10 Ti Oil	Metric	VC-10	V	M8 - M24	Spiral Flute, Coolant- Through, DIN OAL	436
	316Ti		EXOTAP® VC-10 Ti Oil	Inch	VC-10	V	1/4" - 1"	Spiral Point, Coolant- Through, DIN OAL	500
	347Ti		EXOTAP® VC-10 Ti Oil	Metric	VC-10	V	M8 - M24	Spiral Point, Coolant- Through, DIN OAL	501
	313Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V,S/O	No. 2 - 1"	Spiral Flute	437- 438
	345Ni		EXOTAP® VC-10 Ni	Metric	VC-10	S/O	M2.5 - M12	Spiral Flute	439
	312Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V, S/O	No. 2 - 1"	Spiral Point	502- 503
	344Ni		EXOTAP® VC-10 Ni	Metric	VC-10	V, S/O	M2.5 - M12	Spiral Point	504
	315Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - 1/2"	STI, Spiral Fluted	603

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EXOTAP® (Continued)

EXT

TAPS	314Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Pointed	615
	313		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - ¾"	Spiral Flute	440-441
	345		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12	Spiral Flute	442
	312		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - ¾"	Spiral Point	505-506
	344		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12	Spiral Point	507
	315		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Fluted	604-605
	345STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Fluted	606
	314		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Pointed	616-617
	344STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Pointed	618
	317		EXOTAP® VC-10 Oil	Inch	VC-10	V	5/16" - 1"	Spiral Flute, Coolant-Through, DIN OAL	443
	351		EXOTAP® VC-10 Oil	Metric	VC-10	V	M8 - M24	Spiral Flute, Coolant-Through, DIN OAL	444
	316		EXOTAP® VC-10 Oil	Inch	VC-10	V	1/4" - 1"	Spiral Point, Coolant-Through, DIN OAL	508
	350		EXOTAP® VC-10 Oil	Metric	VC-10	V	M6 - M24	Spiral Point, Coolant-Through, DIN OAL	509
	303		EXOTAP VA-3°	Inch	HSSE	V, TiN, S/O	No. 2 - 1"	Spiral Flute	445-447
	343		EXOTAP VA-3°	Metric	HSSE	V, TiN, S/O	M3 - M18	Spiral Flute	448
	300		EXOTAP VA-3°	Inch	HSSE	V, TiN, S/O	No. 2 - 1"	Spiral Point	510-511
	342		EXOTAP VA-3°	Metric	HSSE	V, TiN, S/O	M3 - M18	Spiral Point	512
	302		EXOTAP VA-3°	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Fluted	607-608
	343STI		EXOTAP VA-3°	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Fluted	609
	301		EXOTAP VA-3°	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Pointed	619-620
	342STI		EXOTAP VA-3°	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Pointed	621
	307		EXOTAP® VA-3 Oil	Inch	HSSE	V	1/4" - 1"	Spiral Flute, Coolant-Through, DIN OAL	449
	347		EXOTAP® VA-3 Oil	Metric	HSSE	V	M6 - M24	Spiral Flute, Coolant-Through, DIN OAL	450
	306		EXOTAP® VA-3 Oil	Inch	HSSE	V	1/4" - 1"	Spiral Point, Coolant-Through, DIN OAL	513
	346		EXOTAP® VA-3 Oil	Metric	HSSE	V	M6 - M24	Spiral Point, Coolant-Through, DIN OAL	514



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EXOTAP® (Continued)

EXT

TAPS	398		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - 5/8"	Spiral Flute, Long Shank	451
	397		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - 5/8"	Spiral Point, Long Shank	515
	320		EXOTIN	Inch	HSSE	TiN	No. 4 - 3/4"	Spiral Point	516
	10051		EXOTAP® VCX	Inch	XPM	V	No. 6 - 1"	Straight Flute	565
	11051		EXOTAP® VCX	Metric	XPM	V	M3 - M24	Straight Flute	566
	305		EXOTAP-MOLD®	Inch	HSS-CO	Bright	No. 4 - 3/4"	Straight Flute	567
	10052		EXOTAP® DC	Inch	VC-10	V	1/4" - 1"	Straight Flute, DIN OAL	568
	11052		EXOTAP® DC	Metric	VC-10	V	M6 - M24	Straight Flute, DIN OAL	569
	11054		EXOTAP® DC	Metric	VC-10	V	M6 - M10	Straight Flute, DIN Shank, DIN OAL	572
	10056		EXOTAP® DC	Inch	VC-10	V	1/4" - 3/4"	Straight Flute	574
	11056		EXOTAP® DC	Metric	VC-10	V	M6 - M14	Straight Flute	575
	10053		EXOTAP® DC-OIL	Inch	VC-10	V	1/4" - 1"	Straight Flute, Coolant-Through, DIN OAL	570
	11053		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M24	Straight Flute, Coolant-Through, DIN OAL	571
	11055		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M12	Straight Flute, Coolant-Through, DIN Shank, DIN OAL	573
	10057		EXOTAP® DC-OIL	Inch	VC-10	V	1/4" - 1/2"	Straight Flute, Coolant-Through	576
	11057		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M14	Straight Flute, Coolant-Through	577
	308		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16" - 1"	Pipe Tap, NPT	629
	318		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16" - 1"	Pipe Tap, NPTF	630
	328		EXOTAP-MOLD®	Inch	HSS-CO	Bright	1/8" - 3/4"	Pipe Tap, NPT, ANPT	633
	15001		GENERAL	Inch	HSS	Bright	No. 2 - 1 1/2"	Gage, GO/NOGO Set, Class 2B	647
15002		GENERAL	Metric	HSS	Bright	M3 - M24	Gage, GO/NOGO Set, Class 6H	648	

EXOMINI/EXOMILL

EXM

END MILLS	673		EXOMINI VC-10	Inch	VC-10	TiN	1/32" - 3/16"	Square End	907
	676		EXOMINI VC-10	Inch	VC-10	TiN	1/16" - 3/16"	Center Hole (smaller than 1/8)	908
	677		EXOMINI VC-10	Inch	VC-10	TiN	1/16" - 3/16"	Center Hole (smaller than 1/8)	908








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EXOMINI/EXOMILL (Continued)

EXM

END MILLS	690		EXOTIN Roughing	Inch	HSSE	TiN	1/4" - 2"	EXOTIN®, Center Hole	915
	620		EXOMILL VC-10°	Inch	VC-10	Bright	1/8" - 1 1/2"	Square End	909
	621		EXOMILL VC-10°	Inch	VC-10	Bright	1/8" - 1 1/2"	Ball End	909
	641		EXOMILL VC-10°	Inch	VC-10	Bright	1/8" - 2"	Square End	910
	644		EXOMILL VC-10°	Inch	VC-10	Bright	3/8" - 1 1/2"	Ball End	911
	646		EXOMILL VC-10°	Inch	VC-10	Bright	1/4" - 2"	Square End	912
	660		EXOMILL VC-10°	Inch	VC-10	Bright	1/4" - 1"	High Helix	912

OIL-HOLE DRILL

OHD

DRILL	1700		V-HO GDR	Inch & Metric	HSS-CO	V	5.95mm- 31.75mm	Jobbers, Coolant-Through	233- 234
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EX-GOLD®

EXD

DRILLS	1750		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm- 17.86mm	10D, Solid, Parabolic	235- 237
	1760		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm- 17.86mm	15D, Solid, Parabolic	238- 239
	1770		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm- 14.29mm	20D, Solid, Parabolic	240- 241
	1900		VPH GDS	Inch & Metric	XPM	V	0.5mm- 20mm	Stub, Solid	220- 226
	1950		VPH GDR	Inch & Metric	XPM	V	1.99mm- 17.46mm	Jobbers, Solid	227- 229
	2000		VP® GDR	Inch & Metric	XPM	V	2mm- 32mm	Jobbers, Solid, Parabolic	230- 232
	1800		V-Select	Inch & Metric	HSSE	V	2mm- 13mm	Jobbers, Solid	242- 244
	1000		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm- 12.7mm	Stub, Solid	250- 252
	1500		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm- 19.05mm	Jobbers, Solid	253- 255
	1100		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	0.5mm- 32mm	Stub, Solid	256- 273
	1600		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	2mm- 32mm	Jobbers, Solid	274- 286
	1150		NEXUS	Inch & Metric	HSSE	WD1	1mm- 12.7mm	Stub, Solid	245- 247
	1650		NEXUS	Inch & Metric	HSSE	WD1	2mm- 12.7mm	Jobbers, Solid	248- 249
	1200		EX-SPOT	Metric	HSS	Bright, TiN	3mm- 25mm	Solid, 60°/90°/120° Spot Drill	287
	1250		EX-SPOT	Metric	HSS	Bright	3mm- 25mm	Solid, 90° Spot Drill, Long Shank	288



List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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HY-PRO® TAP



TAPS	14001		HY-PRO® NRT®	Inch	HSS-CO	TiCN, TiN, Bright, S/O	No. 0 - 3/4"	Forming Tap	395-407
	14101		HY-PRO® NRT®	Metric	HSS-CO	TiCN, TiN, Bright, S/O	M1.6 - M12	Forming Tap	408-410
	290		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 1/2"	Spiral Flute	472-474
	299		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30	Spiral Flute	475
	280		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 1/2"	Spiral Point	535-537
	289		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30	Spiral Point	538
	13039		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - 1/2"	STI, Spiral Fluted	610
	11036		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - 1/2"	STI, Spiral Pointed	622
	230		HY-PRO® DIN	Inch	HSSE	TiN	1/4" - 1"	Spiral Flute, Coolant-Through, DIN OAL	454
	239		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Spiral Flute, Coolant-Through, DIN OAL	455
	260		HY-PRO® DIN	Inch	HSSE	TiN	1/4" - 1"	Spiral Point, Coolant-Through, DIN OAL	519
	269		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Spiral Point, Coolant-Through, DIN OAL	520
	220		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - 2"	Spiral Flute, DIN OAL	452
	229		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	Spiral Flute, DIN OAL	453
	250		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - 3/4"	Spiral Point, DIN OAL	517
	259		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	Spiral Point, DIN OAL	518
	13013		HY-PRO® ALLOY	Inch	HSSE	V	1/4" - 3/4"	Spiral Flute, Coolant-Through, DIN OAL	456
	13113		HY-PRO® ALLOY	Metric	HSSE	V	M6 - M20	Spiral Flute, Coolant-Through, DIN OAL	457
	13058		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - 1/2"	Spiral Flute, Synchronized	466
	13158		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Spiral Flute, Synchronized	467
13059		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - 1/2"	Spiral Point, Synchronized, RHC/LHS	529	
13159		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Spiral Point, Synchronized, RHC/LHS	530	
295		HY-PRO® AL	Inch	HSSE	Bright	No. 4 - 3/8"	Spiral Flute	468	
296		HY-PRO® AL	Metric	HSSE	Bright	M3 - M10	Spiral Flute	469	
13019		HY-PRO® AL-DIN	Inch	HSSE	N	No. 2 - 1/2"	Spiral Flute, DIN OAL	470	

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List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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HY-PRO® TAP (Continued)

HYT

TAPS	13119		HY-PRO® AL-DIN	Metric	HSSE	N	M3 - M12	Spiral Flute, DIN OAL	471
	11016		HY-PRO® AL-DIN	Inch	HSSE	N	No. 2 - 1/2"	Spiral Point, DIN OAL	531
	11116		HY-PRO® AL-DIN	Metric	HSSE	N	M3 - M12	Spiral Point, DIN OAL	532
	11015		HY-PRO® AERO-F	Inch	HSS-Co	TiN	No. 4 - 1"	Spiral Point	521-525
	11115		HY-PRO® AERO-F	Metric	HSS-Co	TiN	M3 - M14	Spiral Point	526-527
	11017		HY-PRO® V DIN	Inch	HSSE	V	No. 4 - 1/2"	Spiral Point, DIN OAL	533
	11117		HY-PRO® V DIN	Metric	HSSE	V	M3 - M12	Spiral Point, DIN OAL	534
	240		HYPRO® DC	Inch	HSSE	N, Bright	No. 2 - 1/2"	Straight Flute	578
	241		HYPRO® DC	Metric	HSSE	N	M3 - M12	Straight Flute	579
	12053		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8" - 1"	Pipe Tap, NPT, Interrupted	631
	12054		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8" - 1"	Pipe Tap, NPTF, Interrupted	632




HY-PRO® LARGE

HYL

TAPS	13014		HY-PRO® HXL	Inch	HSSE	S/O	1/2" - 2 1/2"	Spiral Flute, DIN OAL	458
	13024		HY-PRO® HXL-OIL	Inch	HSSE	S/O	1/2" - 2 1/2"	Spiral Flute, Coolant-Through, DIN OAL	459
	13015		HY-PRO® VXL	Inch	HSSE	S/O	1/2" - 2 1/2"	Spiral Flute, DIN OAL	460
	13025		HY-PRO® VXL-OIL	Inch	HSSE	S/O	1/2" - 2 1/2"	Spiral Flute, Coolant-Through, DIN OAL	461
	13116		HY-PRO® HXL-W	Metric	HSSE	S/O	M16 - M42	Spiral Flute, DIN OAL	462
	13126		HY-PRO® HXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Spiral Flute, Coolant-Through, DIN OAL	463
	13117		HY-PRO® VXL-W	Metric	HSSE	S/O	M16 - M42	Spiral Flute, DIN OAL	464
	13127		HY-PRO® VXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Spiral Flute, Coolant-Through, DIN OAL	465
	13118		HY-PRO® RXL-W	Metric	HSSE	V	M16 - M42	Spiral Point, DIN OAL & Extended OAL, For Through Holes, LHS	528

HY-PRO® SEVEN

HY7




TAPS	285		HY-PRO® SEVEN	Inch	HSS	TiCN, TiN, Bright	No. 0 - 1/2	Forming Tap	411
	286		HY-PRO® SEVEN	Metric	HSS	TiCN, TiN, Bright	M3 - M12	Forming Tap	411
	297		HY-PRO® SEVEN	Inch	HSS	TiN, S/O, Bright	No. 3 - 1/2"	Spiral Flute	476



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HY-PRO® SEVEN (Continued)

HY7

TAPS	298		HY-PRO® SEVEN	Metric	HSS	TiN, S/O, Bright	M3 - M12	Spiral Flute	477
	287		HY-PRO® SEVEN	Inch	HSS	TiN, S/O, Bright	No. 0 - 1/2"	Spiral Point	539
	288		HY-PRO® SEVEN	Metric	HSS	TiN, S/O, Bright	M3 - M12	Spiral Point	540

GENERAL PURPOSE END MILLS

STE

END MILLS	573		HY-PRO® V	Inch	HSSE	TiCN, Bright	1/8" - 1"	Square End	913
	574		HY-PRO® V	Inch	HSSE	TiCN, Bright	1/8" - 1"	Square End	914
	450		Roughing Cut	Inch	HSS-Co	TiCN, Bright	3/16" - 2"	Fine Pitch, Center Hole	916
	455		Roughing Cut	Inch	HSS-Co	TiCN, TiAlN	1/4" - 2"	Fine Pitch	917
	420		Roughing Cut	Inch	HSS-Co	Bright	1/4" - 1 1/2"	Fine Pitch, Center Cutting	918
	460		Roughing Cut	Inch	HSS-Co	Bright	1/2" - 1 1/2"	Fine Pitch, Center Cutting	918
	410		Roughing Cut	Inch	HSS-Co	Bright	1/2" - 1"	Square End	919
	430E		Roughing Cut	Inch	HSS-Co	Bright	3/8" - 1 1/2"	3 Flute, Aluminum	919
	490		Roughing Cut	Inch	HSS-Co	Bright	1/4" - 2"	General Purpose, Center Hole	920
	440		Roughing Cut	Inch	HSS-Co	Bright	1/2" - 2"	Ball End, General Purpose	921
	470		Roughing Cut	Inch	HSS-Co	Bright	1/4" - 2"	Rough & Finish	922
	520		Single End	Inch	HSS-Co	TiN, Bright	1/8" - 2"	Square End	923
	580		Single End	Metric	HSS-Co	Bright	3mm - 50mm	Square End	924
	525		Single End	Inch	HSS-Co	Bright	3/8" - 2"	Square End	925
	527		Single End	Inch	HSS-Co	Bright	1/8" - 1 1/4"	Reduced Neck	925
	530		Single End	Inch	HSS-Co	Bright	1/4" - 2"	High Helix	926
	535		Single End	Inch	HSS-Co	Bright	1/4" - 2"	High Helix	926
	521		Single End	Inch	HSS-Co	Bright	1/8" - 1 1/2"	Ball End	927
	526		Single End	Inch	HSS-Co	Bright	1/8" - 1"	Ball End, Reduced Neck	927
	531		Single End	Inch	HSS-Co	Bright	1/8" - 2"	Square End	928
	581		Single End	Metric	HSS-Co	Bright	3mm - 45mm	Center Hole	929
	536		Single End	Inch	HSS-Co	Bright	1/4" - 2"	Square End	930

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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GENERAL PURPOSE END MILLS (Continued)



List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
541		Single End	Inch	HSS-Co	TiCN, TiN, TiAlN, Bright	1/8" - 2"	Square End	931
548		Single End	Inch	HSS-Co	TiCN, Bright	5/8" - 1 1/2"	Square End	932
546		Single End	Inch	HSS-Co	TiCN, Bright	1/4" - 2"	Square End	932
558		Single End	Inch	HSS-Co	TiCN, Bright	1/4" - 2"	Square End	933
544		Single End	Inch	HSS-Co	Bright	3/8" - 1 1/2"	Ball End	934
540		Single End	Inch	HSS-Co	TiN, Bright	1/8" - 2"	Center Hole	935
547		Single End	Inch	HSS-Co	Bright	1" - 2"	Center Hole	936
545		Single End	Inch	HSS-Co	Bright	1/4" - 2"	Center Hole	936
557		Single End	Inch	HSS-Co	Bright	1/4" - 2"	Center Hole	937
591		Single End Tapered	Inch	HSS-Co	Bright	1/16" - 5/8"	1° Taper per Side	938
593		Single End Tapered	Inch	HSS-Co	Bright	1/16" - 5/8"	2° Taper per Side	938
594		Single End Tapered	Inch	HSS-Co	Bright	3/32" - 1/2"	3° Taper per Side	939
595		Single End Tapered	Inch	HSS-Co	Bright	3/32" - 1/2"	3° Taper per Side	940
596		Single End Tapered	Inch	HSS-Co	Bright	5/64" - 1/2"	7° Taper per Side	941
597		Single End Tapered	Inch	HSS-Co	Bright	3/32" - 1/4"	10° Taper per Side	941
522		Double End	Inch	HSS-Co	TiN, Bright	1/8" - 1"	Square End	942
582		Double End	Metric	HSS-Co	Bright	1mm - 25mm	Square End	943
532		Double End	Inch	HSS-Co	Bright	1/8" - 1"	Square End	944
542		Double End	Inch	HSS-Co	TiN, Bright	1/8" - 1"	Center Hole	945
543		Double End	Inch	HSS-Co	Bright	1/8" - 1"	Square End	946
523		Double End	Inch	HSS-Co	Bright	1/8" - 1"	Ball End	946
562		Double End	Inch	HSS-Co	Bright	1/32" - 3/16"	Miniature	947
563		Double End	Inch	HSS-Co	Bright	1/32" - 3/16"	Miniature	947
564		Double End	Inch	HSS-Co	Bright	1/16" - 3/16"	Miniature	948
566		Double End	Inch	HSS-Co	Bright	1/16" - 3/16"	Miniature	948
567		Double End	Inch	HSS-Co	Bright	1/16" - 3/16"	Miniature	949

END MILLS



List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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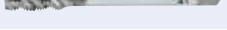
GENERAL PURPOSE END MILLS (Continued)

STE

END MILLS	568		Double End	Inch	HSS-Co	Bright	1/16" - 3/16"	Miniature	949
	570		Double End	Inch	HSS-Co	Bright	1/16" - 3/16"	Ball End, Miniature	950
	571		Double End	Inch	HSS-Co	Bright	1/16" - 3/16"	Ball End, Miniature	951

GENERAL PURPOSE TAP

STT

TAPS	107		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 3 - 3/4"	Spiral Flute	478
	143		GENERAL PURPOSE	Metric	HSS	TiCN, TiN, S/O, Bright	M3 - M12	Spiral Flute	479
	13020		GENERAL PURPOSE	Inch	HSSE	S/O	No. 6 - 5/8"	Spiral Flute	480
	105		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - 3/4"	Spiral Point	541-543
	142		GENERAL PURPOSE	Metric	HSS	TiCN, TiN, S/O, Bright	M1.6 - M20	Spiral Point	549
	101		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	1/4" - 1 1/2"	Straight Flute	582-583
	102		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - No. 12	Straight Flute	585-586
	141		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M1.6 - M36	Straight Flute	591
	S108		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Fluted	611-612
	S109		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Fluted	613
	125		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Pointed	623-624
	127		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Pointed	625
	126		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Straight Fluted	626-627
	128		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Straight Fluted	628
	123		GENERAL PURPOSE	Metric	HSSE	Bright	M3 - M24	Spiral Flute, JIS	481
	122		GENERAL PURPOSE	Metric	HSSE	S/O, Bright	M3 - M24	Spiral Point, JIS	550
	121		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M2 - M36	Straight Flute, JIS	592-593
	S111		GENERAL PURPOSE	Inch	HSS	Bright	No. 00	Spiral Point, Miniature	553
	S110		GENERAL PURPOSE	Inch	HSS	Bright	No. 00 - No. 000	Straight Flute, Miniature	595

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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GENERAL PURPOSE TAP (Continued)



TAPS	918		GENERAL PURPOSE	Inch	HSS	Bright	No. 4 - 5/8"	Spiral Flute, Long Shank	482
	917		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - 5/8"	Spiral Point, Long Shank	551
	11118		GENERAL PURPOSE	Metric	HSS	S/O	M4 - M12	Spiral Point, Extended Length	552
	916		GENERAL PURPOSE	Inch	HSS	S/O	1/4" - 3/4"	Straight Flute, Pulley Taps, Long Shank	594
	105B		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 0 - 7/16"	Spiral Point, Bottom Taps	544
	105A		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - 1/2"	Spiral Point, Assembly Type Taps	545
	105+		GENERAL PURPOSE	Inch	HSS	TiN, Bright	No. 4 - No. 10	Spiral Point, H7 Taps	546
	105H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	No. 6 - 3/4"	Spiral Point, +.005" Oversize	547
	142H		GENERAL PURPOSE	Metric	HSS	Bright	M4 - M12	Spiral Point, +.005" Oversize	548
	101C		GENERAL PURPOSE	Inch	HSS	N, S/O	1/4" - 3/4"	Straight Flute, Cast Iron Tap	580
	141C		GENERAL PURPOSE	Metric	HSS	N, S/O	M6 - M12	Straight Flute, Cast Iron Tap	581
	101H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/4" - 3/4"	Straight Flute, +.005" Oversize	584
	102H		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 6 - No. 10	Straight Flute, +.005" Oversize	587
	103		GENERAL PURPOSE	Inch	HSS	TiN, S/O, Bright	No. 8 - 1/2"	Straight Flute, Three Flutes	588
	104		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 2 - 5/16"	Straight Flute, Two Flutes	589
	101N		GENERAL PURPOSE	Inch	HSS	Bright	No. 12 - 1"	Straight Flute, UNEF	590
	114		GENERAL PURPOSE	Inch	HSS-CO	N	No. 2 - 1/4"	Straight Flute, For Plastics	596
	180		GENERAL PURPOSE	Inch	HSS	Bright	1 1/8" - 2 1/4"	Straight Flute, 8 Pitch	597
	101L		GENERAL PURPOSE	Inch	HSS	Bright	No. 6 - 1"	Straight Flute, Left Hand	598
	108		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16" - 2"	Pipe Tap, NPT, ANPT	634
108AL		GENERAL PURPOSE	Inch	HSS	Bright	1/8" - 1"	Pipe Tap, NPT	635	
118		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16" - 2"	Pipe Tap, NPTF	636	



List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
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GENERAL PURPOSE TAP (Continued)



TAPS	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
	108G		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8" - 2"	Pipe Tap, NPT, NPTF, ANPT, Interrupted Thread	637
	S125		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8" - 1"	Pipe Tap, NPT, NPTF, Short Projection	638
	12006		GENERAL PURPOSE	Inch	HSS	Bright	1/8" - 3/4"	Pipe Tap, NPTF, Special Short Projection	639
	12007		GENERAL PURPOSE	Inch	HSS	Bright	1/8" - 3/4"	Pipe Tap, NPT	640
	109		GENERAL PURPOSE	Inch	HSS	S/O, Bright	1/8" - 1"	Pipe Tap, NPS, NPSF	641
	134		GENERAL	Inch	HSS	Bright	No. 0 - 1 1/2"	Solid & Adjustable Round Split Dies	642-644
	134P		GENERAL	Inch	HSS	Bright	1/8" - 1/2"	Adjustable Round Split Dies, Taper Pipe	645
135		GENERAL	Metric	HSS	Bright	M2 - M30	Adjustable Round Split Dies	646	



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OSG's premium tooling brand. Features products that are designed to exceed the evolving manufacturing needs of our customers.

EXOPRO[®]

OSG's ultra-premium tooling series. Features supreme performance carbide drills with OSG's proprietary coatings, like WD1 and WXS[®], for maximum cost-efficiency.

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Maximum performance carbide coolant-through drills for ultra high-speed drilling.

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NEXUS

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EX-GOLD[®]

Premium high speed steel drills with TiN & TiAlN coating.



DRILLING





Featured Drilling Products

	A Brand® ADO-TRS		A Brand® ADO						
	List 6600	List 6610	List 6500	List 6510	List 6520	List 6530	List 6535	List 6540	List 6550
	P60-63	P64-66	P79-84	P85-89	P90-93	P94-96	P97-98	P99-100	P101-102
Flute Length	3D	5D	3D	5D	8D	10D	15D	20D	30D
Inch	11/64 - 3/4"		3/32 - 3/4"		3/32 - 5/8"	3/32 - 9/16"		1/8 - 9/16"	
Metric	4mm - 20mm		2 - 20mm		2 - 15.88mm	2 - 14.29mm		3 - 14.29mm	
Number of Flutes	3		2						
Solid/Coolant-Through	Coolant-Through		Coolant-Through						
Point Angle	140°		140°						
Coating	EgiAs		EgiAs						

P	Carbon Steels (1010, 1018)		
	Mild Steels, Alloy Steels (1050, 4140)		
	Die Steels (H13, D2)		
M	Stainless Steel (304SS, 420SS)		
K	Cast Iron		
	Ductile Cast Iron		
N	Aluminum Alloys (6061, 7075)		
S	Heat Resistant Alloys (Inconel 718)		
	Titanium Alloy (Ti-6Al-4V)		
H	Pre-Hardened Steel (P20)		
	Die Cast Steels (A2, S7)		
	Hardened Steels (D2)		



Featured Drilling Products



A Brand® ADO-SUS			EXOCARB® WHO-Ni		EXOCARB® WH-70	EXOCARB® MAX-OIL AL	EXOCARB® MAX-MINI		
List 5200	List 5210	List 5220	List 5950Ni	List 5955Ni	List 5171	List 5275	List 5310	List 5330	List 5340
P111-117	P118-124	P125-129	P143-144	P145-146	P147-149	P151	P152	P156-164	P165-166
3D	5D	8D	3D	5D	Regular	15-30D	20D	Regular	Jobber
3/32 - 3/4"		3/32 - 1/2"	1/8 - 1/2"		-	-	-	-	-
2 - 20mm		2 - 12.7mm	3 - 12.7mm		2 - 18.6mm	3 - 10mm	1 - 3mm	0.20 - 5mm	0.50 - 3mm
2			2		2	2	3	2	2
Coolant-Through			Coolant-Through		Solid	Coolant-Through	Solid	Solid	Solid
140°			140°		120°	140°	140°, 120°	140°, 130°	120°
WXL			WXS		WXS	Bright	EXO	TiAIN	TiAIN

For OSG's complete drill offering please refer to the Application Guide on pages 24-25 or the Illustrated Index starting on page 26.

1st Choice 2nd Choice Recommended





Page Number					
	Work Material	Material Designation	Material Condition	Hardness	
				BHN	HRC
P	Low Carbon Steel	1010, 1018	Normalized	~190	~10
	Medium Carbon Steel	1035, 1045	Normalized	~208	~15
	High Carbon Steel	1065, 1095	Normalized	~253	~25
	Alloy Steel	4140, 4340, 8620	Normalized	253~301	25~32
4140, 4340, 8620		Hardened	327~390	35~42	
M	Stainless Steel	300 Series / 400 Series	Annealed	~253	~25
		300 Series / 400 Series	Hardened	327~390	35~42
		17-4, 15-5, A286	Annealed	~253	~25
		17-4, 15-5, A286	Hardened	327~390	35~42
K	Cast Iron	Nodular, Grey	As Cast	~208	~15
N	Aluminum Alloy	6061, 7075, 2011	Normalized	~150	
	Die Cast Aluminum	356AL, 390AL	As Cast	~150	
S	Nickel Based Alloy	Inconel 718, 625	Annealed	253~301	25~32
		Inconel 718	Hardened	327~390	35~42
		Hastelloy, Waspaloy	Normalized		25~40
		Kovar	Normalized		25~40
	Titanium Alloy	6Al4V	Annealed	253~301	25~32
		6Al4V, 6Al6V	Hardened	327~390	35~42
H	Tool Steel	D2, H13, P20, S7	Annealed	190~253	10~25
		H13	Hardened	327~450	35~48
		D2, A2	Hardened		48~55
		D2, A2	Hardened		55~70
Other	Magnesium			~100	
	Brass, Bronze			~150	
	Copper			~150	
	Beryllium Copper			~253	~25
	Cobalt-Chrome	Stellite			



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Carbide														Powdered Metal		HSS-Va & HSS-Co					
60-66	67-70	71-78	79-93	94-102	103-110	111-129	143-146	147-149	151	152-166	184-195	176-183	220-229	230-232	233-234	235-241	242-244	245-249	250-255	256-286	
A Brand® ADO-TRS <i>Coolant-Through</i>	A Brand® ADFO <i>Coolant-Through</i>	A Brand® ADF	A Brand® ADO 3D-8D <i>Coolant-Through</i>	A Brand® ADO 10D-30D <i>Coolant-Through</i>	A Brand® AD	A Brand® ADO-SUS <i>Coolant-Through</i>	EXOPRO® WHO-Ni <i>Coolant-Through</i>	EXOCARB® WH70	EXOCARB® MAX-OIL AL <i>Coolant-Through</i>	EXOCARB® MAX-MINI* <i>Coolant-Through</i>	HY-PRO® CARB <i>Coolant-Through</i>	HY-PRO® CARB	VPH GDS & GDR	VP® GDR	V-HO GDR <i>Coolant-Through</i>	HELIOS®	V-Select	NEXUS	EX-GOLD®	EX-SUS-GOLD	
●	●	●	●	●	●	●	○			●	●	●	○	○	●	●	○	●	●	○	
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			○					○		○	○	○	○	○		○		○	○	○	

*EXOCARB® MAX-MINI covers different materials for each list number. Verify recommended materials on each product page.





● = 1st Choice
○ = 2nd Choice









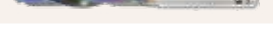





List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
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≤2D

5700		A Brand® ADF	Inch & Metric	Carbide	EgiAs	2mm-20mm	2D, Solid, Flat Drill	71-75	292
5705		NEW A Brand® ADFLS	Inch & Metric	Carbide	EgiAs	3mm-20mm	2D, Solid, Flat Drill, Long Shank	76-78	293
6300		NEW A Brand® AD	Inch & Metric	Carbide	EgiAs	2mm-20mm	2D, Solid	103-106	298
5172		EXOCARB® XH	Metric	Carbide	Bright	2mm-12mm	Solid, Tap Extractor	150	304

≤3D

6600		NEW A Brand® ADO-TRS	Inch & Metric	Carbide	EgiAs	4mm - 20mm	3D, Coolant-Through, 3 Flutes	60-63	290
5720		NEW A Brand® ADFO	Inch & Metric	Carbide	EgiAs	3mm - 20mm	3D, Coolant-Through, Flat Drill	67-70	291
6500		NEW A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 20mm	3D, Coolant-Through	79-84	294
5200		NEW A Brand® ADO-SUS	Inch & Metric	Carbide	WXL®	2mm-20mm	3D, Coolant-Through	111-117	299
5600		EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	4mm-20mm	3D, Coolant-Through, 3 Flutes	132-135	301
5950Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm-12.7mm	3D, Coolant-Through	143-144	303
5330		EXOCARB® MAX-MINI	Metric	Carbide	TiAlN	0.2mm-5mm	3D, Solid, Miniature	156-164	308
HP243		HY-PRO® CARB	Inch & Metric	Carbide	WD1	1mm-20mm	3D, Solid	176-179	312
HP253		HY-PRO® CARB	Inch & Metric	Carbide	WD1	3mm-20mm	3D, Coolant-Through	184-187	313
1900		VPH GDS	Inch & Metric	XPM	V	0.5mm-20mm	Stub, Solid	220-226	318-319
1150		NEXUS	Inch & Metric	HSSE	WD1	1mm-12.7mm	Stub, Solid	245-247	324-325
1000		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm-12.7mm	Stub, Solid	250-252	326
1100		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	0.5mm-32mm	Stub, Solid	256-273	327

≤4D

6310		NEW A Brand® AD	Inch & Metric	Carbide	EgiAs	2mm-20mm	4D, Solid	107-110	298
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List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

≤2D

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5172																	<input checked="" type="checkbox"/>

≤3D

6600	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
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≤4D





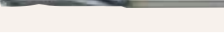
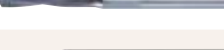














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good best



List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
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≤5D

6610	 NEW	A Brand® ADO-TRS	Inch & Metric	Carbide	EgiAs	4mm - 20mm	5D, Coolant-Through, 3 Flutes	64-66	290
6510	 NEW	A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 20mm	5D, Coolant-Through	85-89	294
5210	 NEW	A Brand® ADO-SUS	Inch & Metric	Carbide	WXL®	2mm - 20mm	5D, Coolant-Through	118-124	299
5610		EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	4mm - 20mm	5D, Coolant-Through, 3 Flutes	136-139	301
5955Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm - 12.7mm	5D, Coolant-Through	145-146	303
5171		EXOCARB® WH70	Metric	Carbide	WXS®	2mm - 18.6mm	5D	147-149	304
5320		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm - 0.08mm	5D, Solid, Miniature	154	307
HP245		HY-PRO® CARB	Inch & Metric	Carbide	WD1	1mm - 20mm	5D, Solid	180-183	312
HP255		HY-PRO® CARB	Inch & Metric	Carbide	WD1	3mm - 20mm	5D, Coolant-Through	188-191	313
215		CARBIDE	Inch & Metric	Carbide	Bright	1mm - 12.7mm	Jobbers, Solid, Slow Spiral	198-202	315-316
220D		CARBIDE	Inch & Metric	Carbide	Bright	1.18mm - 12.7mm	Jobbers, Solid	203-205	315-316
233		CARBIDE	Inch & Metric	Carbide	Bright	3mm - 19.05mm	Jobbers, Solid, 3 Flutes	206	315-316
200		CARBIDE	Inch & Metric	Carbide	Bright	1.18mm - 12.7mm	Jobbers, Solid, Straight Flute	207-209	315-316
1950		VPH GDR	Inch & Metric	XPM	V	1.99mm - 17.46mm	Jobbers, Solid	227-229	318-319
2000		VP® GDR	Inch & Metric	XPM	V	2mm - 32mm	Jobbers, Solid, Parabolic	230-232	320
1700		V-HO GDR	Inch & Metric	HSS-CO	V	5.95mm - 31.75mm	Jobbers, Coolant-Through	233-234	321
1800		V-Select	Inch & Metric	HSSE	V	2mm - 13mm	Jobbers, Solid	242-244	323
1650		NEXUS	Inch & Metric	HSSE	WD1	2mm - 12.7mm	Jobbers, Solid	248-249	324-325
1500		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm - 19.05mm	Jobbers, Solid	253-255	326
1600		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	2mm - 32mm	Jobbers, Solid	274-286	327





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

≤5D




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good best











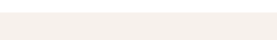



List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
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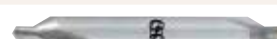


≤8D

6520	 NEW	A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 15.88mm	8D, Coolant-Through	90-93	294
5220	 NEW	A Brand® ADO-SUS	Inch & Metric	Carbide	WXL®	2mm - 12.7mm	8D, Coolant-Through	125-129	299
HP258		HY-PRO® CARB	Inch & Metric	Carbide	WD1	3mm-20mm	8D, Coolant-Through	192-195	313

>10D

6530	 NEW	A Brand® ADO	Inch & Metric	Carbide	EgiAs	2mm - 14.29mm	10D, Coolant-Through	94-96	295-297
6535	 NEW	A Brand® ADO	Inch & Metric	Carbide	EgiAs	3mm - 14.29mm	15D, Coolant-Through	97-98	295-297
6540	 NEW	A Brand® ADO	Inch & Metric	Carbide	EgiAs	3mm - 14.29mm	20D, Coolant-Through	99-100	295-297
6550	 NEW	A Brand® ADO	Inch & Metric	Carbide	EgiAs	3mm - 14.29mm	30D, Coolant-Through	101-102	295-297
5630	 NEW	EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	5mm - 15.88mm	10D, Coolant-Through	140-142	302
5275		EXOCARB® MAX-OIL AL	Metric	Carbide	Bright	3mm-10mm	15-30D, Coolant-Through	151	305
5310		EXOCARB® MAX-MINI	Metric	Carbide	EXO®	1mm-3mm	Up to 20D, Solid, Miniature, 3 Flutes	152	306
5325		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm-0.08mm	10D, Solid, Miniature	155	307
5340		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.5mm-3mm	10D, Solid, Miniature	165-166	309
1750		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-17.86mm	10D, Solid, Parabolic	235-237	322
1760		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-17.86mm	15D, Solid, Parabolic	238-239	322
1770		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-14.29mm	20D, Solid, Parabolic	240-241	322

Centering/Countersinking

5190	 NEW	A Brand® AD-LDS	Inch & Metric	Carbide	EgiAs	3mm - 25mm	Solid, 90°, 120°, 140° Spot Drill	130-131	300
5315		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.05mm	Solid, Miniature, Pilot Drill	153	307
738		HY-PRO® CARB	Inch	-	Bright	-	Indexable, Spot Drill/Countersink/Chamfer	196-197	314
235		CARBIDE	Inch	Carbide	Bright	3/64"-7/32"	Solid, Drill/Countersink	210	-
700		CARBIDE	Inch	Carbide	Bright	1/8"-1"	Solid, Countersink, Single Flute	217	-
701		CARBIDE	Inch	Carbide	Bright	1/4"-1"	Solid, Countersink, Multiple Flutes	218	-



List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

≤8D

6520	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
5220	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>		
HP258	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

>10D

6530	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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6540	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
6550	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
5630	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				
5275										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
5310														<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5325						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
5340	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>				
1750	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
1760	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
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Centering/Countersinking




5190	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5315						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
738	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		
235	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>			
700	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					
701			<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best




List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
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Centering/Countersinking

706		CARBIDE	Inch	Carbide	Bright	1/4"-1"	Solid, Countersink, 6 Flutes	219	-
1200		EX-SPOT	Metric	HSS	Bright, TiN	3mm-25mm	Solid, 60°/90°/120° Spot Drill	287	328
1250		EX-SPOT	Metric	HSS	Bright	3mm-25mm	Solid, 90° Spot Drill, Long Shank	288	328

Chucking Reamer








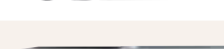
300D		CARBIDE	Inch & Metric	Carbide	Bright	0.80mm-13mm	Solid, Multiple Flutes, RH Cutting	211-215	317
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Boring Tools

750		CARBIDE	Inch	Carbide	Bright	1/16"-3/8"	Solid, Grinding/Deburring	216	-
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List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
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Composite Drills

7501		EXOPRO® AERO-STAD	Inch	Carbide	Diamond	#40 - 1/2"	Triple Angle	167	310
7520		EXOPRO® AERO-LHX	Inch	Carbide	Diamond	#40 - 1/2"	Low Helix	168	310
7500		EXOPRO® AERO-D-REAM	Inch	Carbide	Diamond	#40 - 1/2"	Tapered Reamer	169	310
7530		EXOPRO® AERO-S	Inch	Carbide	Diamond	#40 - 1/2"	High Helix, Stack Drill	170	310
7532		EXOPRO® AERO-H	Inch	Carbide	Diamond	#40 - 1/2"	Stack Drill for All Stacks	171	311
5732		EXOCARB® AERO-H	Inch	Carbide	TiAlN	#11 - 1/2"	Stack Drill for All Stacks	172	311
HP700		HY-PRO CARB® NEPTUNE®	Inch	Carbide	TiAlN	#40 - 1/4"	Hand Drill	173	311
257		AERO-D-REAM	Inch	Carbide	Bright	#40 - 1/2"	Tapered Drill/Reamer	174-175	310

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Centering/Countersinking

706	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>						
1200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				
1250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

Chucking Reamer

300D	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
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Boring Tools

750			<input type="checkbox"/>	<input type="checkbox"/>										<input type="checkbox"/>	<input type="checkbox"/>		
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List No.	Machine Type			Composite Type				
	Hand	Pneumatic	CNC	CFRP	Honeycomb	CFRP/ Al Stack	CFRP/ Ti Stack	CFRP/ CRES Stack

Composite Drills

7501	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
7520		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
7500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			
7530		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
7532		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5732		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HP700	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
257	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

Good Best



A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6600

ADO-TRS-3D, 3 Flute, Coolant-Through

NEW	SPEED FEED P290	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d		
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
8720400	-	-	-	4.00	0.1575	24	74	4		
660015917	-	-	-	4.05	0.1594	25	80	6		
660016117	-	20	-	4.09	0.1610					
8720410	-	-	-	4.10	0.1614					
660016317	-	-	-	4.16	0.1638					
8720420	-	-	-	4.20	0.1654					
660016817	-	-	-	4.27	0.1681					
8720430	-	-	-	4.30	0.1693					
660017217	11/64	-	-	4.37	0.1720	26	3/16			
8720440	-	-	-	4.40	0.1732					
660017517	-	-	-	4.46	0.1756	27	80	6		
8720450	-	-	-	4.50	0.1772					
8720460	-	-	-	4.60	0.1811					
660018317	-	-	-	4.66	0.1835					
8720470	-	13	-	4.70	0.1850					
660018717	3/16	-	-	4.76	0.1874	29			3/16	
8720480	-	12	-	4.80	0.1890					
8720490	-	-	-	4.90	0.1929	30	82	6		
8720500	-	-	-	5.00	0.1969	25				
8720510	-	-	-	5.10	0.2008	26			1/4	
660020317	13/64	-	-	5.16	0.2031					
8720520	-	-	-	5.20	0.2047	27			82	6
8720530	-	-	-	5.30	0.2087					
8720540	-	-	-	5.40	0.2126					
660021317	-	3	-	5.41	0.2130	28	1/4			
8720550	-	-	-	5.50	0.2165					
660021817	7/32	-	-	5.56	0.2189	29	88	6		
8720560	-	-	-	5.60	0.2205					
8720570	-	-	-	5.70	0.2244	30			1/4	
8720580	-	-	-	5.80	0.2283					
8720590	-	-	-	5.90	0.2323	31			94	8
660023417	15/64	-	-	5.95	0.2343					
8720600	-	-	-	6.00	0.2362	32	1/4			
8720610	-	-	-	6.10	0.2402					
8720620	-	-	-	6.20	0.2441	33	88	8		
8720630	-	-	-	6.30	0.2480					
660025017	1/4	-	E	6.35	0.2500	34			5/16	
8720640	-	-	-	6.40	0.2520					
8720650	-	-	-	6.50	0.2559	35			94	8
660025717	-	-	F	6.53	0.2571					
8720660	-	-	-	6.60	0.2598	36	5/16			
8720670	-	-	-	6.70	0.2638					
660026517	17/64	-	-	6.75	0.2657	37	94	8		
8720680	-	-	-	6.80	0.2677					
8720690	-	-	I	6.90	0.2717	36			5/16	
8720700	-	-	-	7.00	0.2756					
8720710	-	-	-	7.10	0.2795	37			94	8
660028117	9/32	-	-	7.14	0.2811					
8720720	-	-	-	7.20	0.2835	37	5/16			
8720730	-	-	-	7.30	0.2874					
8720738	-	-	-	7.38	0.2905	37	8			
8720740	-	-	-	7.40	0.2913					

Packed: 1 pc.
Available EgiAs Coating Only.





List 6600 (Continued)

ADO-TRS-3D, 3 Flute, Coolant-Through

NEW
SPEED FEED P290
CARBIDE
EgiAs
30°
SHANK h6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8720750	-	-	-	7.50	0.2953	38	94	8
660029617	19/64	-	-	7.54	0.2969			5/16
8720760	-	-	-	7.60	0.2992			8
8720770	-	-	-	7.70	0.3031	40		
8720780	-	-	-	7.80	0.3071			
8720790	-	-	-	7.90	0.3110			8
660031217	5/16	-	-	7.94	0.3126	41		
8720800	-	-	-	8.00	0.3150		10	
8720810	-	-	-	8.10	0.3189			3/8
8720820	-	-	P	8.20	0.3228	101		
8720830	-	-	-	8.30	0.3268		10	
660032817	21/64	-	-	8.33	0.3280			42
8720840	-	-	-	8.40	0.3307	3/8		
660033217	-	-	Q	8.43	0.3319		43	
8720850	-	-	-	8.50	0.3346			10
8720860	-	-	-	8.60	0.3386	44		
8720870	-	-	-	8.70	0.3425		3/8	
660034317	11/32	-	-	8.73	0.3437			45
8720880	-	-	-	8.80	0.3465	106		
8720890	-	-	-	8.90	0.3504		10	
8720900	-	-	-	9.00	0.3543			3/8
8720910	-	-	-	9.10	0.3583	46		
660035917	23/64	-	-	9.13	0.3594		47	
8720920	-	-	-	9.20	0.3622			10
8720925	-	-	-	9.25	0.3642	48		
8720930	-	-	-	9.30	0.3661		106	
8720938	-	-	-	9.38	0.3693			3/8
8720940	-	-	-	9.40	0.3701	49		
8720950	-	-	-	9.50	0.3740		10	
660037517	3/8	-	-	9.53	0.3752			50
8720960	-	-	-	9.60	0.3780	7/16		
8720970	-	-	-	9.70	0.3819		10	
8720980	-	-	W	9.80	0.3858			51
8720990	-	-	-	9.90	0.3898	113		
660039017	25/64	-	-	9.92	0.3906		52	
8721000	-	-	-	10.00	0.3937			7/16
8721010	-	-	-	10.10	0.3976	12		
8721020	-	-	-	10.20	0.4016		53	
8721030	-	-	-	10.30	0.4055			12
660040617	13/32	-	-	10.32	0.4063	54		
8721040	-	-	-	10.40	0.4094		7/16	
8721050	-	-	-	10.50	0.4134			12
8721060	-	-	-	10.60	0.4173	55		
8721070	-	-	-	10.70	0.4213		12	
660042217	27/64	-	-	10.72	0.4220			12
8721080	-	-	-	10.80	0.4252	12		
8721090	-	-	-	10.90	0.4291		12	
8721100	-	-	-	11.00	0.4331			12

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page



Work Material

List No.	P						M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
6600	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6600 (Continued)

ADO-TRS-3D, 3 Flute, Coolant-Through

NEW	SPEED FEED P290	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8721110	-	-	-	11.10	0.4370	56	120	12
660043717	7/16	-	-	11.11	0.4374			7/16
8721120	-	-	-	11.20	0.4409	57	120	12
8721125	-	-	-	11.25	0.4429			
8721130	-	-	-	11.30	0.4449	58	120	1/2
8721138	-	-	-	11.38	0.4480			
8721140	-	-	-	11.40	0.4488	59	120	12
8721150	-	-	-	11.50	0.4528			
660045317	29/64	-	-	11.51	0.4531	60	128	1/2
8721160	-	-	-	11.60	0.4567			
8721170	-	-	-	11.70	0.4606	62	128	1/2
8721180	-	-	-	11.80	0.4646			
8721190	-	-	-	11.90	0.4685	63	128	14
660046817	15/32	-	-	11.91	0.4689			
8721200	-	-	-	12.00	0.4724	64	128	1/2
660048417	31/64	-	-	12.30	0.4843			
8721250	-	-	-	12.50	0.4921	65	134	14
660050017	1/2	-	-	12.70	0.5000			
8721300	-	-	-	13.00	0.5118	67	134	14
8721325	-	-	-	13.25	0.5216			
8721330	-	-	-	13.30	0.5236	68	140	5/8
8721338	-	-	-	13.38	0.5268			
660053117	17/32	-	-	13.49	0.5311	70	140	14
8721350	-	-	-	13.50	0.5315			
8721400	-	-	-	14.00	0.5512	71	140	16
8721410	-	-	-	14.10	0.5551			
8721420	-	-	-	14.20	0.5591	72	145	5/8
660056217	9/16	-	-	14.29	0.5626			
8721430	-	-	-	14.30	0.5630	73	145	16
8721450	-	-	-	14.50	0.5709			
8721500	-	-	-	15.00	0.5906	75	150	18
660059317	19/32	-	-	15.08	0.5937			
8721520	-	-	-	15.20	0.5984	76	150	3/4
8721530	-	-	-	15.30	0.6024			
8721550	-	-	-	15.50	0.6102	77	150	18
660062517	5/8	-	-	15.88	0.6252			
8721600	-	-	-	16.00	0.6299	78	155	3/4
8721650	-	-	-	16.50	0.6496			
660065617	21/32	-	-	16.67	0.6563	80	155	18
660066317	-	-	-	16.84	0.6630			
8721700	-	-	-	17.00	0.6693	83	160	20
8721725	-	-	-	17.25	0.6791			
660068717	11/16	-	-	17.46	0.6874	87	160	3/4
8721750	-	-	-	17.50	0.6890			
660070317	45/64	-	-	17.86	0.7031	88	160	18
8721800	-	-	-	18.00	0.7087			
660071817	23/32	-	-	18.26	0.7189	90	160	3/4
8721850	-	-	-	18.50	0.7283			
8721900	-	-	-	19.00	0.7480	92	160	20
660075017	3/4	-	-	19.05	0.7500			

Packed: 1 pc.
Available EgiAs Coating Only.





List 6600 (Continued)

ADO-TRS-3D, 3 Flute, Coolant-Through

NEW	SPEED FEED P290	CARBIDE	EgiAs		30°	SHANK h6
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EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8721925	-	-	-	19.25	0.7579	97	165	20
8721950	-	-	-	19.50	0.7677	98		
8722000	-	-	-	20.00	0.7874	100		

Packed: 1 pc.
Available EgiAs Coating Only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
6600	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6610

ADO-TRS-5D, 3 Flute, Coolant-Through

NEW	SPEED FEED P290	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8722400	-	-	-	4.00	0.1575	36	86	4
661016117	-	20	-	4.09	0.1610	37	95	6
8722410	-	-	-	4.10	0.1614	37		
8722420	-	-	-	4.20	0.1654	38		
8722430	-	-	-	4.30	0.1693	39		
661017217	11/64	-	-	4.37	0.1720	40		
8722440	-	-	-	4.40	0.1732	41		
8722450	-	-	-	4.50	0.1772	41		
8722460	-	-	-	4.60	0.1811	42		
8722470	-	13	-	4.70	0.1850	43		
661018717	3/16	-	-	4.76	0.1874	44		
8722480	-	12	-	4.80	0.1890	44		
8722490	-	-	-	4.90	0.1929	45		
8722500	-	-	-	5.00	0.1969	41		
8722510	-	-	-	5.10	0.2008	42		
661020317	13/64	-	-	5.16	0.2031	42		
8722520	-	-	-	5.20	0.2047	43		
8722530	-	-	-	5.30	0.2087	43		
8722540	-	-	-	5.40	0.2126	44		
661021317	-	3	-	5.41	0.2130	44		
8722550	-	-	-	5.50	0.2165	45		
661021817	7/32	-	-	5.56	0.2189	45		
8722560	-	-	-	5.60	0.2205	46		
8722570	-	-	-	5.70	0.2244	47		
8722580	-	-	-	5.80	0.2283	47		
8722590	-	-	-	5.90	0.2323	48		
661023417	15/64	-	-	5.95	0.2343	48		
8722600	-	-	-	6.00	0.2362	49		
8722610	-	-	-	6.10	0.2402	50		
8722620	-	-	-	6.20	0.2441	51		
8722630	-	-	-	6.30	0.2480	51		
661025017	1/4	-	E	6.35	0.2500	52		
8722640	-	-	-	6.40	0.2520	53		
8722650	-	-	-	6.50	0.2559	53		
661025717	-	-	F	6.53	0.2571	54		
8722660	-	-	-	6.60	0.2598	54		
8722670	-	-	-	6.70	0.2638	55		
661026517	17/64	-	-	6.75	0.2657	55		
8722680	-	-	-	6.80	0.2677	56		
8722690	-	-	I	6.90	0.2717	56		
8722700	-	-	-	7.00	0.2756	57		
8722710	-	-	-	7.10	0.2795	57		
661028117	9/32	-	-	7.14	0.2811	58		
8722720	-	-	-	7.20	0.2835	59		
8722730	-	-	-	7.30	0.2874	59		
8722738	-	-	-	7.38	0.2905	60		
8722740	-	-	-	7.40	0.2913	60		
8722750	-	-	-	7.50	0.2953	61		
661029617	19/64	-	-	7.54	0.2969	61		
8722760	-	-	-	7.60	0.2992	62		
8722770	-	-	-	7.70	0.3031	62		
8722780	-	-	-	7.80	0.3071	63		
8722790	-	-	-	7.90	0.3110	63		
661031217	5/16	-	-	7.94	0.3126	64		
8722800	-	-	-	8.00	0.3150	64		

Packed: 1 pc.
Available EgiAs Coating Only.





List 6610 (Continued)

ADO-TRS-5D, 3 Flute, Coolant-Through

NEW
SPEED FEED P290
CARBIDE
EgiAs
30°
SHANK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8722810	-	-	-	8.10	0.3189	65	128	10
8722820	-	-	P	8.20	0.3228	66		
8722830	-	-	-	8.30	0.3268	67		
661032817	21/64	-	-	8.33	0.3280	68		
8722840	-	-	-	8.40	0.3307	69		
661033217	-	-	Q	8.43	0.3319	70		
8722850	-	-	-	8.50	0.3346	71		
8722860	-	-	-	8.60	0.3386	72		
8722870	-	-	-	8.70	0.3425	73		
661034317	11/32	-	-	8.73	0.3437	74		
8722880	-	-	-	8.80	0.3465	75	136	10
8722890	-	-	-	8.90	0.3504	76		
8722900	-	-	-	9.00	0.3543	77		
8722910	-	-	-	9.10	0.3583	78		
661035917	23/64	-	-	9.13	0.3594	79		
8722920	-	-	-	9.20	0.3622	80		
8722925	-	-	-	9.25	0.3642	81		
8722930	-	-	-	9.30	0.3661	82		
8722938	-	-	-	9.38	0.3693	83		
8722940	-	-	-	9.40	0.3701	84		
8722950	-	-	-	9.50	0.3740	85	146	12
661037517	3/8	-	-	9.53	0.3752	86		
8722960	-	-	-	9.60	0.3780	87		
8722970	-	-	-	9.70	0.3819	88		
8722980	-	-	W	9.80	0.3858	89		
8722990	-	-	-	9.90	0.3898	90		
661039017	25/64	-	-	9.92	0.3906	91		
8723000	-	-	-	10.00	0.3937	92		
8723010	-	-	-	10.10	0.3976	93		
8723020	-	-	-	10.20	0.4016	94		
8723030	-	-	-	10.30	0.4055	95	156	12
661040617	13/32	-	-	10.32	0.4063	96		
8723040	-	-	-	10.40	0.4094	97		
8723050	-	-	-	10.50	0.4134	98		
8723060	-	-	-	10.60	0.4173	99		
8723070	-	-	-	10.70	0.4213	100		
661042217	27/64	-	-	10.72	0.4220	101		
8723080	-	-	-	10.80	0.4252	102		
8723090	-	-	-	10.90	0.4291	103		
8723100	-	-	-	11.00	0.4331	104		
8723110	-	-	-	11.10	0.4370	105	168	12
661043717	7/16	-	-	11.11	0.4374	106		
8723120	-	-	-	11.20	0.4409	107		
8723125	-	-	-	11.25	0.4429	108		
8723130	-	-	-	11.30	0.4449	109		
8723138	-	-	-	11.38	0.4480	110		
8723140	-	-	-	11.40	0.4488	111		
8723150	-	-	-	11.50	0.4528	112		
661045317	29/64	-	-	11.51	0.4531	113		

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page

List No.	Work Material																		
	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
6610	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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A Brand[®] ADO-TRS

Advanced Performance High Feed 3-Flute Carbide Drills

List 6610 (Continued)

ADO-TRS-5D, 3 Flute, Coolant-Through

NEW	SPEED FEED P290	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8723160	-	-	-	11.60	0.4567	93	156	12
8723170	-	-	-	11.70	0.4606	94		
8723180	-	-	-	11.80	0.4646	95		
8723190	-	-	-	11.90	0.4685	96	1/2	
661046817	15/32	-	-	11.91	0.4689			
8723200	-	-	-	12.00	0.4724	99	12	
661048417	31/64	-	-	12.30	0.4843			
8723250	-	-	-	12.50	0.4921			
661050017	1/2	-	-	12.70	0.5000	100	1/2	
8723300	-	-	-	13.00	0.5118			
8723325	-	-	-	13.25	0.5216	102	14	
8723330	-	-	-	13.30	0.5236			
8723338	-	-	-	13.38	0.5268	104	1/2	
661053117	17/32	-	-	13.49	0.5311			
8723350	-	-	-	13.50	0.5315			
8723400	-	-	-	14.00	0.5512	106	14	
8723410	-	-	-	14.10	0.5551			
8723420	-	-	-	14.20	0.5591			
661056217	9/16	-	-	14.29	0.5626	107	176	
8723430	-	-	-	14.30	0.5630			
8723450	-	-	-	14.50	0.5709	112	5/8	
8723500	-	-	-	15.00	0.5906			
661059317	19/32	-	-	15.08	0.5937			
8723520	-	-	-	15.20	0.5984	114	14	
8723530	-	-	-	15.30	0.6024			
8723550	-	-	-	15.50	0.6102	115	185	
661062517	5/8	-	-	15.88	0.6252			
8723600	-	-	-	16.00	0.6299			
8723650	-	-	-	16.50	0.6496	116	16	
661065617	21/32	-	-	16.67	0.6563			
661066317	-	-	-	16.84	0.6630	120	5/8	
8723700	-	-	-	17.00	0.6693			
8723725	-	-	-	17.25	0.6791			
661068717	11/16	-	-	17.46	0.6874	121	16	
8723750	-	-	-	17.50	0.6890			
661070317	45/64	-	-	17.86	0.7031	122	18	
8723800	-	-	-	18.00	0.7087			
661071817	23/32	-	-	18.26	0.7189			
8723850	-	-	-	18.50	0.7283	123	3/4	
8723900	-	-	-	19.00	0.7480			
661075017	3/4	-	-	19.05	0.7500	124	201	
8723925	-	-	-	19.25	0.7579			
8723950	-	-	-	19.50	0.7677			
8724000	-	-	-	20.00	0.7874	128	18	
						132	18	
						134	3/4	
						135	18	
						136	18	
						138	3/4	
						140	18	
						143	3/4	
						144	18	
						147	3/4	
						148	20	
						152	3/4	
						154	20	
						156	20	
						160	20	

Packed: 1 pc.
Available EgiAs Coating Only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6610	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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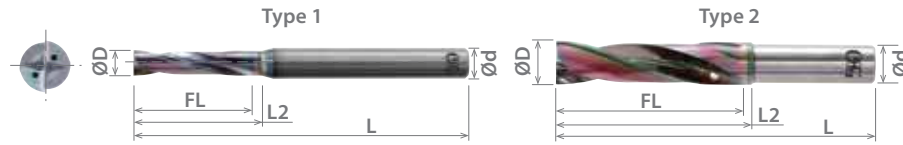




List 5720

ADFO-3D, Coolant-Through, Flat Drill

NEW SPEED FEED P291 CARBIDE EgiAs 20° SHANK h6



Cutting Diameter Tolerance (h8)		
Size	mm	inch
3 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length	Neck Length	Overall Length	Shank Diameter	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
3334300	-	-	-	3.00	0.1181	15	16	55	4	1
3334302	-	-	-	3.10	0.1220					
572012517	1/8	-	-	3.18	0.1250					
3334304	-	-	-	3.20	0.1260	16	17	60	4	1
3334305	-	-	-	3.30	0.1299					
3334306	-	-	-	3.40	0.1339					
3334307	-	-	-	3.50	0.1378	19	20	65	4	2
3334309	-	-	-	3.60	0.1417					
3334312	-	-	-	3.70	0.1457					
3334313	-	-	-	3.80	0.1496	21	22	70	6	1
3334314	-	-	-	3.90	0.1535					
572015617	5/32	-	-	3.97	0.1563					
3334315	-	-	-	4.00	0.1575	24	25	75	6	2
3334317	-	-	-	4.10	0.1614					
3334318	-	-	-	4.20	0.1654					
3334319	-	-	-	4.30	0.1693	27	28	80	6	1
3334320	-	-	-	4.40	0.1732					
3334321	-	-	-	4.50	0.1772					
3334323	-	-	-	4.60	0.1811	30	31	85	8	1
3334326	-	-	-	4.70	0.1850					
572018717	3/16	-	-	4.76	0.1875					
3334327	-	-	-	4.80	0.1890	32	33	90	8	2
3334328	-	-	-	4.90	0.1929					
3334329	-	-	-	5.00	0.1969					
3334331	-	-	-	5.10	0.2008	35	36	95	8	1
3334332	-	-	-	5.20	0.2047					
3334333	-	-	-	5.30	0.2087					
3334334	-	-	-	5.40	0.2126	38	39	100	8	2
3334335	-	-	-	5.50	0.2165					
572021817	7/32	-	-	5.56	0.2188					
3334338	-	-	-	5.60	0.2205	41	42	105	8	1
3334339	-	-	-	5.70	0.2244					
3334340	-	-	-	5.80	0.2283					
3334341	-	-	-	5.90	0.2323	44	45	110	8	2
3334342	-	-	-	6.00	0.2362					
3334344	-	-	-	6.10	0.2402					
3334345	-	-	-	6.20	0.2441	47	48	115	8	1
3334346	-	-	-	6.30	0.2480					
572025017	1/4	-	E	6.35	0.2500					
3334347	-	-	-	6.40	0.2520	50	51	120	8	2
3334348	-	-	-	6.50	0.2559					
3334350	-	-	-	6.60	0.2598					
3334351	-	-	-	6.70	0.2638					

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5720	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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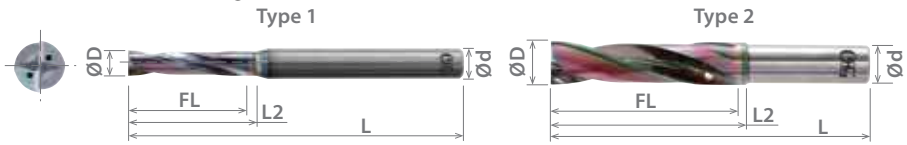




List 5720 (Continued)

ADFO-3D, Coolant-Through, Flat Drill

NEW	SPEED FEED P291	CARBIDE	EgiAs		20°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
3 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
3334352	-	-	-	6.80	0.2677	30	31	70	8	1
3334353	-	-	-	6.90	0.2717					
3334354	-	-	-	7.00	0.2756					
3334356	-	-	-	7.10	0.2795					
572028117	9/32	-	-	7.15	0.2813					
3334357	-	-	-	7.20	0.2835					
3334358	-	-	-	7.30	0.2874					
3334359	-	-	-	7.40	0.2913					
3334360	-	-	-	7.50	0.2953					
3334361	-	-	-	7.60	0.2992					
3334362	-	-	-	7.70	0.3031					
3334363	-	-	-	7.80	0.3071					
3334364	-	-	-	7.90	0.3110					
572031217	5/16	-	-	7.94	0.3125					
3334365	-	-	-	8.00	0.3150					
3334367	-	-	-	8.10	0.3189					
3334368	-	-	-	8.20	0.3228					
3334369	-	-	-	8.30	0.3268					
572032817	21/64	-	-	8.33	0.3281					
3334370	-	-	-	8.40	0.3307					
3334371	-	-	-	8.50	0.3346					
3334373	-	-	-	8.60	0.3386					
3334374	-	-	-	8.70	0.3425					
3334375	-	-	-	8.80	0.3465					
3334376	-	-	-	8.90	0.3504					
3334377	-	-	-	9.00	0.3543					
3334379	-	-	-	9.10	0.3583					
572035917	23/64	-	-	9.13	0.3594					
3334380	-	-	-	9.20	0.3622					
3334381	-	-	-	9.30	0.3661					
3334382	-	-	-	9.40	0.3701					
3334383	-	-	-	9.50	0.3740					
572037517	3/8	-	-	9.53	0.3750					
3334384	-	-	-	9.60	0.3780					
3334385	-	-	-	9.70	0.3819					
3334386	-	-	-	9.80	0.3858					
3334387	-	-	-	9.90	0.3898					
3334388	-	-	-	10.00	0.3937					
3334390	-	-	-	10.10	0.3976					
3334391	-	-	-	10.20	0.4016					
3334392	-	-	-	10.30	0.4055					
572040617	13/32	-	-	10.32	0.4063					
3334393	-	-	-	10.40	0.4094					
3334394	-	-	-	10.50	0.4134					
3334395	-	-	-	10.60	0.4173					
3334396	-	-	-	10.70	0.4213					
3334397	-	-	-	10.80	0.4252					
3334398	-	-	-	10.90	0.4291					
3334399	-	-	-	11.00	0.4331					
3334401	-	-	-	11.10	0.4370					
572043717	7/16	-	-	11.11	0.4374					
3334402	-	-	-	11.20	0.4409					

Packed: 1 pc.
Available EgiAs Coating Only.



List 5720 (Continued)

ADFO-3D, Coolant-Through, Flat Drill

NEW

SPEED
FEED
P291

CARBIDE
EgiAs

20°

SHANK
h6

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
3334403	-	-	-	11.30	0.4449	50	51	95	12	1
3334404	-	-	-	11.40	0.4488					
3334405	-	-	-	11.50	0.4528					
572045317	29/64	-	-	11.51	0.4531					
3334406	-	-	-	11.60	0.4567					
3334407	-	-	-	11.70	0.4606					
3334408	-	-	-	11.80	0.4646					
3334409	-	-	-	11.90	0.4685					
572046817	15/32	-	-	11.91	0.4688					
3334410	-	-	-	12.00	0.4724					
3334412	-	-	-	12.10	0.4764					
3334413	-	-	-	12.20	0.4803					
3334414	-	-	-	12.30	0.4843					
3334415	-	-	-	12.40	0.4882					
3334416	-	-	-	12.50	0.4921					
3334417	-	-	-	12.60	0.4961					
3334418	1/2	-	-	12.70	0.5000					
3334419	-	-	-	12.80	0.5039					
3334420	-	-	-	12.90	0.5079					
3334421	-	-	-	13.00	0.5118					
3334422	-	-	-	13.10	0.5157					
3334423	-	-	-	13.20	0.5197					
3334424	-	-	-	13.30	0.5236					
3334425	-	-	-	13.40	0.5276					
3334426	-	-	-	13.50	0.5315					
3334427	-	-	-	13.60	0.5354					
3334428	-	-	-	13.70	0.5394					
3334429	-	-	-	13.80	0.5433					
3334430	-	-	-	13.90	0.5472					
3334431	-	-	-	14.00	0.5512					
3334432	-	-	-	14.10	0.5551					
3334433	-	-	-	14.20	0.5591					
572056217	9/16	-	-	14.29	0.5626					
3334434	-	-	-	14.30	0.5630					
3334435	-	-	-	14.40	0.5669					
3334436	-	-	-	14.50	0.5709					
3334437	-	-	-	14.60	0.5748					
3334438	-	-	-	14.70	0.5787					
3334439	-	-	-	14.80	0.5827					
3334440	-	-	-	14.90	0.5866					
3334441	-	-	-	15.00	0.5906					
3334442	-	-	-	15.10	0.5945					
3334443	-	-	-	15.20	0.5984					
3334444	-	-	-	15.30	0.6024					
3334445	-	-	-	15.40	0.6063					
3334446	-	-	-	15.50	0.6102					
3334447	-	-	-	15.60	0.6142					
3334448	-	-	-	15.70	0.6181					
3334449	-	-	-	15.80	0.6220					

Packed: 1 pc.
Available EgiAs Coating Only.

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Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5720	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

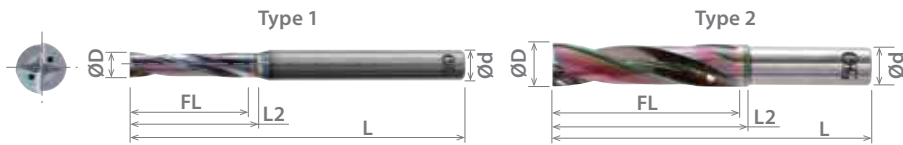




List 5720 (Continued)

ADFO-3D, Coolant-Through, Flat Drill

NEW	SPEED FEED P291	CARBIDE	EgiAs		20°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
3 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
572062517	5/8	-	-	15.88	0.6250	68	70	115	5/8	2
3334450	-	-	-	15.90	0.6260		69		16	1
3334451	-	-	-	16.00	0.6299					
3334452	-	-	-	16.50	0.6496	74	75	125	18	1
3334453	-	-	-	17.00	0.6693		78		80	
572068717	11/16	-	-	17.46	0.6874	79		18	2	
3334454	-	-	-	17.50	0.6890					
3334455	-	-	-	18.00	0.7087	84	85	135	20	1
3334456	-	-	-	18.50	0.7283		88		90	140
3334457	-	-	-	19.00	0.7480	89		20	1	
572075017	3/4	-	-	19.05	0.7500					
3334458	-	-	-	19.50	0.7677	89	20	2		
3334459	-	-	-	20.00	0.7874					

Packed: 1 pc.
Available EgiAs Coating Only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5720	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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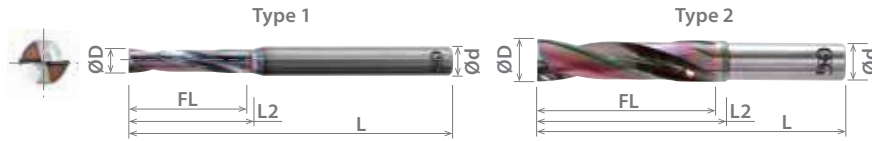




List 5700

ADF-2D, Flat Drill

SPEED FEED P292	CARBIDE	EgiAs	20°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
3330200	-	-	-	2.00	0.0787	10	10.3	50	4	1
3330210	-	-	-	2.10	0.0827		10.5			
3330220	-	-	-	2.20	0.0866	11	10.6			
3330230	-	-	-	2.30	0.0906		10.8			
570009311	3/32	-	-	2.38	0.0937	12	11.0			
3330240	-	-	-	2.40	0.0945		11.2			
3330250	-	-	-	2.50	0.0984	13	11.4			
3330260	-	-	-	2.60	0.1024		11.6			
3330270	-	-	-	2.70	0.1063	14	11.8			
3330280	-	-	-	2.80	0.1102		11.9			
3330290	-	-	-	2.90	0.1142	15	11.4			
3330300	-	-	-	3.00	0.1181		11.6			
3330310	-	-	-	3.10	0.1220	16	17.0			
570012511	1/8	-	-	3.18	0.1250		11.8			
3330320	-	-	-	3.20	0.1260	17	12.0			
3330330	-	-	-	3.30	0.1299		12.1			
3330340	-	-	-	3.40	0.1339	18	12.3			
3330350	-	-	-	3.50	0.1378		12.5			
3330360	-	-	-	3.60	0.1417	19	12.7			
3330370	-	-	-	3.70	0.1457		17.9			
3330380	-	-	-	3.80	0.1496	20	18.1			
3330390	-	-	-	3.90	0.1535		20.5			
570015611	5/32	-	-	3.97	0.1563	21	18.3			
3330400	-	-	-	4.00	0.1575		18.5			
3330410	-	-	-	4.10	0.1614	22	18.6			
3330420	-	-	-	4.20	0.1654		18.8			
3330430	-	-	-	4.30	0.1693	23	19.0			
3330440	-	-	-	4.40	0.1732		19.2			
3330450	-	-	-	4.50	0.1772	24	19.4			
3330460	-	-	-	4.60	0.1811		19.6			
3330470	-	-	-	4.70	0.1850	19.6				

Packed: 1 pc.
Available EgiAs Coating Only.

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List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5700	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

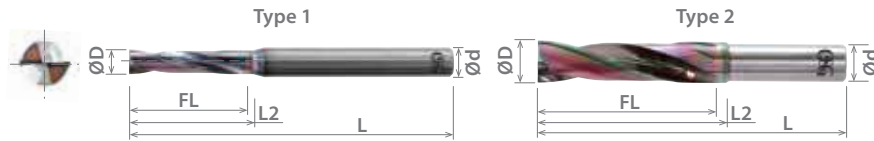




List 5700 (Continued)

ADF-2D, Flat Drill

SPEED FEED P292	CARBIDE	EgiAs	20°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
570018711	3/16	-	-	4.76	0.1875	24	65	70	3/16	2
3330480	-	-	-	4.80	0.1890					
3330490	-	-	-	4.90	0.1929					
3330500	-	-	-	5.00	0.1969					
3330510	-	-	-	5.10	0.2008					
3330520	-	-	-	5.20	0.2047					
3330530	-	-	-	5.30	0.2087					
3330540	-	-	-	5.40	0.2126					
3330550	-	-	-	5.50	0.2165					
570021811	7/32	-	-	5.56	0.2188					
3330560	-	-	-	5.60	0.2205					
3330570	-	-	-	5.70	0.2244					
3330580	-	-	-	5.80	0.2283					
3330590	-	-	-	5.90	0.2323					
3330600	-	-	-	6.00	0.2362					
3330610	-	-	-	6.10	0.2402					
3330620	-	-	-	6.20	0.2441					
3330630	-	-	-	6.30	0.2480					
570025011	1/4	-	E	6.35	0.2500					
3330640	-	-	-	6.40	0.2520					
3330650	-	-	-	6.50	0.2559					
3330660	-	-	-	6.60	0.2598					
3330670	-	-	-	6.70	0.2638					
3330680	-	-	-	6.80	0.2677					
3330690	-	-	-	6.90	0.2717					
3330700	-	-	-	7.00	0.2756					
3330710	-	-	-	7.10	0.2795					
570028111	9/32	-	-	7.14	0.2813					
3330720	-	-	-	7.20	0.2835					
3330730	-	-	-	7.30	0.2874					
3330740	-	-	-	7.40	0.2913					
3330750	-	-	-	7.50	0.2953					
3330760	-	-	-	7.60	0.2992					
3330770	-	-	-	7.70	0.3031					
3330780	-	-	-	7.80	0.3071					
3330790	-	-	-	7.90	0.3110					
570031211	5/16	-	-	7.94	0.3125					
3330800	-	-	-	8.00	0.3150					
3330810	-	-	-	8.10	0.3189					
3330820	-	-	-	8.20	0.3228					
3330830	-	-	-	8.30	0.3268					
570032811	21/64	-	-	8.33	0.3281					
3330840	-	-	-	8.40	0.3307					
3330850	-	-	-	8.50	0.3346					
3330860	-	-	-	8.60	0.3386					
3330870	-	-	-	8.70	0.3425					
3330880	-	-	-	8.80	0.3465					
3330890	-	-	-	8.90	0.3504					
3330900	-	-	-	9.00	0.3543					
3330910	-	-	-	9.10	0.3583					
570035911	23/64	-	-	9.13	0.3594					
3330920	-	-	-	9.20	0.3622					

Packed: 1 pc.
Available EgiAs Coating Only.



List 5700 (Continued)

ADF-2D, Flat Drill

SPEED FEED P292	CARBIDE	EgiAs	20°	SHANK h6
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EDP Number	Diameter					Flute Length	Neck Length	Overall Length	Shank Diameter	Type			
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L2	L	d				
3330930	-	-	-	9.30	0.3661	42	44.0	85	8	2			
3330940	-	-	-	9.40	0.3701								
3330950	-	-	-	9.50	0.3740								
570037511	3/8	-	-	9.53	0.3750				46		48.0	90	3/8
3330960	-	-	-	9.60	0.3780								
3330970	-	-	-	9.70	0.3819								
3330980	-	-	-	9.80	0.3858								
3330990	-	-	-	9.90	0.3898								
3331000	-	-	-	10.00	0.3937								
3331010	-	-	-	10.10	0.3976								
3331020	-	-	-	10.20	0.4016								
3331030	-	-	-	10.30	0.4055	50	52.0	95	7/16	1			
570040611	13/32	-	-	10.32	0.4063								
3331040	-	-	-	10.40	0.4094								
3331050	-	-	-	10.50	0.4134								
3331060	-	-	-	10.60	0.4173								
3331070	-	-	-	10.70	0.4213								
3331080	-	-	-	10.80	0.4252								
3331090	-	-	-	10.90	0.4291								
3331100	-	-	-	11.00	0.4331								
3331110	-	-	-	11.10	0.4370								
570043711	7/16	-	-	11.11	0.4374	56	58.0	100	7/16	2			
3331120	-	-	-	11.20	0.4409								
3331130	-	-	-	11.30	0.4449								
3331140	-	-	-	11.40	0.4488								
3331150	-	-	-	11.50	0.4528								
570045311	29/64	-	-	11.51	0.4531								
3331160	-	-	-	11.60	0.4567								
3331170	-	-	-	11.70	0.4606								
3331180	-	-	-	11.80	0.4646								
3331190	-	-	-	11.90	0.4685								
570046811	15/32	-	-	11.91	0.4688								
3331200	-	-	-	12.00	0.4724								
3331210	-	-	-	12.10	0.4764								
3331220	-	-	-	12.20	0.4803								

Packed: 1 pc.
Available EgiAs Coating Only.

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Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5700	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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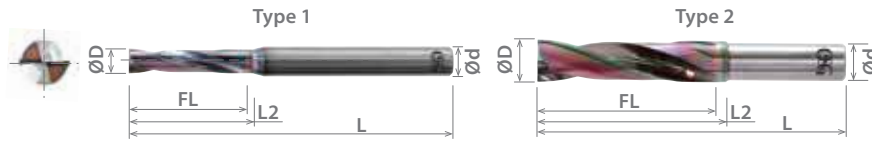




List 5700 (Continued)

SPEED FEED P292	CARBIDE	EgiAs	20°	SHANK h6
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ADF-2D, Flat Drill



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type			
	Fractional Size	Wire Gage	Letter Size	mm	Inch								
3331230	-	-	-	12.30	0.4843	56	58.0	100	12	2			
3331240	-	-	-	12.40	0.4882								
3331250	-	-	-	12.50	0.4921								
3331260	-	-	-	12.60	0.4961								
3331270	1/2	-	-	12.70	0.5000								
3331280	-	-	-	12.80	0.5039								
3331290	-	-	-	12.90	0.5079								
3331300	-	-	-	13.00	0.5118								
3331310	-	-	-	13.10	0.5157								
3331320	-	-	-	13.20	0.5197								
3331330	-	-	-	13.30	0.5236								
3331340	-	-	-	13.40	0.5276								
3331350	-	-	-	13.50	0.5315								
3331360	-	-	-	13.60	0.5354								
3331370	-	-	-	13.70	0.5394								
3331380	-	-	-	13.80	0.5433								
3331390	-	-	-	13.90	0.5472								
3331400	-	-	-	14.00	0.5512								
3331410	-	-	-	14.10	0.5551								
3331420	-	-	-	14.20	0.5591								
570056211	9/16	-	-	14.29	0.5625	66.0	110	12	2				
3331430	-	-	-	14.30	0.5630	63.0							
3331440	-	-	-	14.40	0.5669	66.0							
3331450	-	-	-	14.50	0.5709								
3331460	-	-	-	14.60	0.5748								
3331470	-	-	-	14.70	0.5787								
3331480	-	-	-	14.80	0.5827								
3331490	-	-	-	14.90	0.5866								
3331500	-	-	-	15.00	0.5906								
3331510	-	-	-	15.10	0.5945								
3331520	-	-	-	15.20	0.5984	68	70.0	115	2				
3331530	-	-	-	15.30	0.6024								
3331540	-	-	-	15.40	0.6063								
3331550	-	-	-	15.50	0.6102								
3331560	-	-	-	15.60	0.6142								
3331570	-	-	-	15.70	0.6181								
3331580	-	-	-	15.80	0.6220								
570062511	5/8	-	-	15.88	0.6250					74	76.0	125	5/8
3331590	-	-	-	15.90	0.6260								12
3331600	-	-	-	16.00	0.6299								
3331650	-	-	-	16.50	0.6496								
3331700	-	-	-	17.00	0.6693								

Packed: 1 pc.
Available EgiAs Coating Only.





List 5700 (Continued)

ADF-2D, Flat Drill

SPEED FEED P292	CARBIDE	EgiAs	20°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
570068711	11/16	-	-	17.46	0.6875	78	77.1	130	3/4	1
3331750	-	-	-	17.50	0.6890		80.0			
3331800	-	-	-	18.00	0.7087	84	86.0	135	16	2
3331850	-	-	-	18.50	0.7283					
3331900	-	-	-	19.00	0.7480	88	90.0	140	3/4	
570075011	3/4	-	-	19.05	0.7500				16	
3331950	-	-	-	19.50	0.7677	88	90.0	140	20	
3332000	-	-	-	20.00	0.7874				20	

Packed: 1 pc.
Available EgiAs Coating Only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5700	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

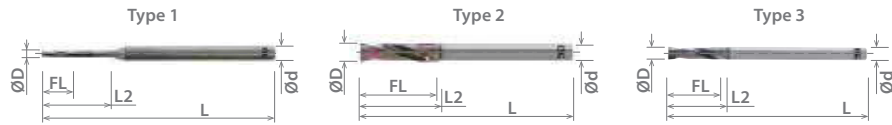




List 5705

ADFLS-2D, Long Shank, Flat Drill

NEW	SPEED FEED P293	CARBIDE	EgiAs	20°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
3 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
3332300	-	-	-	3.00	0.1181	15	30	100	6	1
3332310	-	-	-	3.10	0.1220					
570512517	1/8	-	-	3.18	0.1250					
3332320	-	-	-	3.20	0.1260	16	32	100	6	2
3332330	-	-	-	3.30	0.1299					
3332340	-	-	-	3.40	0.1339					
3332350	-	-	-	3.50	0.1378	19	34	100	6	1
3332360	-	-	-	3.60	0.1417					
3332370	-	-	-	3.70	0.1457					
3332380	-	-	-	3.80	0.1496	21	35	100	6	1
3332390	-	-	-	3.90	0.1535					
570515617	5/32	-	-	3.97	0.1563					
3332400	-	-	-	4.00	0.1575	24	36	100	6	2
3332410	-	-	-	4.10	0.1614					
3332420	-	-	-	4.20	0.1654					
3332430	-	-	-	4.30	0.1693	27	37	110	6	1
3332440	-	-	-	4.40	0.1732					
3332450	-	-	-	4.50	0.1772					
3332460	-	-	-	4.60	0.1811	30	38	110	6	2
3332470	-	-	-	4.70	0.1850					
570518717	3/16	-	-	4.76	0.1875					
3332480	-	-	-	4.80	0.1890	32	39	120	6	2
3332490	-	-	-	4.90	0.1929					
3332500	-	-	-	5.00	0.1969					
3332510	-	-	-	5.10	0.2008	33	40	120	6	1
3332520	-	-	-	5.20	0.2047					
3332530	-	-	-	5.30	0.2087					
3332540	-	-	-	5.40	0.2126	34	41	120	6	2
3332550	-	-	-	5.50	0.2165					
570521817	7/32	-	-	5.56	0.2188					
3332560	-	-	-	5.60	0.2205	35	42	120	6	3
3332570	-	-	-	5.70	0.2244					
3332580	-	-	-	5.80	0.2283					
3332590	-	-	-	5.90	0.2323	36	43	120	6	2
3332600	-	-	-	6.00	0.2362					
3334060	-	-	-	6.00	0.2362					
570525017	1/4	-	E	6.35	0.2500	37	44	120	6	2
3332650	-	-	-	6.50	0.2559					
3332680	-	-	-	6.80	0.2677					
3332700	-	-	-	7.00	0.2756					

Packed: 1 pc.
Available EgiAs Coating Only.



List 5705 (Continued)

ADFLS-2D, Long Shank, Flat Drill

NEW	SPEED FEED P293	CARBIDE	EgiAs	20°	SHANK h6
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EDP Number	Diameter					Flute Length	Neck Length	Overall Length	Shank Diameter	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
570528117	9/32	-	-	7.15	0.2813	34	72	130	5/16	1
3332750	-	-	7.50	0.2953	36		2			
3332780	-	-	7.80	0.3071	79					
570531217	5/16	-	7.94	0.3125	36				5/16	
3332800	-	-	8.00	0.3150	80	3				
3334080	-	-	8.33	0.3281	83		8			
570532817	21/64	-	8.50	0.3346	38		40	140	3/8	1
3332850	-	-	8.80	0.3465		2				
3332880	-	-	9.00	0.3543						
3332900	-	-	9.13	0.3594						
570535917	23/64	-	9.50	0.3740	42	91	150	3/8	1	
3332950	-	-	9.53	0.3750		44		2		
570537517	3/8	-	9.80	0.3858		95			3/8	
3332980	-	-	10.00	0.3937		44			8	
3333000	-	-	10.32	0.4063	100	3				
3334100	-	-	10.50	0.4134	103		10			
570540617	13/32	-	10.80	0.4252	46		48	160	7/16	1
3333050	-	-	11.00	0.4331		2				
3333080	-	-	11.11	0.4374						
3333100	-	-	11.51	0.4531						
570543717	7/16	-	11.80	0.4646	50	111	170	7/16	1	
570545317	29/64	-	11.91	0.4688		115		1		
3333180	-	-	12.00	0.4724		52			1/2	
3333180	-	-	12.50	0.4921		119			10	
570546817	15/32	-	12.70	0.5000	120	2				
3333200	-	-	13.00	0.5118	58		1/2			
3334120	-	-	13.50	0.5315	127		12			
3333250	-	-	14.00	0.5512	58	3				
570550017	1/2	-	14.29	0.5625	62		1/2			
3333300	-	-	15.00	0.5906	143		2			
3333350	-	-	15.88	0.6250	66	12				
3333350	-	-	16.00	0.6299	159	5/8				
3333400	-	-	17.00	0.6693	70	210	16	1		
570556217	9/16	-	17.00	0.6693	76				2	
3333500	-	-								
570562517	5/8	-								
3333600	-	-								
3334160	-	-								
3333700	-	-								

Packed: 1 pc.
Available EgiAs Coating Only.

➔ continued on next page ➔

Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5705	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

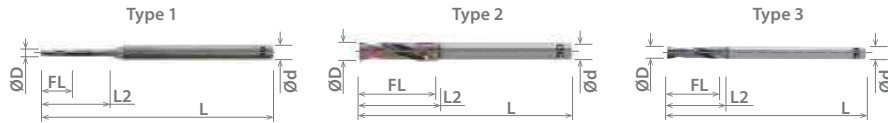




List 5705 (Continued)

NEW SPEED FEED P293 CARBIDE EgiAs 20° SHANK h6

ADFLS-2D, Long Shank, Flat Drill



Cutting Diameter Tolerance (h8)		
Size	mm	inch
3 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Neck Length L2	Overall Length L	Shank Diameter d	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
570568717	11/16	-	-	17.46	0.6875	78	175	230	3/4	1
3333750	-	-	-	17.50	0.6890		80		16	
3333800	-	-	-	18.00	0.7087		88		3/4	2
570575017	3/4	-	-	19.05	0.7500	90	250	20		
3334000	-	-	-	20.00	0.7874	200			3	

Packed: 1 pc.
Available EgiAs Coating Only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5705	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





List 6500

ADO-3D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
650007812	-	-	-	2.00	0.0787	12	66	3
650008212	-	-	-	2.10	0.0827	13		
650008612	-	-	-	2.20	0.0866	14		
8690230	-	-	-	2.30	0.0906			
650009312	3/32	-	-	2.38	0.0937	15		
650009412	-	-	-	2.40	0.0945			
8690250	-	-	-	2.50	0.0984			
8690260	-	-	-	2.60	0.1024	16		
650010612	-	-	-	2.70	0.1063	17		
650010912	7/64	-	-	2.78	0.1094			
8690280	-	-	-	2.80	0.1102			
650011161	-	-	-	2.83	0.1116			
8690290	-	-	-	2.90	0.1142	18		
650011631	-	-	-	2.95	0.1163			
8690300	-	-	-	3.00	0.1181	19		
8690310	-	-	-	3.10	0.1220			
650012511	1/8	-	-	3.18	0.1252		20	
8690320	-	-	-	3.20	0.1260			
8690330	-	-	-	3.30	0.1299		21	
650013231	-	-	-	3.36	0.1323			
8690340	-	-	-	3.40	0.1339			
650013561	-	-	-	3.44	0.1356			
8690350	-	-	-	3.50	0.1378		22	
650013871	-	-	-	3.52	0.1387			
650014051	-	-	-	3.57	0.1405			
8690360	-	-	-	3.60	0.1417	23		
8690370	-	-	-	3.70	0.1457			
650014841	-	-	-	3.77	0.1484	24		
8690380	-	-	-	3.80	0.1496			
650015211	-	-	-	3.86	0.1521			
8690390	-	-	-	3.90	0.1535			
650015511	5/32	-	-	3.97	0.1562	25		
8690400	-	-	-	4.00	0.1575			
650015911	-	-	-	4.05	0.1596	26		
650016011	-	19	-	4.09	0.1610			
8690410	-	-	-	4.10	0.1614			
8700410	-	-	-	4.10	0.1614			
650016311	-	-	-	4.16	0.1636			
8690420	-	-	-	4.20	0.1654			
8700420	-	-	-	4.20	0.1654			
650016711	-	-	-	4.27	0.1681			
8690430	-	-	-	4.30	0.1693			
8700430	-	-	-	4.30	0.1693			

Packed: 1 pc.
Available EgiAs Coating Only.

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List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best





List 6500 (Continued)

ADO-3D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
650017111	11/64	-	-	4.37	0.1719	27	80	3/16	
8690440	-	-	-	4.40	0.1732			5	
8700440	-	-	-	4.46	0.1754			6	
650017511	-	-	-	4.50	0.1772			5	
8690450	-	-	-	4.60	0.1811	28		6	
8700450	-	-	-	4.66	0.1835	29		5	
8690460	-	-	-	4.70	0.1850			6	
8700460	-	-	-	4.76	0.1874			3/16	
650018311	3/16	-	-	4.80	0.1890			5	
8690470	-	-	-	4.90	0.1929	30		6	
8700470	-	-	-	5.00	0.1969	25		5	
650018711	-	-	-	5.10	0.2008	26		6	
8690480	-	-	-	5.15	0.2029		1/4		
8700480	-	-	-	5.18	0.2039		27	82	
8690490	-	-	-	5.20	0.2047				6
8700490	-	-	-	5.26	0.2070	5			
650020291	-	-	-	5.30	0.2087	6			
8690500	-	-	-	5.40	0.2126	28	1/4		
8700500	-	-	-	5.41	0.2130		88		
8690510	-	-	-	5.47	0.2152				7
650020211	13/64	-	-	5.50	0.2165				8
8690520	-	-	-	5.56	0.2189	7			
650020701	-	-	-	5.60	0.2205	31			8
8690530	-	-	-	5.70	0.2244				8
8700530	-	-	-	5.80	0.2283				7
650021211	-	-	-	5.90	0.2323			8	
8690540	-	-	-	5.95	0.2344	32		1/4	
650021521	-	-	-	6.00	0.2362			7	
8690550	-	-	-	6.10	0.2402			8	
650021711	7/32	-	-	6.15	0.2422			8	
8690560	-	-	-	6.20	0.2441	33	7		
8690570	-	-	-	6.30	0.2480		8		
8690580	-	-	-	6.35	0.2500		8		
8690590	-	-	-	6.40	0.2520		7		
650023311	15/64	-	-	6.40	0.2520	34	8		
8690600	-	-	-	6.50	0.2559		7		
8690610	-	-	-	6.53	0.2571		8		
8700610	-	-	-	6.60	0.2598		7		
650024211	-	-	-	6.65	0.2620	34	8		
8690620	-	-	-	6.70	0.2638		7		
8700620	-	-	-	-	-		8		
8690630	-	-	-	-	-		8		
8700630	-	-	-	-	-	8			
650025011	1/4	-	E	-	-	-	-		
8690640	-	-	-	-	-	-	-		
8700640	-	-	-	-	-	-	-		
8690650	-	-	-	-	-	-	-		
8700650	-	-	-	-	-	-	-		
650025611	-	-	F	-	-	-	-		
8690660	-	-	-	-	-	-	-		
8700660	-	-	-	-	-	-	-		
650026211	-	-	-	-	-	-	-		
8690670	-	-	-	-	-	-	-		
8700670	-	-	-	-	-	-	-		

Packed: 1 pc.
Available EgiAs Coating Only.





List 6500 (Continued)

ADO-3D, Coolant-Through

NEW
SPEED FEED P294
CARBIDE
EgiAs
30°
SHANK h6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
650026411	17/64	-	-	6.75	0.2657	34	88	5/16	
8690680	-	-	-	6.80	0.2677			7	
8700680	-	-	-	6.80	0.2677			8	
650026911	-	-	-	6.86	0.2701	35		7	
8690690	-	-	-	6.90	0.2717			8	
8700690	-	-	-	6.90	0.2717			7	
8690700	-	-	-	7.00	0.2756			8	
8700700	-	-	-	7.00	0.2756			7	
650027701	-	-	-	7.04	0.2770	36		8	
8690710	-	-	-	7.10	0.2795			5/16	
650028011	9/32	-	-	7.14	0.2811		37	94	
8690720	-	-	-	7.20	0.2835	8			
8690730	-	-	-	7.30	0.2874	5/16			
8690740	-	-	-	7.40	0.2913	8			
8690750	-	-	-	7.50	0.2953	8			
650029611	19/64	-	-	7.54	0.2969	38	5/16		
8690760	-	-	-	7.60	0.2992	39	101		
8690770	-	-	-	7.70	0.3031				8
8690780	-	-	-	7.80	0.3071				5/16
8690790	-	-	-	7.90	0.3110	40			8
650031211	5/16	-	-	7.94	0.3126			9	
8690800	-	-	-	8.00	0.3150			10	
8690810	-	-	-	8.10	0.3189	41		9	
8700810	-	-	-	8.10	0.3189			10	
650032111	-	-	-	8.15	0.3210			9	
8690820	-	-	-	8.20	0.3228			10	
8700820	-	-	-	8.20	0.3228		9		
8690830	-	-	-	8.30	0.3268	42	10		
8700830	-	-	-	8.30	0.3268		9		
650032711	21/64	-	-	8.33	0.3281		43	3/8	
8690840	-	-	-	8.40	0.3307	10			
8700840	-	-	-	8.40	0.3307	9			
650033011	-	-	Q	8.43	0.3319	44		10	
8690850	-	-	-	8.50	0.3346			9	
8700850	-	-	-	8.50	0.3346		10		
650033611	-	-	-	8.56	0.3371		45	9	
8690860	-	-	-	8.60	0.3386			10	
8700860	-	-	-	8.60	0.3386	9			
650034011	-	-	-	8.64	0.3402	44		10	
650034111	-	-	-	8.68	0.3416			9	
8690870	-	-	-	8.70	0.3425		10		
8700870	-	-	-	8.70	0.3425		3/8		
650034211	11/32	-	-	8.73	0.3437		45	9	
8690880	-	-	-	8.80	0.3465	10			
8700880	-	-	-	8.80	0.3465	9			
650034811	-	-	-	8.86	0.3488	45		10	
8690890	-	-	-	8.90	0.3504			9	
8700890	-	-	-	8.90	0.3504		10		
8690900	-	-	-	9.00	0.3543		9		
8700900	-	-	-	9.00	0.3543		10		

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best





List 6500 (Continued)

ADO-3D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8690910	-	-	-	9.10	0.3583			10
650035811	23/64	-	-	9.13	0.3594	46		3/8
8690920	-	-	-	9.20	0.3622			
8690930	-	-	-	9.30	0.3661	47		10
8690940	-	-	-	9.40	0.3701			
8690950	-	-	-	9.50	0.3740			
650037511	3/8	-	-	9.53	0.3752	48	106	3/8
650037601	-	-	-	9.55	0.3760			
8690960	-	-	-	9.60	0.3780			
8690970	-	-	-	9.70	0.3819	49		10
8690980	-	-	-	9.80	0.3858			
8690990	-	-	-	9.90	0.3898			
650038911	25/64	-	-	9.92	0.3906	50		7/16
8691000	-	-	-	10.00	0.3937			10
8691010	-	-	-					11
8701010	-	-	-	10.10	0.3976	51		12
8691020	-	-	-					11
8701020	-	-	-	10.20	0.4016			12
8691030	-	-	-					11
8701030	-	-	-	10.30	0.4055			12
650040511	13/32	-	-	10.32	0.4062	52		7/16
8691040	-	-	-	10.40	0.4094			11
8701040	-	-	-					12
650041011	-	-	-	10.44	0.4111			
8691050	-	-	-					11
8701050	-	-	-	10.50	0.4134	53	113	12
8691060	-	-	-					11
8701060	-	-	-	10.60	0.4173			12
8691070	-	-	-					11
8701070	-	-	-	10.70	0.4213			12
650042111	27/64	-	-	10.72	0.4220	54		7/16
8691080	-	-	-					11
8701080	-	-	-	10.80	0.4252			12
650042661	-	-	-	10.86	0.4276			
8691090	-	-	-					11
8701090	-	-	-	10.90	0.4291	55		12
8691100	-	-	-					11
8701100	-	-	-	11.00	0.4331			12
8691110	-	-	-					
650043711	7/16	-	-	11.11	0.4374	56		7/16
8691120	-	-	-	11.20	0.4409			
8691130	-	-	-					
8691140	-	-	-	11.30	0.4449	57		12
8691150	-	-	-	11.40	0.4488			
8691150	-	-	-	11.50	0.4528			
650045211	29/64	-	-	11.51	0.4531	58	120	1/2
8691160	-	-	-	11.60	0.4567			
8691170	-	-	-					
8691170	-	-	-	11.70	0.4606	59		12
8691180	-	-	-					
8691180	-	-	-	11.80	0.4646			
8691190	-	-	-					
8691190	-	-	-	11.90	0.4685			
650046711	15/32	-	-	11.91	0.4688	60		1/2
8691200	-	-	-					12
8691200	-	-	-	12.00	0.4724			
8691210	-	-	-					13
8701210	-	-	-	12.10	0.4764	61	128	14

Packed: 1 pc.
Available EgiAs Coating Only.





List 6500 (Continued)

ADO-3D, Coolant-Through

NEW
SPEED FEED P294
CARBIDE
EgiAs
30°
SHANK h6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8691220	-	-	-	12.20	0.4803	61	128	13
8701220	-	-	-					14
650048411	31/64	-	-					1/2
8691230	-	-	-	12.30	0.4844	62		13
8701230	-	-	-					14
8691240	-	-	-	12.40	0.4882	63		13
8701240	-	-	-					14
650049011	-	-	-	12.45	0.4900	64		14
8691250	-	-	-	12.50	0.4921			13
8701250	-	-	-			14		
8691260	-	-	-	12.60	0.4961	65		13
8701260	-	-	-					14
650049811	-	-	-	12.68	0.4991	66		14
650050011	1/2	-	-					1/2
8691270	-	-	-	12.70	0.5000	67	13	
8701270	-	-	-				14	
8691280	-	-	-	12.80	0.5039	68	13	
8701280	-	-	-				14	
8691290	-	-	-	12.90	0.5079	69	13	
8701290	-	-	-				14	
8691300	-	-	-	13.00	0.5118	70	13	
8701300	-	-	-				14	
650051501	-	-	-	13.08	0.5150	71	14	
8691310	-	-	-	13.10	0.5157			
8691320	-	-	-	13.20	0.5197	72	14	
8691330	-	-	-	13.30	0.5236			
8691340	-	-	-	13.40	0.5276	73	5/8	
650053011	17/32	-	-	13.49	0.5311			
8691350	-	-	-	13.50	0.5315	74	14	
8691360	-	-	-	13.60	0.5354			
8691370	-	-	-	13.70	0.5394	75	14	
8691380	-	-	-	13.80	0.5433			
650054601	-	-	-	13.87	0.5460	76	14	
8691390	-	-	-	13.90	0.5472			
8691400	-	-	-	14.00	0.5512	77	15	
8691410	-	-	-	14.10	0.5551			
8701410	-	-	-			78	16	
8691420	-	-	-	14.20	0.5591			
8701420	-	-	-			79	16	
650056111	9/16	-	-	14.29	0.5626			
8691430	-	-	-	14.30	0.5630	80	5/8	
8701430	-	-	-					
8691440	-	-	-	14.40	0.5669	81	15	
8701440	-	-	-					
8691450	-	-	-	14.50	0.5709	82	16	
8701450	-	-	-					
8691460	-	-	-	14.60	0.5748	83	15	
8701460	-	-	-					
650057711	37/64	-	-	14.68	0.5778	84	16	
8691470	-	-	-	14.70	0.5787			

Packed: 1 pc.
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continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 6500 (Continued)

ADO-3D, Coolant-Through



NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8701470	-	-	-	14.70	0.5787	74	140	16
8691480	-	-	-	14.80	0.5827			15
8701480	-	-	-	14.80	0.5827			16
8691490	-	-	-	14.90	0.5866	75	140	15
8701490	-	-	-	14.90	0.5866			16
8691500	-	-	-	15.00	0.5906			15
8691510	-	-	-	15.10	0.5945	76	145	16
8691520	-	-	-	15.20	0.5984			
8691530	-	-	-	15.30	0.6024	77		
8691540	-	-	-	15.40	0.6063		78	
8691550	-	-	-	15.50	0.6102	78	145	16
8691560	-	-	-	15.60	0.6142			
8691570	-	-	-	15.70	0.6181	79		
8691580	-	-	-	15.80	0.6220		80	
650062511	5/8	-	-	15.88	0.6252	80	150	5/8
8691590	-	-	-	15.90	0.6260			81
8691600	-	-	-	16.00	0.6299	81		150
650063311	-	-	-	16.10	0.6339		82	
8691650	-	-	-	16.50	0.6496	83	150	
8701650	-	-	-	16.50	0.6496			84
650065511	21/32	-	-	16.67	0.6563	85		155
650066311	-	-	-	16.84	0.6630		86	
8691700	-	-	-	17.00	0.6693	88	155	
8701700	-	-	-	17.00	0.6693			89
8691750	-	-	-	17.50	0.6890	90		155
650069321	-	-	-	17.61	0.6932		91	
650069601	-	-	-	17.68	0.6960	90	155	
650069801	-	-	-	17.73	0.6980			92
8691800	-	-	-	18.00	0.7087	93		160
8691850	-	-	-	18.50	0.7283		94	
8701850	-	-	-	18.50	0.7283	95	160	
650073311	-	-	-	18.64	0.7339			96
8691900	-	-	-	19.00	0.7480	95		160
8701900	-	-	-	19.00	0.7480		97	
650075011	3/4	-	-	19.05	0.7500	97	165	
650075711	-	-	-	19.25	0.7579			98
8691950	-	-	-	19.50	0.7677	100		165
650077401	-	-	-	19.66	0.7740		99	
650077661	-	-	-	19.73	0.7766	100	165	
650077801	-	-	-	19.76	0.7780			100
8692000	-	-	-	20.00	0.7874	100		

Packed: 1 pc.
Available EgiAs Coating Only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best





List 6510

ADO-5D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
651007812	-	-	-	2.00	0.0787	18	70	3
651008212	-	-	-	2.10	0.0827	19		
651008612	-	-	-	2.20	0.0866	20		
8692230	-	-	-	2.30	0.0906	21		
651009312	3/32	-	-	2.38	0.0937	22		
651009412	-	-	-	2.40	0.0945	23		
8692250	-	-	-	2.50	0.0984	23	78	3
8692260	-	-	-	2.60	0.1024	24		
651010612	-	-	-	2.70	0.1063	25		
8692278	7/64	-	-	2.78	0.1094	26		
8692280	-	-	-	2.80	0.1102	27		
8692290	-	-	-	2.90	0.1142	27		
8692300	-	-	-	3.00	0.1181	28	86	4
8692310	-	-	-	3.10	0.1220	29		
651012511	1/8	-	-	3.18	0.1252	29		
8692320	-	-	-	3.20	0.1260	30		
8692330	-	-	-	3.30	0.1299	31		
8692340	-	-	-	3.40	0.1339	32		
8692350	-	-	-	3.50	0.1378	33	95	4
8692360	-	-	-	3.60	0.1417	34		
8692370	-	-	-	3.70	0.1457	35		
8692380	-	-	-	3.80	0.1496	36		
8692390	-	-	-	3.90	0.1535	37		
651015511	5/32	-	-	3.97	0.1562	37		
8692400	-	-	-	4.00	0.1575	38	6	5
651016011	-	20	-	4.09	0.1610	38		
8692410	-	-	-	4.10	0.1614	39		
8702410	-	-	-	-	-	40		
8692420	-	-	-	4.20	0.1654	41		
8702420	-	-	-	-	-	42		
8692430	-	-	-	4.30	0.1693	43	5	6
8702430	-	-	-	-	-	44		
651017111	11/64	-	-	4.37	0.1719	45		
8692440	-	-	-	4.40	0.1732	46		
8702440	-	-	-	-	-	47		
8692450	-	-	-	4.50	0.1772	48		
8702450	-	-	-	-	-	49		
8692460	-	-	-	4.60	0.1811	50	3/16	5
8702460	-	-	-	-	-	51		
8692470	-	-	-	4.70	0.1850	52		
8702470	-	-	-	-	-	53		
651018711	3/16	-	-	4.76	0.1874	54		
8692480	-	-	-	4.80	0.1890	55		

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6510	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 6510 (Continued)

ADO-5D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8702480	-	-	-	4.80	0.1890	44	95	6
8692490	-	-	-	4.90	0.1929	45		5
8702490	-	-	-	5.00	0.1969			6
8692500	-	-	-	5.10	0.2008	41	5	
8702500	-	-	-	5.16	0.2031	42	6	
8692510	-	-	-	5.20	0.2047		6	
651020211	13/64	-	-	5.30	0.2087	43	100	1/4
8692520	-	-	-	5.40	0.2126	44		6
8692530	-	-	-	5.41	0.2130		44	1/4
8692540	-	3	-	5.50	0.2165	45	6	
651021311	-	-	-	5.56	0.2189		45	1/4
8692550	-	-	-	5.60	0.2205	46	6	
651021711	7/32	-	-	5.70	0.2244			46
8692560	-	-	-	5.70	0.2244	47	6	
8692570	-	-	-	5.80	0.2283			47
8692580	-	-	-	5.90	0.2323	48	109	
8692590	-	-	-	5.95	0.2344			48
651023311	15/64	-	-	6.00	0.2362	49	1/4	
8692600	-	-	-	6.10	0.2402		49	6
8692610	-	-	-	6.20	0.2441	50	7	
8702610	-	-	-	6.30	0.2480		50	8
8692620	-	-	-	6.30	0.2480	51	7	
8702620	-	-	-	6.35	0.2500		51	8
8692630	-	-	-	6.40	0.2520	52	1/4	
651025011	1/4	-	E	6.40	0.2520		52	7
8692640	-	-	-	6.50	0.2559	53	8	
8702640	-	-	-	6.53	0.2571		53	7
8692650	-	-	-	6.60	0.2598	54	8	
8702650	-	-	-	6.70	0.2638		54	7
651025611	-	-	F	6.70	0.2638	55	8	
8692660	-	-	-	6.75	0.2657		55	5/16
8702660	-	-	-	6.80	0.2677	56	7	
8692670	-	-	-	6.80	0.2677		56	8
8702670	-	-	-	6.90	0.2717	57	7	
651026411	17/64	-	-	6.90	0.2717		57	8
8692680	-	-	-	7.00	0.2756	58	7	
8702680	-	-	-	7.10	0.2795		58	8
8692690	-	-	-	7.10	0.2795	59	5/16	
8702690	-	-	-	7.14	0.2811		59	8
8692700	-	-	-	7.20	0.2835	60	8	
8692710	-	-	-	7.30	0.2874		60	7
651028011	9/32	-	-	7.40	0.2913	61	8	
8692720	-	-	-	7.50	0.2953		61	5/16
8692730	-	-	-	7.54	0.2969	62	8	
8692740	-	-	-	7.60	0.2992		62	7
8692750	-	-	-	7.70	0.3031	63	8	
651029611	19/64	-	-	7.80	0.3071		63	5/16
8692760	-	-	-	7.90	0.3110	64	8	
8692770	-	-	-	7.94	0.3126		64	5/16
8692780	-	-	-					
8692790	-	-	-					
651031211	5/16	-	-					

Packed: 1 pc.
Available EgiAs Coating Only.



List 6510 (Continued)

ADO-5D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8692800	-	-	-	8.00	0.3150	64	118	8
8692810	-	-	-	8.10	0.3189	65		9
8702810	-	-	-					10
8692820	-	-	-	8.20	0.3228	66		9
8702820	-	-	-					10
8692830	-	-	-	8.30	0.3268	67		9
8702830	-	-	-					10
651032711	21/64	-	-	8.33	0.3281			3/8
8692840	-	-	-	8.40	0.3307			9
8702840	-	-	-					10
651033111	-	-	Q	8.43	0.3319	68		11/32
8692850	-	-	-	8.50	0.3346		128	9
8702850	-	-	-					10
8692860	-	-	-	8.60	0.3386	69		9
8702860	-	-	-					10
8692870	-	-	-	8.70	0.3425			9
8702870	-	-	-			70		10
651034211	11/32	-	-	8.73	0.3437			3/8
8692880	-	-	-	8.80	0.3465	71		9
8702880	-	-	-					10
8692890	-	-	-	8.90	0.3504			9
8702890	-	-	-			72		10
8692900	-	-	-	9.00	0.3543			9
8702900	-	-	-					10
8692910	-	-	-	9.10	0.3583			10
651035811	23/64	-	-	9.13	0.3594	73		3/8
8692920	-	-	-	9.20	0.3622	74		
8692930	-	-	-	9.30	0.3661	75		10
8692940	-	-	-	9.40	0.3701			
8692950	-	-	-	9.50	0.3740	76		
651037511	3/8	-	-	9.53	0.3752		136	3/8
8692960	-	-	-	9.60	0.3780	77		
8692970	-	-	-	9.70	0.3819	78		
8692980	-	-	-	9.80	0.3858	79		10
8692990	-	-	-	9.90	0.3898			
651038911	25/64	-	-	9.92	0.3906	80		7/16
8693000	-	-	-	10.00	0.3937			10
8693010	-	-	-	10.10	0.3976	81		11
8703010	-	-	-					12
8693020	-	-	-	10.20	0.4016	82		11
8703020	-	-	-					12
8693030	-	-	-	10.30	0.4055			11
8703030	-	-	-			83		12
651040511	13/32	-	-	10.32	0.4062		146	7/16
8693040	-	-	-	10.40	0.4094			11
8703040	-	-	-			84		12
8693050	-	-	-	10.50	0.4134			11
8703050	-	-	-					12
8693060	-	-	-	10.60	0.4173	85		11

Packed: 1 pc.
Available EgiAs Coating Only.

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List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6510	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 6510 (Continued)

ADO-5D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8703060	-	-	-	10.60	0.4173	85	146	12
8693070	-	-	-	10.70	0.4213	86		11
8703070	-	-	-	10.72	0.4220			12
651042111	27/64	-	-	10.80	0.4252	87		7/16
8693080	-	-	-	10.90	0.4291			11
8703080	-	-	-	11.00	0.4331	88		12
8693090	-	-	-	11.10	0.4370			11
8703090	-	-	-	11.11	0.4374	89		12
8693100	-	-	-	11.20	0.4409			11
8703100	-	-	-	11.30	0.4449	90		12
8693110	-	-	-	11.40	0.4488		12	
651043711	7/16	-	-	11.50	0.4528	91	12	
8693120	-	-	-	11.51	0.4531			92
8693130	-	-	-	11.51	0.4531	92	1/2	
8693140	-	-	-	11.60	0.4567			93
8693150	-	-	-	11.70	0.4606	93	12	
651045211	29/64	-	-	11.80	0.4646			94
8693160	-	-	-	11.90	0.4685	94	12	
8693170	-	-	-	11.91	0.4688			95
8693180	-	-	-	12.00	0.4724	95	1/2	
8693190	-	-	-	12.10	0.4764			96
651046711	15/32	-	-	12.10	0.4764	96	12	
8693200	-	-	-	12.20	0.4803			97
8693210	-	-	-	12.20	0.4803	97	13	
8703210	-	-	-	12.30	0.4844			14
8693220	-	-	-	12.30	0.4844	98	13	
8703220	-	-	-	12.40	0.4882			14
651048411	31/64	-	-	12.40	0.4882	98	1/2	
8693230	-	-	-	12.50	0.4921			13
8703230	-	-	-	12.50	0.4921	99	14	
8693240	-	-	-	12.60	0.4961			13
8703240	-	-	-	12.60	0.4961	100	14	
8693250	-	-	-	12.70	0.5000			13
8693260	-	-	-	12.70	0.5000	101	1/2	
8703260	-	-	-	12.80	0.5039			14
651050011	1/2	-	-	12.80	0.5039	101	13	
8693270	-	-	-	12.90	0.5079			14
8703270	-	-	-	13.00	0.5118	102	14	
8693280	-	-	-	13.10	0.5157			13
8703280	-	-	-	13.20	0.5197	103	14	
8693290	-	-	-	13.30	0.5236			13
8703290	-	-	-	13.40	0.5276	104	14	
8693300	-	-	-	13.49	0.5311			13
8703300	-	-	-	13.50	0.5315	104	13	
8693310	-	-	-	13.60	0.5354			14
8693320	-	-	-	13.70	0.5394	105	14	
8693330	-	-	-	13.80	0.5433			110
8693340	-	-	-	13.80	0.5433	106	14	
651053011	17/32	-	-	13.90	0.5472			107
8693350	-	-	-	14.00	0.5512	107	5/8	
8693360	-	-	-	14.10	0.5551			108
8693370	-	-	-	14.20	0.5591	108	14	
8693380	-	-	-	14.30	0.5630			109
				14.40	0.5670	110		
				14.50	0.5709	111		

Packed: 1 pc.
Available EgiAs Coating Only.





List 6510 (Continued)

ADO-5D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8693390	-	-	-	13.90	0.5472	112	176	14
8693400	-	-	-	14.00	0.5512			15
8693410	-	-	-	14.10	0.5551	113		16
8693420	-	-	-	14.20	0.5591	114		15
8703420	-	-	-					16
651056111	9/16	-	-	14.29	0.5626			5/8
8693430	-	-	-	14.30	0.5630	115		15
8703430	-	-	-					16
8693440	-	-	-	14.40	0.5669			15
8703440	-	-	-			116		16
8693450	-	-	-	14.50	0.5709		185	15
8703450	-	-	-					16
8693460	-	-	-	14.60	0.5748	117		15
8703460	-	-	-					16
8693470	-	-	-	14.70	0.5787	118		15
8703470	-	-	-					16
8693480	-	-	-	14.80	0.5827	119		15
8703480	-	-	-					16
8693490	-	-	-	14.90	0.5866			15
8703490	-	-	-			120		16
8693500	-	-	-	15.00	0.5906			15
8703500	-	-	-					
8693510	-	-	-	15.10	0.5945	121		
8693520	-	-	-	15.20	0.5984	122		
8693530	-	-	-	15.30	0.6024	123		
8693540	-	-	-	15.40	0.6063			16
8693550	-	-	-	15.50	0.6102	124		
8693560	-	-	-	15.60	0.6142	125		
8693570	-	-	-	15.70	0.6181	126		
8693580	-	-	-	15.80	0.6220	127		
651062511	5/8	-	-	15.88	0.6252			5/8
8693590	-	-	-	15.90	0.6260	128		16
8693600	-	-	-	16.00	0.6299			
651063311	-	-	-	16.10	0.6339	129		18
8693650	-	-	-	16.50	0.6496	132		17
8703650	-	-	-					18
651065511	21/32	-	-	16.67	0.6563	134		3/4
8693700	-	-	-	17.00	0.6693	136		17
8703700	-	-	-					
8693750	-	-	-	17.50	0.6890	140		18
8693800	-	-	-	18.00	0.7087	144	209	
8693850	-	-	-	18.50	0.7283	148		19
8703850	-	-	-					20
8693900	-	-	-	19.00	0.7480	152		19
8703900	-	-	-					20
651075011	3/4	-	-	19.05	0.7500			3/4
651075711	-	-	-	19.25	0.7579	154		
8693950	-	-	-	19.50	0.7677	156		20
8694000	-	-	-	20.00	0.7874	160	225	

Packed: 1 pc.
Available EgiAs Coating Only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6510	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best

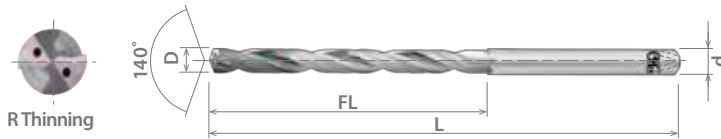




List 6520

ADO-8D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 15.88	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
*8694200	-	-	-	2.00	0.0787	22	75	3
*8694210	-	-	-	2.10	0.0827	24		
*8694220	-	-	-	2.20	0.0866	25		
*8694230	-	-	-	2.30	0.0906	26		
*652009312	3/32	-	-	2.38	0.0937	27		
*8694240	-	-	-	2.40	0.0945	28		
*8694250	-	-	-	2.50	0.0984	28		
*8694260	-	-	-	2.60	0.1024	29		
*8694270	-	-	-	2.70	0.1063	30		
*652010911	7/64	-	-	2.78	0.1094	31		
*8694280	-	-	-	2.80	0.1102	31		
*8694290	-	-	-	2.90	0.1142	32		
8694300	-	-	-	3.00	0.1181	33		
8694310	-	-	-	3.10	0.1220	34		
652012511	1/8	-	-	3.18	0.1252	35		
8694320	-	-	-	3.20	0.1260	36		
8694330	-	-	-	3.30	0.1299	37		
8694340	-	-	-	3.40	0.1339	37		
8694350	-	-	-	3.50	0.1378	39		
8694360	-	-	-	3.60	0.1417	40		
8694370	-	-	-	3.70	0.1457	41		
8694380	-	-	-	3.80	0.1496	42		
8694390	-	-	-	3.90	0.1535	43		
652015511	5/32	-	-	3.97	0.1563	44		
8694400	-	-	-	4.00	0.1575	44		
652016011	-	20	-	4.09	0.1610	45		
8704410	-	-	-	4.10	0.1614	46		
8704420	-	-	-	4.20	0.1654	46		
8704430	-	-	-	4.30	0.1693	47		
652017111	11/64	-	-	4.37	0.1720	47		
8704440	-	-	-	4.40	0.1732	48		
8694450	-	-	-	4.50	0.1772	50		
8704450	-	-	-	4.60	0.1811	51		
8704460	-	-	-	4.70	0.1850	52		
8704470	-	-	-	4.76	0.1874	52		
652018711	3/16	-	-	4.76	0.1874	52		
8704480	-	-	-	4.80	0.1890	53		
8704490	-	-	-	4.90	0.1929	54		
8694500	-	-	-	5.00	0.1969	55		
8704500	-	-	-	5.10	0.2008	56		
8704510	-	-	-	5.16	0.2031	57		
652020211	13/64	-	-	5.20	0.2047	57		
8704520	-	-	-	5.30	0.2087	58		
8704530	-	-	-	5.40	0.2126	59		
8704540	-	-	-	5.41	0.2130	60		
652021311	-	3	-	5.41	0.2130	60		
8694550	-	-	-	5.50	0.2165	61		
652021711	7/32	-	-	5.56	0.2189	61		
8704560	-	-	-	5.60	0.2205	62		
8704570	-	-	-	5.70	0.2244	63		

Packed: 1 pc.
 Available EgiAs Coating Only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.



List 6520 (Continued)

ADO-8D, Coolant-Through

NEW

SPEED
FEED
P294

CARBIDE

EgiAs

30°

SHANK
h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8704580	-	-	-	5.80	0.2283	64	115	6
8704590	-	-	-	5.90	0.2323	65		1/4
652023311	15/64	-	-	5.95	0.2343	66		6
8694600	-	-	-	6.00	0.2362	67	8	8
8704610	-	-	-	6.10	0.2402			
8704620	-	-	-	6.20	0.2441	68	125	7
8704630	-	-	-	6.30	0.2480	69		
652025011	1/4	-	-	6.35	0.2500	70	1/4	
8704640	-	-	-	6.40	0.2520		8	
8694650	-	-	-	6.50	0.2559	72	8	8
8704650	-	-	-					
652025611	-	-	F	6.53	0.2571	73	140	8
8704660	-	-	-	6.60	0.2598	74		
8704670	-	-	-	6.70	0.2638	75	150	5/16
652026411	17/64	-	-	6.75	0.2657	76		
8704680	-	-	-	6.80	0.2677	77	8	7
8704690	-	-	-	6.90	0.2717	78		
8694700	-	-	-	7.00	0.2756	79	8	8
8704700	-	-	-					
8704710	-	-	-	7.10	0.2795	80	140	5/16
652028011	9/32	-	-	7.14	0.2811	81		
8704720	-	-	-	7.20	0.2835	82	8	8
8704730	-	-	-	7.30	0.2874	83		
8704740	-	-	-	7.40	0.2913	84	150	3/8
8694750	-	-	-	7.50	0.2953	85		
652029611	19/64	-	-	7.54	0.2969	86	10	10
8704760	-	-	-	7.60	0.2992	87		
8704770	-	-	-	7.70	0.3031	88	8	8
8704780	-	-	-	7.80	0.3071	89		
8704790	-	-	-	7.90	0.3110	90	140	5/16
652031211	5/16	-	-	7.94	0.3126	91		
8694800	-	-	-	8.00	0.3150	92	8	8
8704810	-	-	-	8.10	0.3189	93		
8704820	-	-	-	8.20	0.3228	94	150	10
8704830	-	-	-	8.30	0.3268	95		
652032711	21/64	-	-	8.33	0.3280	96	3/8	10
8704840	-	-	-	8.40	0.3307	97		
652033111	-	-	Q	8.43	0.3319	98	11/32	9
8694850	-	-	-	8.50	0.3346	99		
8704850	-	-	-					
8704860	-	-	-	8.60	0.3386	100	8	8
8704870	-	-	-	8.70	0.3425	101		
652035211	11/32	-	-	8.73	0.3437	102	150	3/8
8704880	-	-	-	8.80	0.3465	103		
8704890	-	-	-	8.90	0.3504	104	10	10

Packed: 1 pc.
Available EgiAs Coating Only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

➔ continued on next page ➔

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6520	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best

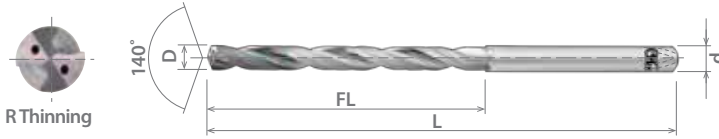




List 6520 (Continued)

ADO-8D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 15.88	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8694900	-	-	-	9.00	0.3543	99	150	9
8704900	-	-	-	9.10	0.3583	100		10
8704910	-	-	-	9.13	0.3594	101		3/8
652035711	23/64	-	-	9.20	0.3622	102	160	10
8704920	-	-	-	9.30	0.3661	103		
8704930	-	-	-	9.40	0.3701	105		
8704940	-	-	-	9.50	0.3740	106		
8694950	-	-	-	9.53	0.3752	107		
652037511	3/8	-	-	9.60	0.3780	108		
8704960	-	-	-	9.70	0.3819	109		
8704970	-	-	-	9.80	0.3858	110		
8704980	-	-	-	9.90	0.3898	111		
8704990	-	-	-	9.92	0.3906	112		
652038811	25/64	-	-	10.00	0.3937	113	182	7/16
8695000	-	-	-	10.10	0.3976	114		10
8705010	-	-	-	10.20	0.4016	115		12
8705020	-	-	-	10.30	0.4055	116		
8705030	-	-	-	10.32	0.4063	117		7/16
652040711	13/32	-	-	10.40	0.4094	118		12
8705040	-	-	-	10.50	0.4134	119		11
8695050	-	-	-	10.60	0.4173	120		12
8705050	-	-	-	10.70	0.4213	121		
8705060	-	-	-	10.72	0.4220	122		7/16
652042111	27/64	-	-	10.80	0.4252	123	194	12
8705080	-	-	-	10.90	0.4291	124		
8705090	-	-	-	11.00	0.4331	125		11
8695100	-	-	-	11.10	0.4370	126		12
8705100	-	-	-	11.11	0.4374	127		
652043811	7/16	-	-	11.20	0.4409	128		7/16
8705120	-	-	-	11.30	0.4449	129		12
8705130	-	-	-	11.40	0.4488	130		
8705140	-	-	-	11.50	0.4528	131		1/2
8695150	-	-	-	11.51	0.4531	132		
652045211	29/64	-	-	11.60	0.4567	133	206	14
8705160	-	-	-	11.70	0.4606	134		
8705170	-	-	-	11.80	0.4646	135		12
8705180	-	-	-	11.90	0.4685	136		
8705190	-	-	-	12.00	0.4724	137		13
8695200	-	-	-	12.10	0.4764	138		
8705210	-	-	-	12.20	0.4803	139		14
8705220	-	-	-	12.30	0.4843	140		
8705230	-	-	-	12.40	0.4882	141		13
8705240	-	-	-	12.50	0.4921	142		
8695250	-	-	-	12.60	0.4961	143	14	
8705250	-	-	-	12.70	0.5000	144		
8705260	-	-	-				1/2	1/2
652050011	1/2	-	-					

Packed: 1 pc.
 Available EgiAs Coating Only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.





List 6520 (Continued)

ADO-8D, Coolant-Through

NEW	SPEED FEED P294	CARBIDE	EgiAs		30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
652053011	17/32	-	-	13.49	0.5311	149	218	5/8
8705350	-	-	-	13.50	0.5315			14
8705400	-	-	-	14.00	0.5512			154
652056111	9/16	-	-	14.29	0.5626	157	230	5/8
8705450	-	-	-	14.50	0.5709	160		16
652062511	5/8	-	-	15.88	0.6252	175		5/8

Packed: 1 pc.

Available EgiAs Coating Only.

* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6520	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 6530

ADO-10D, Coolant-Through

NEW	SPEED FEED P295-297	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (e8)		
Size	mm	inch
2 ≤ D ≤ 3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015
6 < D ≤ 10	-0.025 / -0.047	-0.0010 / -0.0019
10 < D ≤ 14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
*653007812	-	-	-	2.00	0.0787	26	75	3
*653008212	-	-	-	2.10	0.0827			
*653008612	-	-	-	2.20	0.0866			
*653009012	-	-	-	2.30	0.0906			
*653009312	3/32	-	-	2.38	0.0937			
*653009412	-	-	-	2.40	0.0945			
*653009812	-	-	-	2.50	0.0984			
*653010212	-	-	-	2.60	0.1024			
*653010612	-	-	-	2.70	0.1063			
*653010912	7/64	-	-	2.78	0.1094			
*653011012	-	-	-	2.80	0.1102			
*653011412	-	-	-	2.90	0.1142			
8696300	-	-	-	3.00	0.1181	45	100	4
653012212	-	-	-	3.10	0.1220			
653012512	1/8	-	-	3.18	0.1252			
653012612	-	-	-	3.20	0.1260			
653012912	-	-	-	3.30	0.1299			
653013312	-	-	-	3.40	0.1339			
8696350	-	-	-	3.50	0.1378			
653014112	-	-	-	3.60	0.1417			
653014512	-	-	-	3.70	0.1457			
653014912	-	25	-	3.80	0.1496			
653015312	-	-	-	3.90	0.1535			
653015612	5/32	-	-	3.97	0.1563	55	115	4
8696400	-	-	-	4.00	0.1575			
653016012	-	20	-	4.09	0.1610			
8710410	-	-	-	4.10	0.1614			
8710420	-	-	-	4.20	0.1654			
8710430	-	-	-	4.30	0.1693			
8710440	-	-	-	4.40	0.1732			
8696450	-	16	-	4.50	0.1772			
8710450	-	16	-	4.60	0.1811			
8710460	-	-	-	4.60	0.1811			
8710470	-	13	-	4.70	0.1850			
653018712	3/16	-	-	4.76	0.1874	60	128	6
8710480	-	12	-	4.80	0.1890			
8710490	-	-	-	4.90	0.1929			
8696500	-	-	-	5.00	0.1969			
8710500	-	-	-	5.00	0.1969			
653020012	-	-	-	5.10	0.2008			
653020212	13/64	-	-	5.16	0.2031			
653020412	-	-	-	5.20	0.2047			
653020812	-	-	-	5.30	0.2087			
653021212	-	-	-	5.40	0.2126			
653021112	-	3	-	5.41	0.2130	70	6	1/4
8696550	-	-	-	5.50	0.2165			
653021712	7/32	-	-	5.56	0.2189			
653022012	-	-	-	5.60	0.2205			
653022412	-	-	-	5.70	0.2244			
653022812	-	-	-	5.80	0.2283			
653022812	-	-	-	5.80	0.2283			

Packed: 1 pc.
 Available EgiAs Coating Only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.





List 6530 (Continued)

ADO-10D, Coolant-Through

NEW

SPEED
FEED
P295-297

CARBIDE

EgiAs

30°

SHANK
h6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d		
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
653023212	-	-	-	5.90	0.2323	78	128	6		
8696600	-	-	-	6.00	0.2362					
8710610	-	-	-	6.10	0.2402	87	140	8		
8696620	-	-	-	6.20	0.2441			7		
8710620	-	-	-	6.30	0.2480			8		
653025012	1/4	-	E	6.35	0.2500			1/4		
8710640	-	-	-	6.40	0.2520			8		
8696650	-	-	-	6.50	0.2559			7		
8710650	-	-	-	6.53	0.2571			8		
653025612	-	-	F	6.60	0.2598					
8710660	-	-	-	6.70	0.2638			90	165	5/16
8710670	-	-	-	6.75	0.2657					8
653026412	17/64	-	-	6.80	0.2677	7				
8710680	-	-	-	6.90	0.2717	8				
8710690	-	-	I	7.00	0.2756	7				
8696700	-	-	-	7.10	0.2795	8				
8710700	-	-	-	7.14	0.2811	100	155			5/16
653027912	-	-	-	7.20	0.2835					8
653028012	9/32	-	-	7.30	0.2874					7
653028312	-	-	-	7.40	0.2913					8
653028712	-	-	-	7.50	0.2953			105	165	8
653029112	-	-	-	7.60	0.2992					7
8696750	-	-	-	7.70	0.3031					8
653029912	-	-	-	7.80	0.3071					7
653030312	-	-	-	7.90	0.3110					8
653030712	-	-	-	7.94	0.3126					5/16
653031112	-	-	-	8.00	0.3150	8				
653031212	5/16	-	-	8.10	0.3189	110	165			10
8696800	-	-	-	8.20	0.3228					9
8710810	-	-	-	8.30	0.3268					10
8710820	-	-	P	8.40	0.3307			9		
8696830	-	-	-	8.43	0.3319			10		
8710830	-	-	-	8.50	0.3346			9		
8710840	-	-	-	8.60	0.3386			10		
653033112	-	-	Q	8.70	0.3425			115	165	10
8696850	-	-	-	8.73	0.3437					3/8
8710850	-	-	-	8.80	0.3465					10
8710860	-	-	-	8.90	0.3504	9				
8710870	-	-	-	9.00	0.3543	10				
653034212	11/32	-	-			9				
8710880	-	-	-			10				
8710890	-	-	-			9				
8696900	-	-	-			10				
8710900	-	-	-			10				

Packed: 1 pc.
Available EgiAs Coating Only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

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Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6530	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		

☐ good ☐ best





List 6530 (Continued)

ADO-10D, Coolant-Through

NEW	SPEED FEED P295-297	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (e8)		
Size	mm	inch
2 ≤ D ≤ 3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015
6 < D ≤ 10	-0.025 / -0.047	-0.0010 / -0.0019
10 < D ≤ 14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
653035812	-	-	-	9.10	0.3583	125	190	10
653036212	-	-	-	9.20	0.3622			
653036612	-	-	-	9.30	0.3661			
653037012	-	-	-	9.40	0.3701			
8696950	-	-	-	9.50	0.3740			
653037512	3/8	-	-	9.53	0.3752	130	190	3/8
653037812	-	-	-	9.60	0.3780			
653038112	-	-	-	9.70	0.3819			
653038512	-	-	W	9.80	0.3858			
653038912	-	-	-	9.90	0.3898			
8697000	-	-	-	10.00	0.3937	140	205	12
8711010	-	-	-	10.10	0.3976			
8711020	-	-	-	10.20	0.4016			
8711030	-	-	-	10.30	0.4055			
8711040	-	-	-	10.40	0.4094			
8711050	-	-	-	10.50	0.4134	145	205	12
8711060	-	-	-	10.60	0.4173			
8711070	-	-	-	10.70	0.4213			
653042312	27/64	-	-	10.72	0.4220			
8711080	-	-	-	10.80	0.4252			
8711090	-	-	-	10.90	0.4291	155	215	12
8697100	-	-	-	11.00	0.4331			
8711100	-	-	-	11.10	0.4370			
653043712	-	-	-	11.10	0.4370			
653043812	7/16	-	-	11.11	0.4374			
653044012	-	-	-	11.20	0.4409	180	230	5/8
653044412	-	-	-	11.30	0.4449			
653044812	-	-	-	11.40	0.4488			
653045212	-	-	-	11.50	0.4528			
653045412	29/64	-	-	11.51	0.4531			
653045612	-	-	-	11.60	0.4567	180	230	5/8
653046012	-	-	-	11.70	0.4606			
653046412	-	-	-	11.80	0.4646			
653046812	-	-	-	11.90	0.4685			
8697200	-	-	-	12.00	0.4724			
8711250	-	-	-	12.50	0.4921	180	230	5/8
653050012	1/2	-	-	12.70	0.5000			
653056112	9/16	-	-	14.29	0.5626			

Packed: 1 pc.
 Available EgiAs Coating Only.
 * Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6530	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 6535

ADO-15D, Coolant-Through

NEW SPEED FEED P295-297 CARBIDE EgiAs 30° SHANK h6



Cutting Diameter Tolerance (e8)		
Size	mm	inch
D=3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015
6 < D ≤ 10	-0.025 / -0.047	-0.0010 / -0.0019
10 < D ≤ 14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8698300	-	-	-	3.00	0.1181	55	105	3
653512512	1/8	-	-	3.18	0.1252	60	125	1/8
8698320	-	-	-	3.20	0.1260	65		4
8698350	-	-	-	3.50	0.1378		75	5/32
653514112	9/64	-	-	3.57	0.1406	85		3/16
653515612	5/32	-	-	3.97	0.1563		90	4
8698400	-	-	-	4.00	0.1575	95		3/16
653517212	11/64	-	-	4.37	0.1720		110	6
8712440	-	-	-	4.40	0.1732	120		6
8712450	-	-	-	4.50	0.1772		125	3/16
653518712	3/16	-	-	4.76	0.1874	135		6
8712480	-	-	-	4.80	0.1890		145	6
8712500	-	-	-	5.00	0.1969	155		6
8712510	-	-	-	5.10	0.2008		160	1/4
653520312	13/64	-	-	5.16	0.2031	170		6
8712520	-	-	-	5.20	0.2047		175	6
653521312	-	-	-	5.41	0.2130	180		6
8698550	-	-	-	5.50	0.2165		185	6
653521912	7/32	-	-	5.56	0.2189	190		1/4
653523412	15/64	-	-	5.95	0.2343		195	6
8698600	-	-	-	6.00	0.2362	200		6
8712620	-	-	-	6.20	0.2441		205	8
653525012	1/4	-	-	6.35	0.2500	210		1/4
8712650	-	-	-	6.50	0.2559		215	8
653526612	17/64	-	-	6.75	0.2657	220		8
8712700	-	-	-	7.00	0.2756		225	5/16
653528112	9/32	-	-	7.14	0.2811	230		8
8698750	-	-	-	7.50	0.2953		235	8
653529712	19/64	-	-	7.54	0.2969	240		5/16
653531312	5/16	-	-	7.94	0.3126		245	5/16
8698800	-	-	-	8.00	0.3150	250		8
8712810	-	-	-	8.10	0.3189		255	10
8712820	-	-	-	8.20	0.3228	260		10
653532812	21/64	-	-	8.33	0.3280		265	3/8
8712850	-	-	-	8.50	0.3346	270		10
653534412	11/32	-	-	8.73	0.3437		275	3/8
8712900	-	-	-	9.00	0.3543	280		10
653535912	23/64	-	-	9.13	0.3594		285	3/8
8712940	-	-	-	9.40	0.3701	290		10
8698950	-	-	-	9.50	0.3740			

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6535	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

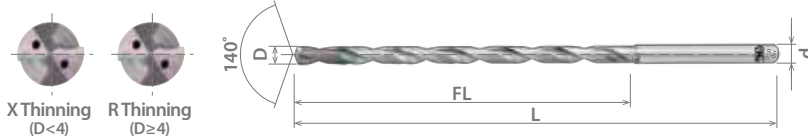




List 6535 (Continued)

ADO-15D, Coolant-Through

NEW	SPEED FEED P295-297	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (e8)		
Size	mm	inch
D=3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015
6 < D ≤ 10	-0.025 / -0.047	-0.0010 / -0.0019
10 < D ≤ 14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
653537512	3/8	-	-	9.53	0.3752	180	240	3/8
8712980	-	-	-	9.80	0.3858			10
653539112	25/64	-	-	9.92	0.3906	190	260	7/16
8699000	-	-	-	10.00	0.3937			10
653540612	13/32	-	-	10.32	0.4063	200	280	7/16
8713050	-	-	-	10.50	0.4134			12
653542212	27/64	-	-	10.72	0.4220	210	300	7/16
8713100	-	-	-	11.00	0.4331			12
653543712	7/16	-	-	11.11	0.4374	215	315	7/16
8713150	-	-	-	11.50	0.4528			12
653545312	29/64	-	-	11.51	0.4531	225	290	1/2
653546912	15/32	-	-	11.91	0.4689			12
8699200	-	-	-	12.00	0.4724	230	295	1/2
8713250	-	-	-	12.50	0.4921			14
653550012	1/2	-	-	12.70	0.5000	245	315	1/2
653553112	17/32	-	-	13.49	0.5311			5/8
653556312	9/16	-	-	14.29	0.5626	260	330	5/8

Packed: 1 pc.
Available EgiAs Coating Only.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6535	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 6540

ADO-20D, Coolant-Through

NEW SPEED FEED P295-297 CARBIDE EgiAs 30° SHANK h6



Cutting Diameter Tolerance (e8)		
Size	mm	inch
D=3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015
6 < D ≤ 10	-0.025 / -0.047	-0.0010 / -0.0019
10 < D ≤ 14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8706300	-	-	-	3.00	0.1181	70	120	3
654012512	1/8	-	-	3.18	0.1252	80	140	1/8
8706320	-	-	-	3.20	0.1260	85	140	4
8706350	-	-	-	3.50	0.1378	90	140	5/32
654014012	9/64	-	-	3.57	0.1406	90	140	3/16
654015612	5/32	-	-	3.97	0.1563	110	165	4
8706400	-	-	-	4.00	0.1575	110	165	3/16
654017212	11/64	-	-	4.37	0.1720	115	165	5
8706450	-	16	-	4.50	0.1772	115	165	6
8714450	-	16	-	4.76	0.1874	120	190	3/16
654018712	3/16	-	-	4.80	0.1890	120	190	6
8714480	-	-	-	5.00	0.1969	140	190	5
8706500	-	-	-	5.10	0.2008	140	190	6
8714500	-	-	-	5.16	0.2031	155	210	1/4
8714510	-	-	-	5.20	0.2047	155	210	6
654020212	13/64	-	-	5.20	0.2047	155	210	1/4
8714520	-	-	-	5.41	0.2130	160	230	6
654021312	-	-	-	5.50	0.2165	170	230	5/16
8706550	-	-	-	5.56	0.2189	170	230	8
654021712	7/32	-	-	5.95	0.2343	180	260	5/16
654023412	15/64	-	-	6.00	0.2362	180	260	8
8706600	-	-	-	6.20	0.2441	195	260	10
8714620	-	-	-	6.35	0.2500	195	260	3/8
654025012	1/4	-	E	6.50	0.2559	210	260	9
8706650	-	-	-	6.50	0.2559	210	260	10
8714650	-	-	-	6.75	0.2657	210	260	3/8
654026412	17/64	-	-	7.00	0.2756	210	260	9
8706700	-	-	-	7.14	0.2811	210	260	10
8714700	-	-	-	7.50	0.2953	210	260	3/8
654028012	9/32	-	-	7.54	0.2969	210	260	9
8706750	-	-	-	7.94	0.3126	210	260	10
654029612	19/64	-	-	8.00	0.3150	210	260	3/8
654031212	5/16	-	-	8.10	0.3189	210	260	9
8706800	-	-	-	8.33	0.3280	210	260	10
8714810	-	-	-	8.50	0.3346	210	260	3/8
654032812	21/64	-	-	8.73	0.3437	210	260	9
8706850	-	-	-	9.00	0.3543	210	260	10
8714850	-	-	-					
654034212	11/32	-	-					
8706900	-	-	-					

Packed: 1 pc.
Available EgiAs Coating Only.

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List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6540	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

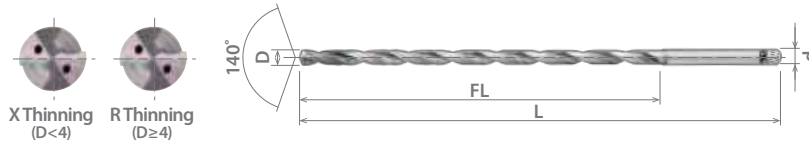




List 6540 (Continued)

ADO-20D, Coolant-Through

NEW	SPEED FEED P295-297	CARBIDE	EgiAs		30°	SHANK h6
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Cutting Diameter Tolerance (e8)		
Size	mm	inch
D=3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015
6 < D ≤ 10	-0.025 / -0.047	-0.0010 / -0.0019
10 < D ≤ 14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8714900	-	-	-	9.00	0.3543	210	260	10
654035912	23/64	-	-	9.13	0.3594	220	290	3/8
8714940	-	-	-	9.40	0.3701			10
8706950	-	-	-	9.50	0.3740			3/8
654037512	3/8	-	-	9.53	0.3752			10
8714980	-	-	-	9.80	0.3858	230	290	7/16
654039012	25/64	-	-	9.92	0.3906			10
8707000	-	-	-	10.00	0.3937	250	310	12
654040612	13/32	-	-	10.32	0.4063			7/16
8715050	-	-	-	10.50	0.4134			12
654042112	27/64	-	-	10.72	0.4220			7/16
8707100	-	-	-	11.00	0.4331	270	330	11
8715100	-	-	-					12
654043712	7/16	-	-	11.11	0.4374			7/16
654045212	-	-	-	11.50	0.4528			12
654045412	29/64	-	-	11.51	0.4531	280	330	1/2
654046812	15/32	-	-	11.91	0.4689			12
8707200	-	-	-	12.00	0.4724	310	380	14
8715250	-	-	-	12.50	0.4921			1/2
654050012	1/2	-	-	12.70	0.5000			1/2
654053112	17/32	-	-	13.49	0.5311			5/8
654056112	9/16	-	-	14.29	0.5626	315	365	

Packed: 1 pc.
Available EgiAs Coating Only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6540	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 6550

ADO-30D, Coolant-Through

NEW SPEED FEED P295-297 **CARBIDE** EgiAs 30° h6



Cutting Diameter Tolerance (e8)		
Size	mm	inch
D=3	-0.014 / -0.028	-0.0006 / -0.0011
3 < D ≤ 6	-0.020 / -0.038	-0.0008 / -0.0015
6 < D ≤ 10	-0.025 / -0.047	-0.0010 / -0.0019
10 < D ≤ 14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					xD	Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d
655011812	-	-	-	3.00	0.1181	25 x D	85	135	3
655012512	1/8	-	-	3.18	0.1252		95	165	1/8
8708320	-	-	-	3.20	0.1260		105	185	4
8708350	-	-	-	3.50	0.1378		116		5/32
655014012	9/64	-	-	3.57	0.1406		132		3/16
655015612	5/32	-	-	3.97	0.1563				4
8708400	-	-	-	4.00	0.1575		150	3/16	
655017212	11/64	-	-	4.37	0.1720			5	
8708450	-	16	-	4.50	0.1772		155	6	
8716450	-	16	-	4.50	0.1772			3/16	
655018712	3/16	-	-	4.76	0.1874		165	210	6
8716480	-	-	-	4.80	0.1890			5	
8708500	-	-	-	5.00	0.1969		180	215	6
8716500	-	-	-	5.00	0.1969			6	
8716510	-	-	-	5.10	0.2008		200	250	1/4
655020212	13/64	-	-	5.16	0.2031				6
8716520	-	-	-	5.20	0.2047	215	280	1/4	
655021312	-	-	-	5.41	0.2130			8	
8708550	-	-	-	5.50	0.2165	230	315	6	
655021712	7/32	-	-	5.56	0.2189			7	
655023412	15/64	-	-	5.95	0.2343	250	350	8	
8708600	-	-	-	6.00	0.2362			5/16	
8716620	-	-	-	6.20	0.2441	265	350	7	
655025012	1/4	-	E	6.35	0.2500			8	
8708650	-	-	-	6.50	0.2559	280	350	8	
8716650	-	-	-	6.50	0.2559			10	
655026412	17/64	-	-	6.75	0.2657	300	350	3/8	
8708700	-	-	-	7.00	0.2756			9	
8716700	-	-	-	7.00	0.2756	280	350	10	
655028012	9/32	-	-	7.14	0.2811			3/8	
8708750	-	-	-	7.50	0.2953	280	350	10	
655029612	19/64	-	-	7.54	0.2969			3/8	
655031212	5/16	-	-	7.94	0.3126	280	350	10	
8708800	-	-	-	8.00	0.3150			3/8	
8716810	-	-	-	8.10	0.3189	280	350	10	
655032812	21/64	-	-	8.33	0.3280			3/8	
8708850	-	-	-	8.50	0.3346	280	350	10	
8716850	-	-	-	8.50	0.3346			3/8	
655034212	11/32	-	-	8.73	0.3437	300	350	3/8	

Packed: 1 pc.
Available EgiAs Coating Only.

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List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6550	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 6550 (Continued)

ADO-30D, Coolant-Through

NEW SPEED FEED P295-297 **CARBIDE** EgiAs 30° h6



Cutting Diameter Tolerance (e8)		
Size	mm	inch
D=3	-0.014 / -0.028	-0.0006 / -0.0011
3<D≤6	-0.020 / -0.038	-0.0008 / -0.0015
6<D≤10	-0.025 / -0.047	-0.0010 / -0.0019
10<D≤14.29	-0.032 / -0.059	-0.0013 / -0.0023

EDP Number	Diameter					xD	Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d
8708900	-	-	-	9.00	0.3543	30 x D	300	350	9
8716900	-	-	-						10
655035912	23/64	-	-	9.13	0.3594		315	390	3/8
8716940	-	-	-	9.40	0.3701				10
8708950	-	-	-	9.50	0.3740				3/8
655037512	3/8	-	-	9.53	0.3752		330	390	10
8716980	-	-	-	9.80	0.3858				7/16
655039012	25/64	-	-	9.92	0.3906		340	400	10
8709000	-	-	-	10.00	0.3937				7/16
655040612	13/32	-	-	10.32	0.4063		350	400	12
655041212	-	-	-	10.50	0.4134				7/16
655042112	27/64	-	-	10.72	0.4220		28 x D	340	12
655043212	-	-	-	11.00	0.4331				14
655043712	7/16	-	-	11.11	0.4374		25 x D	350	1/2
655045212	-	-	-	11.50	0.4528				12
655045412	29/64	-	-	11.51	0.4531		26 x D	340	12
655046812	15/32	-	-	11.91	0.4689				14
655047212	-	-	-	12.00	0.4724		25 x D	350	1/2
655049112	-	-	-	12.50	0.4921	1/2			
655050012	1/2	-	-	12.70	0.5000	22 x D	340	5/8	
655053112	17/32	-	-	13.49	0.5311			350	
655056112	9/16	-	-	14.29	0.5626				

Packed: 1 pc.
Available EgiAs Coating Only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6550	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

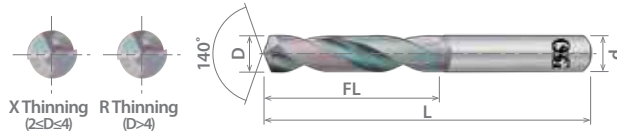




List 6300

AD-2D

NEW	SPEED FEED P298	CARBIDE	EgiAs	30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d			
	Fractional Size	Wire Gage	Letter Size	mm	Inch						
8670200	-	-	-	2.00	0.0787	14	62	4			
8670210	-	-	-	2.10	0.0827						
8670220	-	-	-	2.20	0.0866						
8670230	-	-	-	2.30	0.0906						
8670240	-	-	-	2.40	0.0945						
8670250	-	-	-	2.50	0.0984						
8670260	-	-	-	2.60	0.1024						
8670270	-	-	-	2.70	0.1063						
8670280	-	-	-	2.80	0.1102						
8670290	-	-	-	2.90	0.1142						
8670300	-	-	-	3.00	0.1181						
8670310	-	-	-	3.10	0.1220						
630012311	1/8	-	-	3.17	0.1248				20	66	1/8
8670320	-	-	-	3.20	0.1260						
8670330	-	-	-	3.30	0.1299						
8670340	-	-	-	3.40	0.1339						
8670350	-	-	-	3.50	0.1378						
8670360	-	-	-	3.60	0.1417						
8670370	-	-	-	3.70	0.1457						
8670380	-	25	-	3.80	0.1496						
8670390	-	-	-	3.90	0.1535						
630015511	5/32	-	-	3.97	0.1563						
8670400	-	-	-	4.00	0.1575						
630016111	-	20	-	4.09	0.1610	24	66	6			
8670410	-	-	-	4.10	0.1614						
8670420	-	-	-	4.20	0.1654						
8670430	-	-	-	4.30	0.1693						
630017111	11/64	-	-	4.37	0.1720						
8670440	-	-	-	4.40	0.1732						
8670450	-	16	-	4.50	0.1772						
8670460	-	-	-	4.60	0.1811						
8670470	-	13	-	4.70	0.1850						
630018611	3/16	-	-	4.76	0.1874				28	66	6
8670480	-	12	-	4.80	0.1890						
8670490	-	-	-	4.90	0.1929						
8670500	-	-	-	5.00	0.1969						
8670510	-	-	-	5.10	0.2008						
630020211	13/64	-	-	5.16	0.2031						
8670520	-	-	-	5.20	0.2047						
8670530	-	-	-	5.30	0.2087						

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6300	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

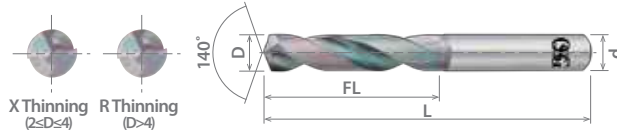




List 6300 (Continued)

NEW	SPEED FEED P298	CARBIDE	EgiAs	30°	SHANK h6
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AD-2D



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8670540	-	-	-	5.40	0.2126	28	66	6
630021311	-	3	-	5.41	0.2130			
8670550	-	-	-	5.50	0.2165			
630021711	7/32	-	-	5.56	0.2189			
8670560	-	-	-	5.60	0.2205			
8670570	-	-	-	5.70	0.2244			
8670580	-	-	-	5.80	0.2283			
8670590	-	-	-	5.90	0.2323			
630023311	15/64	-	-	5.95	0.2343			
8670600	-	-	-	6.00	0.2362			
8670610	-	-	-	6.10	0.2402	34	79	8
8670620	-	-	-	6.20	0.2441			
8670630	-	-	-	6.30	0.2480			
630024911	1/4	-	E	6.35	0.2500			
8670640	-	-	-	6.40	0.2520			
8670650	-	-	-	6.50	0.2559			
630025711	-	-	F	6.53	0.2571			
8670660	-	-	-	6.60	0.2598			
8670670	-	-	-	6.70	0.2638			
630026411	17/64	-	-	6.75	0.2657			
8670680	-	-	-	6.80	0.2677	41	79	8
8670690	-	-	I	6.90	0.2717			
8670700	-	-	-	7.00	0.2756			
8670710	-	-	-	7.10	0.2795			
630028011	9/32	-	-	7.14	0.2811			
8670720	-	-	-	7.20	0.2835			
8670730	-	-	-	7.30	0.2874			
8670740	-	-	-	7.40	0.2913			
8670750	-	-	-	7.50	0.2953			
630029511	19/64	-	-	7.54	0.2969			
8670760	-	-	-	7.60	0.2992	47	89	10
8670770	-	-	-	7.70	0.3031			
8670780	-	-	-	7.80	0.3071			
8670790	-	-	-	7.90	0.3110			
630031111	5/16	-	-	7.94	0.3126			
8670800	-	-	-	8.00	0.3150			
8670810	-	-	-	8.10	0.3189			
8670820	-	-	P	8.20	0.3228			
8670830	-	-	-	8.30	0.3268			
630032711	21/64	-	-	8.33	0.3280			
8670840	-	-	-	8.40	0.3307	47	89	10
630033111	-	-	Q	8.43	0.3319			
8670850	-	-	-	8.50	0.3346			
8670860	-	-	-	8.60	0.3386			
8670870	-	-	-	8.70	0.3425			
630034211	11/32	-	-	8.73	0.3437			
8670880	-	-	-	8.80	0.3465			
8670890	-	-	-	8.90	0.3504			
8670900	-	-	-	9.00	0.3543			

Packed: 1 pc.
Available EgiAs Coating Only.



List 6300 (Continued)

AD-2D

NEW

SPEED FEED
P298

CARBIDE

EgiAs

30°

SHANK
h6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8670910	-	-	-	9.10	0.3583	47	89	10
630035811	23/64	-	-	9.13	0.3594			3/8
8670920	-	-	-	9.20	0.3622			10
8670930	-	-	-	9.30	0.3661			
8670940	-	-	-	9.40	0.3701			
8670950	-	-	-	9.50	0.3740			
630037411	3/8	-	-	9.52	0.3748			3/8
8670960	-	-	-	9.60	0.3780			10
8670970	-	-	-	9.70	0.3819			
8670980	-	-	W	9.80	0.3858			
8670990	-	-	-	9.90	0.3898			
630038911	25/64	-	-	9.92	0.3906	7/16		
8671000	-	-	-	10.00	0.3937	10		
8671010	-	-	-	10.10	0.3976	12		
8671020	-	-	-	10.20	0.4016			
8671030	-	-	-	10.30	0.4055			
630040511	13/32	-	-	10.32	0.4063		7/16	
8671040	-	-	-	10.40	0.4094		12	
8671050	-	-	-	10.50	0.4134			
8671060	-	-	-	10.60	0.4173			
8671070	-	-	-	10.70	0.4213			
630042111	27/64	-	-	10.72	0.4220		7/16	
8671080	-	-	-	10.80	0.4252		12	
8671090	-	-	-	10.90	0.4291			
8671100	-	-	-	11.00	0.4331			
8671110	-	-	-	11.10	0.4370			
630043711	7/16	-	-	11.11	0.4374	7/16		
8671120	-	-	-	11.20	0.4409	12		
8671130	-	-	-	11.30	0.4449			
8671140	-	-	-	11.40	0.4488			
8671150	-	-	-	11.50	0.4528			
630045211	29/64	-	-	11.51	0.4531	1/2		
8671160	-	-	-	11.60	0.4567	12		
8671170	-	-	-	11.70	0.4606			
8671180	-	-	-	11.80	0.4646			
8671190	-	-	-	11.90	0.4685			
630046811	15/32	-	-	11.91	0.4689	1/2		
8671200	-	-	-	12.00	0.4724	12		
630047611	-	-	-	12.10	0.4764	14		
630048011	-	-	-	12.20	0.4803			
630048311	31/64	-	-	12.30	0.4843		1/2	
630048811	-	-	-	12.40	0.4882		14	
630049211	-	-	-	12.50	0.4921			
630049611	-	-	-	12.60	0.4961			
630049911	1/2	-	-	12.70	0.5000			
630050311	-	-	-	12.80	0.5039		1/2	
							14	

Packed: 1 pc.
Available EgiAs Coating Only.

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Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6300	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

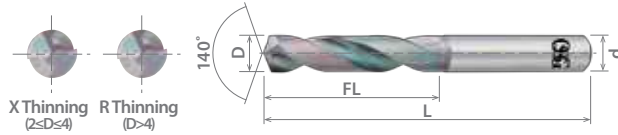
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List 6300 (Continued)

AD-2D



NEW	SPEED FEED P298	CARBIDE	EgiAs	30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
630050711	-	-	-	12.90	0.5079	60	107	14
630051111	-	-	-	13.00	0.5118			5/8
630051411	33/64	-	-	13.10	0.5157			14
630051911	-	-	-	13.20	0.5197			5/8
630052311	-	-	-	13.30	0.5236			16
630052711	-	-	-	13.40	0.5276	65	115	14
630053211	-	-	-	13.50	0.5315			5/8
630055111	-	-	-	14.00	0.5512			16
630056111	9/16	-	-	14.29	0.5626			5/8
630057011	-	-	-	14.50	0.5709			16
630059011	-	-	-	15.00	0.5906	73	123	16
630061011	-	-	-	15.50	0.6102			5/8
630062311	5/8	-	-	15.87	0.6248			16
630062911	-	-	-	16.00	0.6299			18
630064911	-	-	-	16.50	0.6496			79
630066911	-	-	-	17.00	0.6693	20		
630068911	-	-	-	17.50	0.6890	3/4		
630070811	-	-	-	18.00	0.7087	20		
630072811	-	-	-	18.50	0.7283	3/4		
630074811	-	-	-	19.00	0.7480	630076711	20	20
630074911	3/4	-	-	19.05	0.7500			20
630076711	-	-	-	19.50	0.7677			20
630078711	-	-	-	20.00	0.7874			

Packed: 1 pc.
Available EgiAs Coating Only.



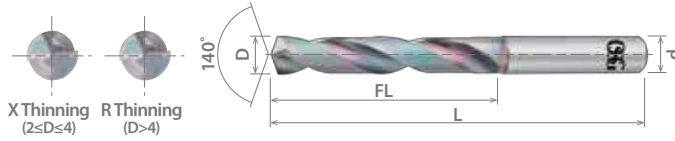
Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6300	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best



List 6310

AD-4D



NEW	SPEED FEED P298	CARBIDE	EgiAs	30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8672200	-	-	-	2.00	0.0787	20	66	4
8672210	-	-	-	2.10	0.0827			
8672220	-	-	-	2.20	0.0866			
8672230	-	-	-	2.30	0.0906			
8672240	-	-	-	2.40	0.0945			
8672250	-	-	-	2.50	0.0984			
8672260	-	-	-	2.60	0.1024			
8672270	-	-	-	2.70	0.1063			
8672280	-	-	-	2.80	0.1102			
8672290	-	-	-	2.90	0.1142			
8672300	-	-	-	3.00	0.1181	28	74	4
8672310	-	-	-	3.10	0.1220			
631012311	1/8	-	-	3.17	0.1248			
8672320	-	-	-	3.20	0.1260			
8672330	-	-	-	3.30	0.1299			
8672340	-	-	-	3.40	0.1339			
8672350	-	-	-	3.50	0.1378			
8672360	-	-	-	3.60	0.1417			
8672370	-	-	-	3.70	0.1457			
8672380	-	25	-	3.80	0.1496			
8672390	-	-	-	3.90	0.1535	36	82	6
631015511	5/32	-	-	3.97	0.1563			
8672400	-	-	-	4.00	0.1575			
631016111	-	20	-	4.09	0.1610			
8672410	-	-	-	4.10	0.1614			
8672420	-	-	-	4.20	0.1654			
8672430	-	-	-	4.30	0.1693			
631017111	11/64	-	-	4.37	0.1720			
8672440	-	-	-	4.40	0.1732			
8672450	-	16	-	4.50	0.1772			
8672460	-	-	-	4.60	0.1811			
8672470	-	13	-	4.70	0.1850	44	82	6
631018611	3/16	-	-	4.76	0.1874			
8672480	-	12	-	4.80	0.1890			
8672490	-	-	-	4.90	0.1929			
8672500	-	-	-	5.00	0.1969			
8672510	-	-	-	5.10	0.2008			
631020211	13/64	-	-	5.16	0.2031			
8672520	-	-	-	5.20	0.2047			
8672530	-	-	-	5.30	0.2087			

Packed: 1 pc.
Available EgiAs Coating Only.

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Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6310	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best

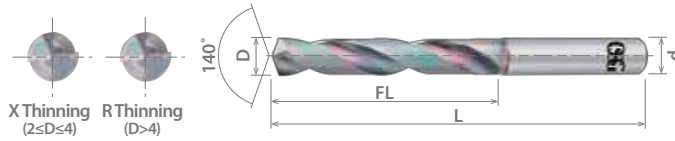




List 6310 (Continued)

NEW	SPEED FEED P298	CARBIDE	EgiAs	30°	SHANK h6
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AD-4D



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8672540	-	-	-	5.40	0.2126	44	82	6
631021311	-	3	-	5.41	0.2130			
8672550	-	-	-	5.50	0.2165			
631021711	7/32	-	-	5.56	0.2189			
8672560	-	-	-	5.60	0.2205			
8672570	-	-	-	5.70	0.2244			
8672580	-	-	-	5.80	0.2283			
8672590	-	-	-	5.90	0.2323			
631023311	15/64	-	-	5.95	0.2343			
8672600	-	-	-	6.00	0.2362			
8672610	-	-	-	6.10	0.2402	53	91	8
8672620	-	-	-	6.20	0.2441			
8672630	-	-	-	6.30	0.2480			
631024911	1/4	-	E	6.35	0.2500			
8672640	-	-	-	6.40	0.2520			
8672650	-	-	-	6.50	0.2559			
631025711	-	-	F	6.53	0.2571			
8672660	-	-	-	6.60	0.2598			
8672670	-	-	-	6.70	0.2638			
631026411	17/64	-	-	6.75	0.2657			
8672680	-	-	-	6.80	0.2677			
8672690	-	-	I	6.90	0.2717			
8672700	-	-	-	7.00	0.2756			
8672710	-	-	-	7.10	0.2795			
631028011	9/32	-	-	7.14	0.2811			
8672720	-	-	-	7.20	0.2835			
8672730	-	-	-	7.30	0.2874			
8672740	-	-	-	7.40	0.2913			
8672750	-	-	-	7.50	0.2953			
631029511	19/64	-	-	7.54	0.2969			
8672760	-	-	-	7.60	0.2992			
8672770	-	-	-	7.70	0.3031			
8672780	-	-	-	7.80	0.3071			
8672790	-	-	-	7.90	0.3110			
631031111	5/16	-	-	7.94	0.3126			
8672800	-	-	-	8.00	0.3150			
8672810	-	-	-	8.10	0.3189			
8672820	-	-	P	8.20	0.3228			
8672830	-	-	-	8.30	0.3268			
631032711	21/64	-	-	8.33	0.3280			
8672840	-	-	-	8.40	0.3307			
631033111	-	-	Q	8.43	0.3319			
8672850	-	-	-	8.50	0.3346			
8672860	-	-	-	8.60	0.3386			
8672870	-	-	-	8.70	0.3425			
631034211	11/32	-	-	8.73	0.3437			
8672880	-	-	-	8.80	0.3465			
8672890	-	-	-	8.90	0.3504			
8672900	-	-	-	9.00	0.3543			
8672910	-	-	-	9.10	0.3583			

Packed: 1 pc.
Available EgiAs Coating Only.



List 6310 (Continued)

AD-4D

NEW	SPEED FEED P298	CARBIDE	EgiAs	30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
631035811	23/64	-	-	9.13	0.3594	61	103	3/8
8672920	-	-	-	9.20	0.3622			10
8672930	-	-	-	9.30	0.3661			10
8672940	-	-	-	9.40	0.3701			10
8672950	-	-	-	9.50	0.3740			10
631037411	3/8	-	-	9.52	0.3748			3/8
8672960	-	-	-	9.60	0.3780			10
8672970	-	-	-	9.70	0.3819			10
8672980	-	-	W	9.80	0.3858			10
8672990	-	-	-	9.90	0.3898			10
631038911	25/64	-	-	9.92	0.3906	71	118	7/16
8673000	-	-	-	10.00	0.3937			10
8673010	-	-	-	10.10	0.3976			12
8673020	-	-	-	10.20	0.4016			12
8673030	-	-	-	10.30	0.4055			12
631040511	13/32	-	-	10.32	0.4063			7/16
8673040	-	-	-	10.40	0.4094			12
8673050	-	-	-	10.50	0.4134			12
8673060	-	-	-	10.60	0.4173			12
8673070	-	-	-	10.70	0.4213			12
631042111	27/64	-	-	10.72	0.4220	77	124	7/16
8673080	-	-	-	10.80	0.4252			12
8673090	-	-	-	10.90	0.4291			12
8673100	-	-	-	11.00	0.4331			12
8673110	-	-	-	11.10	0.4370			12
631043711	7/16	-	-	11.11	0.4374			7/16
8673120	-	-	-	11.20	0.4409			12
8673130	-	-	-	11.30	0.4449			12
8673140	-	-	-	11.40	0.4488			12
8673150	-	-	-	11.50	0.4528			12
631045211	29/64	-	-	11.51	0.4531	77	124	1/2
8673160	-	-	-	11.60	0.4567			12
8673170	-	-	-	11.70	0.4606			12
8673180	-	-	-	11.80	0.4646			12
8673190	-	-	-	11.90	0.4685			12
631046811	15/32	-	-	11.91	0.4689			1/2
8673200	-	-	-	12.00	0.4724			12
8673210	-	-	-	12.10	0.4764			14
8673220	-	-	-	12.20	0.4803			14
631048411	31/64	-	-	12.30	0.4843			1/2
8673230	31/64	-	-	12.30	0.4843	77	124	14
8673240	-	-	-	12.40	0.4882			14
8673250	-	-	-	12.50	0.4921			14
8673260	-	-	-	12.60	0.4961			14
631050011	1/2	-	-	12.70	0.5000			1/2
8673270	1/2	-	-	12.70	0.5000			14
8673280	-	-	-	12.80	0.5039	14		

Packed: 1 pc.
Available EgiAs Coating Only.

▶ continued on next page ▶

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
6310	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best

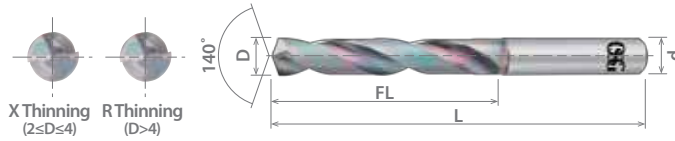




List 6310 (Continued)

NEW	SPEED FEED P298	CARBIDE	EgiAs	30°	SHANK h6
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AD-4D



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2<D<=3	+0 / -0.014	+0 / -0.0006
3<D<=6	+0 / -0.018	+0 / -0.0007
6<D<=10	+0 / -0.022	+0 / -0.0009
10<D<=18	+0 / -0.027	+0 / -0.0011
18<D<=20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8673290	-	-	-	12.90	0.5079	77	124	14
8673300	-	-	-	13.00	0.5118			5/8
631051511	33/64	-	-	13.10	0.5157			14
8673310	33/64	-	-	13.20	0.5197			14
8673320	-	-	-	13.30	0.5236			14
8673330	-	-	-	13.40	0.5276			14
8673340	-	-	-	13.50	0.5315			14
8673350	-	-	-	14.00	0.5512			14
8673400	-	-	-	14.29	0.5626			14
631056111	9/16	-	-	14.50	0.5709			14
8673450	-	-	-	15.00	0.5906	83	133	16
8673500	-	-	-	15.50	0.6102			16
8673550	-	-	-	15.87	0.6248			16
631062311	5/8	-	-	16.00	0.6299			16
8673600	-	-	-	16.50	0.6496			16
8673650	-	-	-	17.00	0.6693			16
8673700	-	-	-	17.50	0.6890			16
8673750	-	-	-	18.00	0.7087			16
8673800	-	-	-	18.50	0.7283			16
8673850	-	-	-	19.00	0.7480			16
8673900	-	-	-	19.05	0.7500	101	153	20
631074911	3/4	-	-	19.50	0.7677			3/4
8673950	-	-	-	19.50	0.7677			20
8674000	-	-	-	20.00	0.7874			20

Packed: 1 pc.
Available EgiAs Coating Only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
6310	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best





List 5200

ADO-SUS-3D, Coolant-Through

NEW SPEED FEED P299 CARBIDE WXL 30°



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8665200	-	-	-	2.00	0.0787	12	66	3
8665210	-	-	-	2.10	0.0827	13		
8665220	-	-	-	2.20	0.0866	14		
8665230	-	-	-	2.30	0.0906			
520009312	3/32	-	-	2.38	0.0937	15		
8665240	-	-	-	2.40	0.0945			
8665250	-	-	-	2.50	0.0984			
8665260	-	-	-	2.60	0.1024			
8665270	-	-	-	2.70	0.1063	16		
520010912	7/64	-	-	2.78	0.1094			
8665280	-	-	-	2.80	0.1102	17		
8665290	-	-	-	2.90	0.1142			
520011612	-	-	-	2.95	0.1161	18		
8665300	-	-	-	3.00	0.1181			
8665310	-	-	-	3.10	0.1220	19	4	
8665315	-	-	-	3.15	0.1240			
520012512	1/8	-	-	3.18	0.1250	20	1/8	
8665320	-	-	-	3.20	0.1260			
8665326	-	-	-	3.26	0.1283			
8665330	-	-	-	3.30	0.1299			
520013212	-	-	-	3.36	0.1323	21	74	
8665340	-	-	-	3.40	0.1339			
520013512	-	-	-	3.44	0.1354			
8665350	-	-	-	3.50	0.1378			
520013812	-	-	-	3.52	0.1386	22		4
520014012	9/64	-	-	3.57	0.1406			
8665360	-	-	-	3.60	0.1417	23		
8665370	-	-	-	3.70	0.1457			
8665375	-	-	-	3.75	0.1476			
520014812	-	-	-	3.77	0.1484			
8665380	-	-	-	3.80	0.1496	24		
520015212	-	-	-	3.86	0.1520			
8665390	-	-	-	3.90	0.1535	25		
520015612	5/32	-	-	3.97	0.1563			
8665400	-	-	-	4.00	0.1575	80		
520015912	-	-	-	4.05	0.1594			
520016112	-	20	-	4.09	0.1610			
8665410	-	-	-	4.10	0.1614			

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340		Stainless Steels				Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8680410	-	-	-	4.10	0.1614	25	80	6	
520016312	-	-	-	4.16	0.1638	26			
8665420	-	-	-	4.20	0.1654			5	
8680420	-	-	-	4.20	0.1654				6
520016812	-	-	-	4.27	0.1681			5	
8665430	-	-	-	4.30	0.1693				6
8680430	-	-	-	4.30	0.1693			3/16	
520017112	11/64	-	-	4.37	0.1719				27
8665440	-	-	-	4.40	0.1732			5	
8680440	-	-	-	4.40	0.1732				
520017512	-	-	-	4.46	0.1756			5	
8665450	-	-	-	4.50	0.1772	6			
8680450	-	-	-	4.50	0.1772			5	
8665460	-	-	-	4.60	0.1811	28			
8680460	-	-	-	4.60	0.1811			6	
520018312	-	-	-	4.66	0.1835	29			
8665470	-	-	-	4.70	0.1850			5	
8680470	-	-	-	4.70	0.1850				6
520018712	3/16	-	-	4.76	0.1875			3/16	
8665480	-	-	-	4.80	0.1890				5
8680480	-	-	-	4.80	0.1890		6		
8665485	-	-	-	4.85	0.1909			5	
8665490	-	-	-	4.90	0.1929		30		
8680490	-	-	-	4.90	0.1929			6	
8665500	-	-	-	5.00	0.1969		25		
8680500	-	-	-	5.00	0.1969	5			
8665510	-	-	-	5.10	0.2008		26		
520020212	-	-	-	5.15	0.2028	6			
520020312	13/64	-	-	5.16	0.2031			1/4	
8665520	-	-	-	5.20	0.2047	6			
8665525	-	-	-	5.25	0.2067			27	
520020712	-	-	-	5.26	0.2071	5.30			
8665530	-	-	-	5.30	0.2087			6	
8665540	-	-	-	5.40	0.2126	28			
520021312	-	3	-	5.41	0.2130			5.50	
520021512	-	-	-	5.47	0.2154	5.56			
8665550	-	-	-	5.50	0.2165		1/4		
520021812	7/32	-	-	5.56	0.2188	29			
8665560	-	-	-	5.60	0.2205		6		
8665570	-	-	-	5.70	0.2244	30			
8665580	-	-	-	5.80	0.2283		5.90		
8665590	-	-	-	5.90	0.2323	1/4			
520023412	15/64	-	-	5.95	0.2344		6.00		
8665600	-	-	-	6.00	0.2362	6			
8665610	-	-	-	6.10	0.2402		7		
8680610	-	-	-	6.10	0.2402	31			
520024212	-	-	-	6.15	0.2421		88		
						8			

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8665620	-	-	-	6.20	0.2441	31	88	7
8680620	-	-	-	6.20	0.2441	31		8
8665625	-	-	-	6.25	0.2461	32		7
8665630	-	-	-	6.30	0.2480			8
8680630	-	-	-	6.30	0.2480	8		
8665635	1/4	-	-	6.35	0.2500	32		1/4
8665640	-	-	-	6.40	0.2520	33		7
8680640	-	-	-	6.40	0.2520			8
8665650	-	-	-	6.50	0.2559	33		7
8680650	-	-	-	6.50	0.2559	33		8
520025712	-	-	F	6.53	0.2570	34		8
8665660	-	-	-	6.60	0.2598			7
8680660	-	-	-	6.60	0.2598	7		
520026112	-	-	-	6.65	0.2618	35		8
8665670	-	-	-	6.70	0.2638		7	
8680670	-	-	-	6.70	0.2638	8		
8665675	-	-	-	6.75	0.2656	36	7	
520026512	17/64	-	-	6.75	0.2656		8	
8665680	-	-	-	6.80	0.2677	37	7	
8680680	-	-	-	6.80	0.2677		8	
520027012	-	-	-	6.86	0.2701	38	7	
8665690	-	-	-	6.90	0.2717		8	
8680690	-	-	-	6.90	0.2717	8		
8665700	-	-	-	7.00	0.2756	39	7	
8680700	-	-	-	7.00	0.2756		8	
520027712	-	-	-	7.04	0.2772	40	8	
8665710	-	-	-	7.10	0.2795		7	
520028112	9/32	-	-	7.14	0.2813	41	5/16	
8665720	-	-	-	7.20	0.2835		8	
8665725	-	-	-	7.25	0.2854	42	8	
8665730	-	-	-	7.30	0.2874		8	
8665740	-	-	-	7.40	0.2913	43	8	
8665750	-	-	-	7.50	0.2953		8	
520029612	19/64	-	-	7.54	0.2969	44	5/16	
8665760	-	-	-	7.60	0.2992		8	
8665770	-	-	-	7.70	0.3031	45	8	
8665775	-	-	-	7.75	0.3051		8	
8665780	-	-	-	7.80	0.3071	46	8	
8665790	-	-	-	7.90	0.3110		8	
520031212	5/16	-	-	7.94	0.3125	47	5/16	
8665800	-	-	-	8.00	0.3150		8	
8665810	-	-	-	8.10	0.3189	48	9	
8680810	-	-	-	8.10	0.3189		10	

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
5200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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List 5200 (Continued)

ADO-SUS-3D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h8
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
520032012	-	-	-	8.15	0.3209	41	101	10
8665820	-	-	-	8.20	0.3228			9
8680820	-	-	-	8.25	0.3248			10
8665825	-	-	-	8.30	0.3268	42		9
8665830	-	-	-	8.33	0.3281			10
520032812	21/64	-	-	8.40	0.3307	43		3/8
8665840	-	-	-	8.43	0.3320			9
8680840	-	-	-	8.50	0.3346			10
520033212	-	-	Q	8.56	0.3370	44		9
8665850	-	-	-	8.60	0.3386			10
8680850	-	-	-	8.64	0.3402	45	9	
520033712	-	-	-	8.68	0.3417		10	
8665860	-	-	-	8.70	0.3425		9	
520034012	-	-	-	8.73	0.3438	46	10	
520034112	-	-	-	8.75	0.3445		3/8	
8665870	-	-	-	8.80	0.3465	47	9	
8680870	-	-	-	8.86	0.3488		10	
520034312	11/32	-	-	8.90	0.3504		48	9
8665875	-	-	-	9.00	0.3543	10		
8665880	-	-	-	9.10	0.3583	49	9	
8665888	-	-	-	9.13	0.3594		10	
520034812	-	-	-	9.20	0.3622		50	3/8
8665890	-	-	-	9.25	0.3642	10		
8680890	-	-	-	9.30	0.3661	51	9	
8665900	-	-	-	9.40	0.3701		10	
8680900	-	-	-	9.50	0.3740		9	
520035912	23/64	-	-	9.53	0.3750	48	10	
8665910	-	-	-	9.55	0.3760		3/8	
8665920	-	-	-	9.60	0.3780	49	9	
8665925	-	-	-	9.70	0.3819		10	
8665930	-	-	-	9.75	0.3839		9	
8665940	-	-	-	9.80	0.3858	50	10	
8665950	-	-	-	9.90	0.3898		9	
520037512	3/8	-	-	9.92	0.3906	51	7/16	
520037612	-	-	-	10.00	0.3937		10	
8665960	-	-	-	10.10	0.3976		11	
8665970	-	-	-	10.20	0.4016	51	12	
8665975	-	-	-				11	
8665980	-	-	-				11	
8665990	-	-	-			11		
520039012	25/64	-	-			11		
8666000	-	-	-			11		
8666010	-	-	-			11		
8681010	-	-	-			11		
8666020	-	-	-			11		

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8681020	-	-	-	10.20	0.4016	51	113	12
8666025	-	-	-	10.25	0.4035	52		11
8666030	-	-	-	10.30	0.4055			12
8681030	-	-	-	10.32	0.4063	7/16		
520040612	13/32	-	-	10.40	0.4094	53		11
8666040	-	-	-	10.44	0.4110			12
8681040	-	-	-	10.50	0.4134	54		11
520041112	-	-	-	10.60	0.4173			12
8666050	-	-	-	10.70	0.4213	55		11
8681050	-	-	-	10.72	0.4219			12
8666060	-	-	-	10.75	0.4232	56		11
8681060	-	-	-	10.80	0.4252		7/16	
8666070	-	-	-	10.86	0.4276	57	12	
8681070	-	-	-	10.90	0.4291		11	
520042212	27/64	-	-	11.00	0.4331	58	12	
8666075	-	-	-	11.10	0.4370		11	
8666080	-	-	-	11.11	0.4375	59	7/16	
8681080	-	-	-	11.20	0.4409		12	
520042712	-	-	-	11.30	0.4449	60	120	12
8666090	-	-	-	11.40	0.4488			
8681090	-	-	-	11.50	0.4528	61	128	13
8666100	-	-	-	11.51	0.4531			
8681100	-	-	-	11.60	0.4567	62	62	14
8666110	-	-	-	11.70	0.4606			
520043712	7/16	-	-	11.80	0.4646	60	60	12
8666120	-	-	-	11.90	0.4685			
8666130	-	-	-	11.91	0.4688	61	61	13
8666140	-	-	-	12.00	0.4724			
8666150	-	-	-	12.10	0.4764	62	62	14
520045312	29/64	-	-	12.20	0.4803			
8666160	-	-	-	12.30	0.4843	61	61	13
8666170	-	-	-	12.30	0.4844			
8666180	-	-	-	12.30	0.4844	62	62	14
8666190	-	-	-	12.30	0.4844			
520046912	15/32	-	-	12.30	0.4844	62	62	14
8666200	-	-	-	12.30	0.4844			
8666210	-	-	-	12.30	0.4844	62	62	14
8681210	-	-	-	12.30	0.4844			
8666220	-	-	-	12.30	0.4844	62	62	14
8681220	-	-	-	12.30	0.4844			
8666230	-	-	-	12.30	0.4844	62	62	14
8681230	-	-	-	12.30	0.4844			
520048512	31/64	-	-	12.30	0.4844	59		

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER[™] applies only to diameter sizes over 6 mm.

continued on next page



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
5200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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List 5200 (Continued)

ADO-SUS-3D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8666240	-	-	-	12.40	0.4882	62	128	13
8681240	-	-	-	12.45	0.4902	63		14
520049012	-	-	-	12.50	0.4921			13
8666250	-	-	-	12.60	0.4961	14		
8681250	-	-	-	12.68	0.4992	64		13
8666260	-	-	-	12.70	0.5000			1/2
8681260	-	-	-	12.75	0.5020	13		
520049912	-	-	-	12.80	0.5039	65		14
8666270	-	-	-	12.90	0.5079			13
520050012	1/2	-	-	13.00	0.5118	14		
8666275	-	-	-	13.08	0.5150	66		14
8666280	-	-	-	13.10	0.5157			
8681280	-	-	-	13.20	0.5197			
8666290	-	-	-	13.30	0.5236	67	134	
8681290	-	-	-	13.40	0.5276			
8666300	-	-	-	13.49	0.5313	68		5/8
8681300	-	-	-	13.50	0.5315			
520051512	-	-	-	13.60	0.5354	69		14
8666310	-	-	-	13.70	0.5394			
8666320	-	-	-	13.80	0.5433	70		
8666330	-	-	-	13.87	0.5461			
8666340	-	-	-	13.90	0.5472	71		
520053112	17/32	-	-	14.00	0.5512			
8666350	-	-	-	14.10	0.5551	72		15
8666360	-	-	-	14.20	0.5591			16
8666370	-	-	-	14.29	0.5625	73	15	
8666380	-	-	-	14.30	0.5630		16	
8666390	-	-	-	14.40	0.5669	74	15	
8666400	-	-	-	14.50	0.5709		16	
8666410	-	-	-	14.60	0.5748	74	15	
52005512	-	-	-	14.68	0.5780		16	
8666420	-	-	-	14.70	0.5787	74	15	
520055912	-	-	-	14.80	0.5827		16	
520056212	9/16	-	-				15	
8666430	-	-	-				15	
520056312	-	-	-				15	
8666440	-	-	-				15	
520056612	-	-	-				15	
8666450	-	-	-				15	
8681450	-	-	-				15	
8666460	-	-	-				15	
520057412	-	-	-				15	
520057812	37/64	-	-				15	
8666470	-	-	-				15	
520057912	-	-	-				15	
8666480	-	-	-				15	

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5200 (Continued)

ADO-SUS-3D, Coolant-Through



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter																																																							
	Fractional Size	Wire Gage	Letter Size	mm	Inch																																																										
520058212	-	-	-	14.80	0.5827	74	140	16																																																							
8666490	-	-	-	14.90	0.5866	75		15																																																							
520058612	-	-	-					15.00	0.5906	16																																																					
8666500	-	-	-	15.10	0.5945	15																																																									
8681500	-	-	-			15.20				0.5984	16																																																				
8666510	-	-	-				15.30	0.6024	16																																																						
8666520	-	-	-									15.40	0.6063	16																																																	
8666530	-	-	-	15.50	0.6102										16																																																
8666540	-	-	-													15.60	0.6142	16																																													
8666550	-	-	-			15.70				0.6181	16																																																				
8666560	-	-	-																15.80	0.6220	16																																										
8666570	-	-	-				15.88	0.6250	16																																																						
8666580	-	-	-																			15.90	0.6260	16																																							
520062512	5/8	-	-									16.00	0.6299	16																																																	
8666590	-	-	-																						16.10	0.6339	16																																				
8666600	-	-	-	16.50	0.6496										16																																																
520063312	-	-	-																									16.67	0.6563	16																																	
8666650	-	-	-													16.84	0.6630	16																																													
8681650	-	-	-																												17.00	0.6693	16																														
520065612	21/32	-	-			17.50				0.6890	16																																																				
520066312	-	-	-																															17.61	0.6933	16																											
8666700	-	-	-																17.68	0.6961	16																																										
8681700	-	-	-																																		17.73	0.6980	16																								
8666750	-	-	-				18.00	0.7087	16																																																						
520069312	-	-	-																																					18.50	0.7283	16																					
520069612	-	-	-																			18.64	0.7339	16																																							
520069812	-	-	-																																								19.00	0.7480	16																		
8666800	-	-	-									19.05	0.7500	16																																																	
8666850	-	-	-																																											19.25	0.7579	16															
8681850	-	-	-																						19.50	0.7677	16																																				
520073312	-	-	-																																														19.66	0.7740	16												
8666900	-	-	-	19.73	0.7768										16																																																
8681900	-	-	-																																																	19.76	0.7780	16									
520075012	3/4	-	-																									20.00	0.7874	16																																	
520075712	-	-	-																																																				19.25	0.7579	16						
8666950	-	-	-													19.50	0.7677	16																																													
520077412	-	-	-																																																							19.66	0.7740	16			
520077612	-	-	-																												19.73	0.7768	16																														
520077812	-	-	-																																																										19.76	0.7780	16
8667000	-	-	-			20.00				0.7874	16																																																				

Packed: 1 pc.
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MEGA COOLER™ applies only to diameter sizes over 6 mm.



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
5200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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A Brand[®] ADO-SUS

Advanced Performance Carbide Drills for Stainless Steels & Titanium Alloys

List 5210

ADO-SUS-5D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8667200	-	-	-	2.00	0.0787	18	70	3
8667210	-	-	-	2.10	0.0827	19		
8667220	-	-	-	2.20	0.0866	20		
8667230	-	-	-	2.30	0.0906	21		
521009312	3/32	-	-	2.38	0.0937	22		
8667240	-	-	-	2.40	0.0945	23		
8667250	-	-	-	2.50	0.0984	24		
8667260	-	-	-	2.60	0.1024	25		
8667270	-	-	-	2.70	0.1063	26		
8667278	-	-	-	2.78	0.1094	27		
8667280	-	-	-	2.80	0.1102	28		
8667290	-	-	-	2.90	0.1142	29		
8667300	-	-	-	3.00	0.1181	30		
8667310	-	-	-	3.10	0.1220	31		
8667315	-	-	-	3.15	0.1240	32		
521012512	1/8	-	-	3.18	0.1250	33		
8667320	-	-	-	3.20	0.1260	34		
8667326	-	-	-	3.26	0.1283	35		
8667330	-	-	-	3.30	0.1299	36		
8667340	-	-	-	3.40	0.1339	37		
8667350	-	-	-	3.50	0.1378	38		
8667360	-	-	-	3.60	0.1417	39		
8667366	-	-	-	3.66	0.1441	40		
8667368	-	-	-	3.68	0.1449	41		
8667370	-	-	-	3.70	0.1457	42		
8667375	-	-	-	3.75	0.1476	43		
8667380	-	-	-	3.80	0.1496	44		
8667390	-	-	-	3.90	0.1535	45		
521015612	5/32	-	-	3.97	0.1563	46		
8667400	-	-	-	4.00	0.1575	47		
521016112	-	20	-	4.09	0.1610	48		
8667410	-	-	-	4.10	0.1614	49		
8682410	-	-	-	4.10	0.1614	50		
8667420	-	-	-	4.20	0.1654	51		
8682420	-	-	-	4.20	0.1654	52		
8667430	-	-	-	4.30	0.1693	53		
8682430	-	-	-	4.30	0.1693	54		
521017112	11/64	-	-	4.37	0.1719	55		
8667440	-	-	-	4.40	0.1732	56		
8682440	-	-	-	4.40	0.1732	57		
8667450	-	-	-	4.50	0.1772	58		
8682450	-	-	-	4.50	0.1772	59		
8667460	-	-	-	4.60	0.1811	60		
8682460	-	-	-	4.60	0.1811	61		

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER[™] applies only to diameter sizes over 6 mm.





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8667462	-	-	-	4.62	0.1819	42	95	5	
8667464	-	-	-	4.64	0.1827				
8667470	-	-	-	4.70	0.1850	43		6	
8682470	-	-	-						
521018712	3/16	-	-	4.76	0.1875	44		3/16	
8667480	-	-	-	4.80	0.1890				
8682480	-	-	-	4.85	0.1909	45		5	
8667485	-	-	-						
8667490	-	-	-	4.90	0.1929	41		6	
8682490	-	-	-						
8667500	-	-	-	5.00	0.1969	42	5		
8682500	-	-	-						
8667510	-	-	-	5.10	0.2008	43	6		
521020312	13/64	-	-	5.16	0.2031				
8667520	-	-	-	5.20	0.2047	44	6		
8667525	-	-	-	5.25	0.2067				
8667530	-	-	-	5.30	0.2087	45		1/4	
8667540	-	-	-	5.40	0.2126				
521021312	-	3	-	5.41	0.2130	46		6	
8667550	-	-	-	5.50	0.2165				
8667552	-	-	-	5.52	0.2173	47			6
8667554	-	-	-	5.54	0.2181				
521021812	7/32	-	-	5.56	0.2188	48			1/4
8667560	-	-	-	5.60	0.2205				
8667570	-	-	-	5.70	0.2244	49	6		
8667580	-	-	-	5.80	0.2283				
8667590	-	-	-	5.90	0.2323	50			7
521023412	15/64	-	-	5.95	0.2344				
8667600	-	-	-	6.00	0.2362	51		6	
8667610	-	-	-	6.10	0.2402			52	7
8682610	-	-	-						
8667620	-	-	-	6.20	0.2441	53		8	
8682620	-	-	-						
8667625	-	-	-	6.25	0.2461	54		7	
8667630	-	-	-	6.30	0.2480		55	8	
8682630	-	-	-						
8667635	1/4	-	-	6.35	0.2500	56	1/4		
8667640	-	-	-	6.40	0.2520		57	7	
8682640	-	-	-	6.50	0.2559	58		8	
8667650	-	-	-						
8682650	-	-	-	6.53	0.2570	59	7		
521025712	-	-	F						
8667660	-	-	-	6.60	0.2598	60	8		
							7		

Packed: 1 pc.
Available WXL[®] coating only.
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continued on next page **ADR**

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5210	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d							
	Fractional Size	Wire Gage	Letter Size	mm	Inch										
8682660	-	-	-	6.60	0.2598	53	109	8							
8667670	-	-	-	6.70	0.2638	54		7							
8682670	-	-	-	6.70	0.2638			8							
8667675	-	-	-	6.75	0.2657	55		7							
521026512	17/64	-	-	6.75	0.2657			5/16							
8667680	-	-	-	6.80	0.2677	56		7							
8682680	-	-	-	6.80	0.2677			8							
8667690	-	-	-	6.90	0.2717	57		7							
8682690	-	-	-	6.90	0.2717			8							
8667700	-	-	-	7.00	0.2756	58		7							
8682700	-	-	-	7.00	0.2756		118	8							
8667710	-	-	-	7.10	0.2795	59		8							
521028112	9/32	-	-	7.14	0.2813				5/16						
8667720	-	-	-	7.20	0.2835	60			8						
8667725	-	-	-	7.25	0.2854					61	8				
8667730	-	-	-	7.30	0.2874	62						8			
8667736	-	-	-	7.36	0.2898					63			8		
8667738	-	-	-	7.38	0.2906	64								8	
8667740	-	-	-	7.40	0.2913					65					8
8667750	-	-	-	7.50	0.2953	66									
8667752	-	-	-	7.52	0.2961		67			8					
8667754	-	-	-	7.54	0.2969	68		8							
521029612	19/64	-	-	7.60	0.2992		69								
8667760	-	-	-	7.60	0.2992	70			8						
8667770	-	-	-	7.70	0.3031		71				8				
8667775	-	-	-	7.75	0.3051	72						8			
8667780	-	-	-	7.80	0.3071		73						8		
8667790	-	-	-	7.90	0.3110	74								8	
521031212	5/16	-	-	7.94	0.3125		75								8
8667800	-	-	-	8.00	0.3150	76									
8667810	-	-	-	8.10	0.3189		77			8					
8682810	-	-	-	8.10	0.3189	78		8							
8667820	-	-	-	8.20	0.3228		79								
8682820	-	-	-	8.20	0.3228	80			8						
8667825	-	-	-	8.25	0.3248		81				8				
8667830	-	-	-	8.30	0.3268	82						8			
8682830	-	-	-	8.30	0.3268		83						8		
521032812	21/64	-	-	8.33	0.3281	84								8	
8667840	-	-	-	8.40	0.3307		85								8
8682840	-	-	-	8.40	0.3307	86									
521033212	-	-	Q	8.43	0.3320		87			8					
8667850	-	-	-	8.50	0.3346	88		8							
8682850	-	-	-	8.50	0.3346		89								
8667860	-	-	-	8.60	0.3386	90			8						
8682860	-	-	-	8.60	0.3386		91				8				
8667870	-	-	-	8.70	0.3425	92						8			
							93						8		
						94								8	
							95								8
						96									
							97			8					
						98		8							
							99								
						100			8						

Packed: 1 pc.
 Available WXL® coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8682870	-	-	-	8.70	0.3425	70	128	10
521034312	11/32	-	-	8.73	0.3438			3/8
8667875	-	-	-	8.75	0.3445			9
8667880	-	-	-	8.80	0.3465	71		10
8667890	-	-	-	8.90	0.3504	72		9
8682880	-	-	-					10
8667900	-	-	-	9.00	0.3543	73		9
8682900	-	-	-					10
8667910	-	-	-	9.10	0.3583	74		9
521035912	23/64	-	-	9.13	0.3594			10
8667920	-	-	-	9.20	0.3622	75	136	3/8
8667924	-	-	-	9.24	0.3638			74
8667925	-	-	-	9.25	0.3642	76		10
8667926	-	-	-	9.26	0.3646			
8667930	-	-	-	9.30	0.3661	77		10
8667936	-	-	-	9.36	0.3685			
8667938	-	-	-	9.38	0.3693	78		10
8667940	-	-	-	9.40	0.3701			
8667950	-	-	-	9.50	0.3740	79		10
8667952	-	-	-	9.52	0.3748			
521037512	3/8	-	-	9.53	0.3750	80	146	3/8
8667954	-	-	-	9.54	0.3756			79
8667960	-	-	-	9.60	0.3780	81	10	
8667970	-	-	-	9.70	0.3819			80
8667975	-	-	-	9.75	0.3839	82	10	
8667980	-	-	-	9.80	0.3858			81
8667990	-	-	-	9.90	0.3898	83	10	
521039012	25/64	-	-	9.92	0.3906			82
8668000	-	-	-	10.00	0.3937	84	10	
8668010	-	-	-	10.10	0.3976			83
8683010	-	-	-	10.20	0.4016	84	10	11
8668020	-	-	-					12
8683020	-	-	-	10.25	0.4035	85	10	11
8668025	-	-	-					12
8668030	-	-	-	10.30	0.4055	86	10	11
8683030	-	-	-	10.32	0.4063			85
521040612	13/32	-	-	10.40	0.4094	87	10	7/16
8668040	-	-	-	10.40	0.4094			86
8683040	-	-	-	10.50	0.4134	88	10	11
8668050	-	-	-					12
8683050	-	-	-	10.60	0.4173	89	10	11
8668060	-	-	-					12

Packed: 1 pc.
Available WXL® coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5210	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

good best





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8683060	-	-	-	10.60	0.4173	85	146	12	
8668070	-	-	-	10.70	0.4213	86		11	
8683070	-	-	-	10.72	0.4219			12	
521042212	27/64	-	-	10.75	0.4232	87		7/16	
8668075	-	-	-	10.80	0.4252			11	
8668080	-	-	-	10.90	0.4291	88		12	
8683080	-	-	-	11.00	0.4331			11	
8668090	-	-	-	11.10	0.4370	89		12	
8683090	-	-	-	11.20	0.4409			7/16	
8668100	-	-	-	11.22	0.4417	90		156	
8683100	-	-	-	11.24	0.4425		12		
8668110	-	-	-	11.30	0.4449	91	12		
521043812	7/16	-	-	11.36	0.4472				11
8668120	-	-	-	11.38	0.4480	92	12		
8668122	-	-	-	11.40	0.4488				12
8668124	-	-	-	11.50	0.4528	93	167		
8668130	-	-	-	11.51	0.4531				1/2
8668136	-	-	-	11.60	0.4567	94			12
8668138	-	-	-	11.70	0.4606				
8668140	-	-	-	11.80	0.4646	95		12	
8668150	-	-	-	11.90	0.4685				12
521045312	29/64	-	-	11.91	0.4688	96		12	
8668160	-	-	-	12.00	0.4724				1/2
8668170	-	-	-	12.10	0.4764	97		13	
8668180	-	-	-	12.20	0.4803				14
8668190	-	-	-	12.20	0.4803	98	13		
521046912	15/32	-	-	12.30	0.4843			14	
8668200	-	-	-	12.30	0.4844	99	13		
8668210	-	-	-	12.40	0.4882			14	
8668220	-	-	-	12.50	0.4921	100	13		
8683220	-	-	-	12.60	0.4961			14	
8668230	-	-	-	12.70	0.5000	101	13		
521048512	31/64	-	-	12.75	0.5020			14	
8668240	-	-	-	12.80	0.5039	102	1/2		
8683240	-	-	-	12.80	0.5039			13	
8668250	-	-	-	12.80	0.5039	103	13		
8683250	-	-	-	12.80	0.5039			1/2	
8668260	-	-	-	12.80	0.5039	103	13		
8683260	-	-	-	12.80	0.5039			13	
8668270	-	-	-	12.80	0.5039	103	13		
521050012	1/2	-	-	12.80	0.5039			13	
8668275	-	-	-	12.80	0.5039	103	13		
8668280	-	-	-	12.80	0.5039			13	
8683280	-	-	-	12.80	0.5039	103	13		
8668280	-	-	-	12.80	0.5039			13	

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5210 (Continued)

ADO-SUS-5D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8668290	-	-	-	12.90	0.5079	104	167	13	
8683290	-	-	-						14
8668300	-	-	-	13.00	0.5118				13
8683300	-	-	-					14	
8668310	-	-	-	13.10	0.5157	105			
8668320	-	-	-	13.20	0.5197	106			
8668325	-	-	-	13.25	0.5217				
8668330	-	-	-	13.30	0.5236	107			
8668340	-	-	-	13.40	0.5276	108			
521053112	17/32	-	-	13.49	0.5313				5/8
8668350	-	-	-	13.50	0.5315				
8668360	-	-	-	13.60	0.5354	109			
8668370	-	-	-	13.70	0.5394	110			
8668380	-	-	-	13.80	0.5433	111			
8668390	-	-	-	13.90	0.5472	112			
8668400	-	-	-	14.00	0.5512				
8668410	-	-	-	14.10	0.5551	113			
521055512	-	-	-					15	
8668420	-	-	-					16	
521055912	-	-	-	14.20	0.5591	114		15	
521056212	9/16	-	-	14.29	0.5625	115		16	
8668430	-	-	-	14.30	0.5630			5/8	
521056312	-	-	-					15	
8668440	-	-	-					16	
8668440	-	-	-	14.40	0.5669	116		15	
521056612	-	-	-						16
8668450	-	-	-	14.50	0.5709	117		15	
8683450	-	-	-						16
8668460	-	-	-	14.60	0.5748	118		15	
521057412	-	-	-					16	
8668470	-	-	-	14.70	0.5787	119		15	
521057812	-	-	-						16
8668480	-	-	-	14.80	0.5827	120		15	
521058212	-	-	-						16
8668490	-	-	-	14.90	0.5866	121		15	
521058612	-	-	-						16
8668500	-	-	-	15.00	0.5906	122		15	
8683500	-	-	-						16
8668510	-	-	-	15.10	0.5945	123		16	
8668520	-	-	-	15.20	0.5984				15
8668525	-	-	-	15.25	0.6004	124		16	
8668530	-	-	-	15.30	0.6024				15
8668540	-	-	-	15.40	0.6063	124		16	
8668550	-	-	-	15.50	0.6102				15

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

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List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5210	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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List 5210 (Continued)

ADO-SUS-5D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8668560	-	-	-	15.60	0.6142	125	193	16
8668570	-	-	-	15.70	0.6181	126		
8668580	-	-	-	15.80	0.6220	127		
521062512	5/8	-	-	15.88	0.6250	128	5/8	
8668590	-	-	-	15.90	0.6260		16	
8668600	-	-	-	16.00	0.6299	113	18	
521063312	-	-	-	16.10	0.6339			17
8668650	-	-	-	16.50	0.6496			18
8683650	-	-	-	16.67	0.6563	117	3/4	
521065612	21/32	-	-	16.67	0.6563			17
8668700	-	-	-	17.00	0.6693	119	18	
8683700	-	-	-	17.00	0.6693			17
8668750	-	-	-	17.50	0.6890			123
8668800	-	-	-	18.00	0.7087	126	19	
8668850	-	-	-	18.50	0.7283			130
8683850	-	-	-	19.00	0.7480	133	20	
8668900	-	-	-	19.00	0.7480			19
8683900	-	-	-	19.00	0.7480	134	20	
521075012	3/4	-	-	19.05	0.7500			134
521075712	-	-	-	19.25	0.7579			135
8668950	-	-	-	19.50	0.7677	137	20	
8669000	-	-	-	20.00	0.7874			140

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5210	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

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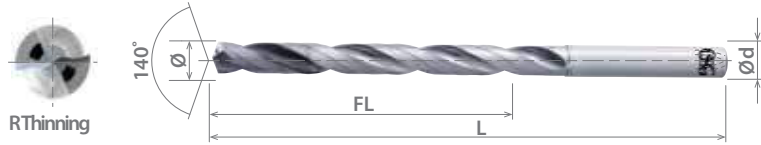




List 5220

ADO-SUS-8D, Coolant-Through

NEW SPEED FEED P299 CARBIDE WXL 30° SHANK h6



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8686200	-	-	-	2.00	0.0787	22	75	3
8686210	-	-	-	2.10	0.0827	24		
8686220	-	-	-	2.20	0.0866	25		
8686230	-	-	-	2.30	0.0906	26		
522009312	3/32	-	-	2.38	0.0937	27		
8686240	-	-	-	2.40	0.0945			
8686250	-	-	-	2.50	0.0984	28		
8686260	-	-	-	2.60	0.1024	29		
8686270	-	-	-	2.70	0.1063	30		
522010912	7/64	-	-	2.78	0.1094	31		
8686280	-	-	-	2.80	0.1102			
8686290	-	-	-	2.90	0.1142	32		
8686300	-	-	-	3.00	0.1181	33		
8684310	-	-	-	3.10	0.1220	34		
522012512	1/8	-	-	3.18	0.1252	35		
8684320	-	-	-	3.20	0.1260	36		
8684330	-	-	-	3.30	0.1299			
8684340	-	-	-	3.40	0.1339	37		
8684350	-	-	-	3.50	0.1378	39		
8684360	-	-	-	3.60	0.1417	40		
8684370	-	-	-	3.70	0.1457	41		
8684380	-	-	-	3.80	0.1496	42		
8684390	-	-	-	3.90	0.1535	43		
522015612	5/32	-	-	3.97	0.1563	44		
8684400	-	-	-	4.00	0.1575			
522016112	-	20	-	4.09	0.1610	45		
8686410	-	-	-	4.10	0.1614			
8684410	-	-	-	4.10	0.1614	46		
8686420	-	-	-	4.20	0.1654			
8684420	-	-	-	4.20	0.1654	47		
8686430	-	-	-	4.30	0.1693			
8684430	-	-	-	4.30	0.1693	48		
522017212	11/64	-	-	4.37	0.1720			
8686440	-	-	-	4.40	0.1732			
8684440	-	-	-	4.40	0.1732	50		
8686450	-	-	-	4.50	0.1772			
8684450	-	-	-	4.50	0.1772			

Packed: 1 pc.
Available WXL® coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

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List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
5220	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

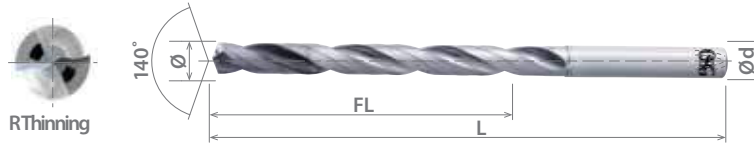
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List 5220 (Continued)

ADO-SUS-8D, Coolant-Through



NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8686460	-	-	-	4.60	0.1811	51	105	5
8684460	-	-	-	4.60	0.1811	51		6
8686470	-	-	-	4.70	0.1850	52		5
8684470	-	-	-					6
522018712	3/16	-	-	4.76	0.1874	53		3/16
8686480	-	-	-	4.80	0.1890			5
8684480	-	-	-			6		
8686490	-	-	-	4.90	0.1929	54		5
8684490	-	-	-					6
8686500	-	-	-	5.00	0.1969	55		5
8684500	-	-	-				6	
8684510	-	-	-	5.10	0.2008	56	6	
522020312	13/64	-	-	5.16	0.2031	57	1/4	
8684520	-	-	-	5.20	0.2047		6	
8684530	-	-	-	5.30	0.2087	58	6	
8684540	-	-	-	5.40	0.2126			
522021312	-	3	-	5.41	0.2130	60	1/4	
8684550	-	-	-	5.50	0.2165	61	6	
522021812	7/32	-	-	5.56	0.2189		1/4	
8684560	-	-	-	5.60	0.2205	62	6	
8684570	-	-	-	5.70	0.2244	63		
8684580	-	-	-	5.80	0.2283	64		
8684590	-	-	-	5.90	0.2323	65		
522023412	15/64	-	-	5.95	0.2343	66		1/4
8684600	-	-	-	6.00	0.2362			6
8686610	-	-	-	6.10	0.2402	67	7	
8684610	-	-	-				8	
8686620	-	-	-	6.20	0.2441	68	7	
8684620	-	-	-				8	
8686630	-	-	-	6.30	0.2480	69	7	
8684630	-	-	-				8	
522025012	1/4	-	-	6.35	0.2500	70	1/4	
8686640	-	-	-	6.40	0.2520		7	
8684640	-	-	-			8		
8686650	-	-	-	6.50	0.2559	72	7	
8684650	-	-	-				8	
522025712	-	-	F	6.53	0.2571	73	8	
8686660	-	-	-	6.60	0.2598		7	
8684660	-	-	-			8		
8686670	-	-	-	6.70	0.2638	74	7	
8684670	-	-	-				8	
522026512	17/64	-	-	6.75	0.2657	75	5/16	
8686680	-	-	-	6.80	0.2677		7	
8684680	-	-	-			8		
8686690	-	-	-	6.90	0.2717	76	7	
8684690	-	-	-				8	

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER[™] applies only to diameter sizes over 6 mm.





List 5220 (Continued)

ADO-SUS-8D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8686700	-	-	-	7.00	0.2756	77	125	7	
8684700	-	-	-	7.00	0.2756	77		8	
8684710	-	-	-	7.10	0.2795	78		8	
522028112	9/32	-	-	7.14	0.2811	79	140	5/16	
8684720	-	-	-	7.20	0.2835			80	8
8684730	-	-	-	7.30	0.2874	81		8	
8684740	-	-	-	7.40	0.2913	83	140	5/16	
8684750	-	-	-	7.50	0.2953	84			8
522029612	19/64	-	-	7.54	0.2969	85			
8684760	-	-	-	7.60	0.2992	86	140	8	
8684770	-	-	-	7.70	0.3031	87			5/16
8684780	-	-	-	7.80	0.3071	88			
8684790	-	-	-	7.90	0.3110	89	140	5/16	
522031212	5/16	-	-	7.94	0.3126	90			8
8684800	-	-	-	8.00	0.3150	91			
8686810	-	-	-	8.10	0.3189	92	140	9	
8684810	-	-	-	8.10	0.3189	93		10	
8686820	-	-	-	8.20	0.3228	94		9	
8684820	-	-	-	8.20	0.3228	95	140	10	
8686830	-	-	-	8.30	0.3268	96		9	
8684830	-	-	-	8.30	0.3268	97		10	
522032812	21/64	-	-	8.33	0.3280	98	140	3/8	
8686840	-	-	-	8.40	0.3307	99		9	
8684840	-	-	-	8.40	0.3307	100		10	
522033112	-	-	Q	8.43	0.3319	101	140	11/32	
8686850	-	-	-	8.50	0.3346	102		9	
8684850	-	-	-	8.50	0.3346	103		10	
8686860	-	-	-	8.60	0.3386	104	140	9	
8684860	-	-	-	8.60	0.3386	105		10	
8686870	-	-	-	8.70	0.3425	106		9	
8684870	-	-	-	8.70	0.3425	107	140	10	
522034312	11/32	-	-	8.73	0.3437	108		3/8	
8686880	-	-	-	8.80	0.3465	109		9	
8684880	-	-	-	8.80	0.3465	110	140	10	
8686890	-	-	-	8.90	0.3504	111		9	
8684890	-	-	-	8.90	0.3504	112		10	
8686900	-	-	-	9.00	0.3543	113	140	9	
8684900	-	-	-	9.00	0.3543	114		10	
8684910	-	-	-	9.10	0.3583	115		10	
522035912	23/64	-	-	9.13	0.3594	116	160	3/8	
8684920	-	-	-	9.20	0.3622	117		10	
8684930	-	-	-	9.30	0.3661	118			10
8684940	-	-	-	9.40	0.3701	119	10		

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.

continued on next page

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
5220	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>				

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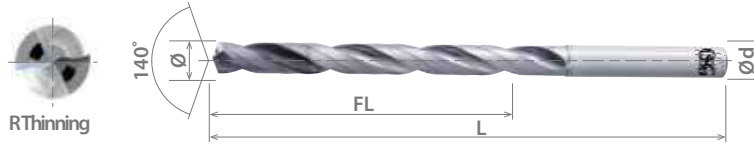




List 5220 (Continued)

ADO-SUS-8D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8684950	-	-	-	9.50	0.3740	105	160	10	
522037512	3/8	-	-	9.53	0.3752			3/8	
8684960	-	-	-	9.60	0.3780	106		10	
8684970	-	-	-	9.70	0.3819	107			
8684980	-	-	-	9.80	0.3858	108			
8684990	-	-	-	9.90	0.3898	109			
522039012	25/64	-	-	9.92	0.3906	110		7/16	
8685000	-	-	-	10.00	0.3937			10	
8687010	-	-	-	10.10	0.3976	111	11		
8685010	-	-	-				12		
8687020	-	-	-	10.20	0.4016	112	11		
8685020	-	-	-				12		
8687030	-	-	-	10.30	0.4055	113	11		
8685030	-	-	-				12		
522040612	13/32	-	-	10.32	0.4063	114	7/16		
8687040	-	-	-	10.40	0.4094		11		
8685040	-	-	-			12			
8687050	-	-	-	10.50	0.4134	116	11		
8685050	-	-	-				12		
8687060	-	-	-	10.60	0.4173	117	11		
8685060	-	-	-				12		
8687070	-	-	-	10.70	0.4213	118	11		
8685070	-	-	-				12		
522042212	27/64	-	-	10.72	0.4220	119	7/16		
8687080	-	-	-	10.80	0.4252		11		
8685080	-	-	-			12			
8687090	-	-	-	10.90	0.4291	120	11		
8685090	-	-	-				12		
8687100	-	-	-	11.00	0.4331	121	11		
8685100	-	-	-				12		
8685110	-	-	-	11.10	0.4370	122	7/16		
522043712	7/16	-	-	11.11	0.4374				
8685120	-	-	-	11.20	0.4409	123	12		
8685130	-	-	-	11.30	0.4449				
8685140	-	-	-	11.40	0.4488	125		12	
8685150	-	-	-	11.50	0.4528				
522045312	29/64	-	-	11.51	0.4531	127		1/2	
8685160	-	-	-	11.60	0.4567				
8685170	-	-	-	11.70	0.4606	129		12	
8685180	-	-	-	11.80	0.4646				
8685190	-	-	-	11.90	0.4685	131	12		
8685200	-	-	-	12.00	0.4724				
522047612	-	-	-	12.10	0.4764	133	206		14
522048012	-	-	-	12.20	0.4803				
522048412	-	-	-	12.30	0.4843	135			
522048812	-	-	-	12.40	0.4882				

Packed: 1 pc.
 Available WXL[®] coating only.
 MEGA COOLER™ applies only to diameter sizes over 6 mm.





List 5220 (Continued)

ADO-SUS-8D, Coolant-Through

NEW	SPEED FEED P299	CARBIDE	WXL		30°	SHANK h6
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EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
522049212	-	-	-	12.50	0.4921	138	206	13
522049312	-	-	-			14		
522049612	-	-	-	12.60	0.4961	139		1/2
522050012	1/2	-	-	12.70	0.5000	140		

Packed: 1 pc.
Available WXL[®] coating only.
MEGA COOLER™ applies only to diameter sizes over 6 mm.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Nickel Alloy Titanium	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Inconel	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
5220	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				

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List 5190

NEW	SPEED FEED P300	CARBIDE	EgiAs	12°	25°	SHANK h7
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AD-LDS



EDP Number	Diameter					Min. Drill Hole Size	Flute Length	Overall Length	Shank Diameter	Point Angle	Helix
	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d	a	
8688933	-	-	-	3.00	0.1181	1.2	9	48	3	90°	12°
8688957	-	-	-							120°	25°
8688966	-	-	-							140°	25°
8688934	-	-	-	4.00	0.1575	1.5	12	54	4	90°	12°
8688958	-	-	-							120°	25°
8688967	-	-	-							140°	25°
519012017	-	-	-	5.00	0.1969	1.7	14	70	5	90°	12°
519022017	-	-	-							120°	25°
519032017	-	-	-							140°	25°
8688935	-	-	-	6.00	0.2362	1.9	15	72	6	90°	12°
8688959	-	-	-							120°	25°
8688968	-	-	-							140°	25°
519012517	-	-	-	6.35	0.2500	2.1	17	75	1/4	90°	12°
519022517	1/4	-	E							120°	25°
519032517	-	-	-							140°	25°
8688936	-	-	-	8.00	0.3150	2.1	20	81	8	90°	12°
8688960	-	-	-							120°	25°
8688969	-	-	-							140°	25°
519013817	-	-	-	9.53	0.3750	2.3	24	93	3/8	90°	12°
519023817	3/8	-	-							120°	25°
519033817	-	-	-							140°	25°
8688937	-	-	-	10.00	0.3937	2.5	28	108	10	90°	12°
8688961	-	-	-							120°	25°
8688970	-	-	-							140°	25°
8688938	-	-	-	12.00	0.4724	3.0	36	111	1/2	90°	12°
8688962	-	-	-							120°	25°
8688971	-	-	-							140°	25°
519015017	-	-	-	12.70	0.5000	3.0	41	118	5/8	90°	12°
519025017	1/2	-	-							120°	25°
519035017	-	-	-							140°	25°
519016217	-	-	-	15.88	0.6250	5.0	46	132	3/4	90°	12°
519026217	5/8	-	-							120°	25°
519036217	-	-	-							140°	25°
519016317	-	-	-	16.00	0.6299	5.0	46	132	16	90°	12°
519026317	-	-	-							120°	25°
519036317	-	-	-							140°	25°
519017517	-	-	-	19.05	0.7500	5.0	46	132	20	90°	12°
519027517	3/4	-	-							120°	25°
519037517	-	-	-							140°	25°
519017917	-	-	-	20.00	0.7874	5.0	46	132	20	90°	12°
519027917	-	-	-							120°	25°
519037917	-	-	-							140°	25°

Packed: 1 pc.
Available EgiAs coating only.
Minimum drill hole size is recommended for chamfering operations.



List 5190 (Continued)

AD-LDS

NEW	SPEED FEED P300	CARBIDE	EgiAs	12°	25°	SHANK h7
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EDP Number	Diameter					Min. Drill Hole Size	Flute Length	Overall Length	Shank Diameter	Point Angle	Helix
	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d	a	
519019817	-	-	-	25.00	0.9843	5.0	53	151	25	90°	12°
519029817	-	-	-							120°	25°
519039817	-	-	-							140°	25°

Packed: 1 pc.
Available EgiAs coating only.
Minimum drill hole size is recommended for chamfering operations.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5190	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

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List 5600

WHILE SUPPLIES LAST

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-3D, 3 Flute, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
560015711	-	-	-	4.00	0.1575	24	74	4
560015911	-	-	-	4.05	0.1594	25	80	5
560016011	-	20	-	4.09	0.1610			
560016111	-	-	-	4.10	0.1614	26	80	5
560016311	-	-	-	4.16	0.1638			
560016511	-	-	-	4.20	0.1654	27	80	5
560016811	-	-	-	4.27	0.1681			
560016911	-	-	-	4.30	0.1693	28	80	5
560017211	11/64	-	-	4.37	0.1720			
560017311	-	-	-	4.40	0.1732	29	80	5
560017511	-	-	-	4.46	0.1756			
560017711	-	-	-	4.50	0.1772	30	80	5
560018111	-	-	-	4.60	0.1811			
560018311	-	-	-	4.66	0.1835	31	80	5
560018511	-	13	-	4.70	0.1850			
560018711	3/16	-	-	4.76	0.1874	32	80	5
560018911	-	12	-	4.80	0.1890			
560019211	-	-	-	4.90	0.1929	33	80	5
8660500	-	-	-	5.00	0.1969			
8660510	-	-	-	5.10	0.2008	34	80	5
560020311	13/64	-	-	5.16	0.2031			
8660520	-	-	-	5.20	0.2047	35	80	5
8660530	-	-	-	5.30	0.2087			
8660540	-	-	-	5.40	0.2126	36	80	5
560021311	-	3	-	5.41	0.2130			
8660550	-	-	-	5.50	0.2165	37	80	5
560021911	7/32	-	-	5.56	0.2189			
8660560	-	-	-	5.60	0.2205	38	80	5
8660570	-	-	-	5.70	0.2244			
8660580	-	-	-	5.80	0.2283	39	80	5
8660590	-	-	-	5.90	0.2323			
560023411	15/64	-	-	5.95	0.2343	40	80	5
8660600	-	-	-	6.00	0.2362			
8660610	-	-	-	6.10	0.2402	41	80	5
8660620	-	-	-	6.20	0.2441			
8660630	-	-	-	6.30	0.2480	42	80	5
560025011	1/4	-	E	6.35	0.2500			
8660640	-	-	-	6.40	0.2520	43	80	5
8660650	-	-	-	6.50	0.2559			
560025711	-	-	F	6.53	0.2571	44	80	5
8660660	-	-	-	6.60	0.2598			
8660670	-	-	-	6.70	0.2638	45	80	5
560026611	17/64	-	-	6.75	0.2657			
8660680	-	-	-	6.80	0.2677	46	80	5
8660690	-	-	I	6.90	0.2717			
8660700	-	-	-	7.00	0.2756	47	80	5
8660710	-	-	-	7.10	0.2795			
560028111	9/32	-	-	7.14	0.2811	48	80	5
8660720	-	-	-	7.20	0.2835			
8660730	-	-	-	7.30	0.2874	49	80	5
8660740	-	-	-	7.40	0.2913			
8660750	-	-	-	7.50	0.2953	38	80	5

Packed: 1 pc.
Available WD1 Coating Only.





List 5600 (Continued)

WHILE SUPPLIES LAST

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-3D, 3 Flute, Coolant-Through

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
560029711	19/64	-	-	7.54	0.2969	38	94	5/16	
8660760	-	-	-	7.60	0.2992	39		8	
8660770	-	-	-	7.70	0.3031				40
8660780	-	-	-	7.80	0.3071				
8660790	-	-	-	7.90	0.3110	41	5/16		
560031311	5/16	-	-	7.94	0.3126			42	8
8660800	-	-	-	8.00	0.3150	43	9		
8660810	-	-	-	8.10	0.3189			44	
8660820	-	-	P	8.20	0.3228				
8660830	-	-	-	8.30	0.3268	45	11/32		
560032811	21/64	-	-	8.33	0.3280			46	9
8660840	-	-	-	8.40	0.3307	47	11/32		
560033211	-	-	Q	8.43	0.3319			48	9
8660850	-	-	-	8.50	0.3346	49	11/32		
8660860	-	-	-	8.60	0.3386			50	9
8660870	-	-	-	8.70	0.3425	51	11/32		
560034411	11/32	-	-	8.73	0.3437			52	9
8660880	-	-	-	8.80	0.3465	53	10		
8660890	-	-	-	8.90	0.3504			54	25/64
8660900	-	-	-	9.00	0.3543	55	10		
8660910	-	-	-	9.10	0.3583			56	11
560035911	23/64	-	-	9.13	0.3594	57	11		
8660920	-	-	-	9.20	0.3622			58	10
8660930	-	-	-	9.30	0.3661	59	3/8		
8660940	-	-	-	9.40	0.3701			60	10
8660950	-	-	-	9.50	0.3740	61	11		
560037511	3/8	-	-	9.53	0.3752			62	11
8660960	-	-	-	9.60	0.3780	63	25/64		
8660970	-	-	-	9.70	0.3819			64	10
8660980	-	-	W	9.80	0.3858	65	11		
8660990	-	-	-	9.90	0.3898			66	11
560039111	25/64	-	-	9.92	0.3906	67	11		
8661000	-	-	-	10.00	0.3937			68	27/64
8661010	-	-	-	10.10	0.3976	69	11		
8661020	-	-	-	10.20	0.4016			70	11
8661030	-	-	-	10.30	0.4055	71	27/64		
560040611	13/32	-	-	10.32	0.4063			72	11
8661040	-	-	-	10.40	0.4094	73	11		
8661050	-	-	-	10.50	0.4134			74	27/64
8661060	-	-	-	10.60	0.4173	75	11		
8661070	-	-	-	10.70	0.4213			76	11
560042211	27/64	-	-	10.72	0.4220	77	12		
8661080	-	-	-	10.80	0.4252			78	7/16
8661090	-	-	-	10.90	0.4291	79	11		
8661100	-	-	-	11.00	0.4331			80	11
8661110	-	-	-	11.10	0.4370	81	11		
560043711	7/16	-	-	11.11	0.4374			82	11

Packed: 1 pc.
Available WD1 Coating Only.

continued on next page



List No.	Work Material																		
	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
5600	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





EXOPRO® Mega Muscle®

Extreme Performance High Feed Carbide Drills

List 5600 (Continued)

WHILE SUPPLIES LAST

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-3D, 3 Flute, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8661120	-	-	-	11.20	0.4409	56	120	12
8661130	-	-	-	11.30	0.4449	57		
8661140	-	-	-	11.40	0.4488	58		
8661150	-	-	-	11.50	0.4528	59		
560045311	29/64	-	-	11.51	0.4531	60	120	15/32
8661160	-	-	-	11.60	0.4567	61	128	12
8661170	-	-	-	11.70	0.4606	62		
8661180	-	-	-	11.80	0.4646	63		
8661190	-	-	-	11.90	0.4685	64		
560046911	15/32	-	-	11.91	0.4689	65	128	15/32
8661200	-	-	-	12.00	0.4724	66	134	12
8661210	-	-	-	12.10	0.4764	67		
8661220	-	-	-	12.20	0.4803	68		
8661230	-	-	-	12.30	0.4843	69		
560048411	31/64	-	-	12.30	0.4843	70	140	13
8661240	-	-	-	12.40	0.4882	71		
8661250	-	-	-	12.50	0.4921	72		
8661260	-	-	-	12.60	0.4961	73		
560050011	1/2	-	-	12.70	0.5000	74	145	13
8661270	-	-	-	12.80	0.5039	75		
8661280	-	-	-	12.90	0.5079	76		
8661290	-	-	-	13.00	0.5118	77		
8661300	-	-	-	13.10	0.5157	78	150	14
8661310	33/64	-	-	13.10	0.5157	79		
8661320	-	-	-	13.20	0.5197	80		
8661330	-	-	-	13.30	0.5236	81		
8661340	-	-	-	13.40	0.5276	82	155	14
560053111	17/32	-	-	13.49	0.5311	83		
8661350	-	-	-	13.50	0.5315	84		
8661360	-	-	-	13.60	0.5354	85		
8661370	-	-	-	13.70	0.5394	86	160	15
8661380	-	-	-	13.80	0.5433	87		
8661390	-	-	-	13.90	0.5472	88		
8661400	-	-	-	14.00	0.5512	89		
8661410	-	-	-	14.10	0.5551	90	165	15
8661420	-	-	-	14.20	0.5591	91		
560056311	9/16	-	-	14.29	0.5626	92		
8661430	-	-	-	14.30	0.5630	93		
8661440	-	-	-	14.40	0.5669	94	170	16
8661450	-	-	-	14.50	0.5709	95		
8661460	-	-	-	14.60	0.5748	96		
8661470	-	-	-	14.70	0.5787	97		
8661480	-	-	-	14.80	0.5827	98	175	16
8661490	-	-	-	14.90	0.5866	99		
8661500	-	-	-	15.00	0.5906	100		
560059311	19/32	-	-	15.08	0.5937	101		
8661510	-	-	-	15.10	0.5945	102	180	16
8661520	-	-	-	15.20	0.5984	103		
8661530	-	-	-	15.30	0.6024	104		
8661540	-	-	-	15.40	0.6063	105		
8661550	-	-	-	15.50	0.6102	106	185	16
8661560	-	-	-	15.60	0.6142	107		

Packed: 1 pc.
Available WD1 Coating Only.





List 5600 (Continued)

WHILE SUPPLIES LAST

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-3D, 3 Flute, Coolant-Through

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8661570	-	-	-	15.70	0.6181	79	145	16
8661580	-	-	-	15.80	0.6220			
560062511	5/8	-	-	15.88	0.6252	80	145	5/8
8661590	-	-	-	15.90	0.6260			
8661600	-	-	-	16.00	0.6299	81	150	16
560063311	-	-	-	16.10	0.6339			
8661650	-	-	-	16.50	0.6496	83	150	17
560065611	21/32	-	-	16.67	0.6563			
560066311	-	-	-	16.84	0.6630	85	150	18
8661700	-	-	-	17.00	0.6693			
560068711	11/16	-	-	17.46	0.6874	88	155	3/4
8661750	-	-	-	17.50	0.6890			
560070311	45/64	-	-	17.86	0.7031	90	160	18
8661800	-	-	-	18.00	0.7087			
560071811	23/32	-	-	18.26	0.7189	92	160	3/4
8661850	-	-	-	18.50	0.7283			
8661900	-	-	-	19.00	0.7480	95	160	19
560075011	3/4	-	-	19.05	0.7500			
560075711	-	-	-	19.25	0.7579	97	165	20
8661950	-	-	-	19.50	0.7677			
8662000	-	-	-	20.00	0.7874	100		

Packed: 1 pc.
Available WD1 Coating Only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5600	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 5610 **WHILE SUPPLIES LAST**

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-5D, 3 Flute, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
561015711	-	-	-	4.00	0.1575	36	86	4
561016011	-	20	-	4.09	0.1610	37	95	5
561016111	-	-	-	4.10	0.1614	37		
561016511	-	-	-	4.20	0.1654	38		
561016911	-	-	-	4.30	0.1693	39		
561017211	11/64	-	-	4.37	0.1720	40		3/16
561017311	-	-	-	4.40	0.1732	40		
561017711	-	-	-	4.50	0.1772	41		
561018111	-	-	-	4.60	0.1811	42		
561018511	-	13	-	4.70	0.1850	43		
561018711	3/16	-	-	4.76	0.1874	43		3/16
561018911	-	12	-	4.80	0.1890	44		
561019211	-	-	-	4.90	0.1929	45	5	
8662500	-	-	-	5.00	0.1969	45	100	6
8662510	-	-	-	5.10	0.2008	41		15/64
561020311	13/64	-	-	5.16	0.2031	42		
8662520	-	-	-	5.20	0.2047	42		
8662530	-	-	-	5.30	0.2087	43		6
8662540	-	-	-	5.40	0.2126	43		
561021311	-	3	-	5.41	0.2130	44		1/4
8662550	-	-	-	5.50	0.2165	44		6
561021911	7/32	-	-	5.56	0.2189	45		15/64
8662560	-	-	-	5.60	0.2205	45		
8662570	-	-	-	5.70	0.2244	46	6	
8662580	-	-	-	5.80	0.2283	47		
8662590	-	-	-	5.90	0.2323	47		
561023411	15/64	-	-	5.95	0.2343	48	15/64	
8662600	-	-	-	6.00	0.2362	48	6	
8662610	-	-	-	6.10	0.2402	49	109	7
8662620	-	-	-	6.20	0.2441	50		
8662630	-	-	-	6.30	0.2480	51		
561025011	1/4	-	E	6.35	0.2500	52		1/4
8662640	-	-	-	6.40	0.2520	52		7
8662650	-	-	-	6.50	0.2559	52		
561025711	-	-	F	6.53	0.2571	53		17/64
8662660	-	-	-	6.60	0.2598	53		
8662670	-	-	-	6.70	0.2638	54		7
561026611	17/64	-	-	6.75	0.2657	54		17/64
8662680	-	-	-	6.80	0.2677	55	7	
8662690	-	-	I	6.90	0.2717	56		
8662700	-	-	-	7.00	0.2756	56		
8662710	-	-	-	7.10	0.2795	57	118	8
561028111	9/32	-	-	7.14	0.2811	58		9/32
8662720	-	-	-	7.20	0.2835	58		
8662730	-	-	-	7.30	0.2874	59		8
8662740	-	-	-	7.40	0.2913	59		
8662750	-	-	-	7.50	0.2953	60		5/16
561029711	19/64	-	-	7.54	0.2969	60		
8662760	-	-	-	7.60	0.2992	61		
8662770	-	-	-	7.70	0.3031	62		
8662780	-	-	-	7.80	0.3071	63		8
8662790	-	-	-	7.90	0.3110	64		

Packed: 1 pc.
Available WD1 Coating Only.





List 5610 (Continued)

WHILE SUPPLIES LAST

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-5D, 3 Flute, Coolant-Through

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
561031311	5/16	-	-	7.94	0.3126	64	118	5/16
8662800	-	-	-	8.00	0.3150			8
8662810	-	-	-	8.10	0.3189	65	9	9
8662820	-	-	P	8.20	0.3228			
8662830	-	-	-	8.30	0.3268	67	11/32	9
561032811	21/64	-	-	8.33	0.3280			
8662840	-	-	-	8.40	0.3307	68	11/32	9
561033211	-	-	Q	8.43	0.3319			
8662850	-	-	-	8.50	0.3346	69	9	9
8662860	-	-	-	8.60	0.3386			
8662870	-	-	-	8.70	0.3425	70	11/32	9
561034411	11/32	-	-	8.73	0.3437			
8662880	-	-	-	8.80	0.3465	71	9	9
8662890	-	-	-	8.90	0.3504			
8662900	-	-	-	9.00	0.3543	72	10	25/64
8662910	-	-	-	9.10	0.3583			
561035911	23/64	-	-	9.13	0.3594	73	10	10
8662920	-	-	-	9.20	0.3622			
8662930	-	-	-	9.30	0.3661	74	10	10
8662940	-	-	-	9.40	0.3701			
8662950	-	-	-	9.50	0.3740	75	10	10
561037511	3/8	-	-	9.53	0.3752			
8662960	-	-	-	9.60	0.3780	76	10	10
8662970	-	-	-	9.70	0.3819			
8662980	-	-	W	9.80	0.3858	77	10	10
8662990	-	-	-	9.90	0.3898			
561039111	25/64	-	-	9.92	0.3906	78	10	10
8663000	-	-	-	10.00	0.3937			
8663010	-	-	-	10.10	0.3976	79	10	10
8663020	-	-	-	10.20	0.4016			
8663030	-	-	-	10.30	0.4055	80	10	10
561040611	13/32	-	-	10.32	0.4063			
8663040	-	-	-	10.40	0.4094	81	10	10
8663050	-	-	-	10.50	0.4134			
8663060	-	-	-	10.60	0.4173	82	10	10
8663070	-	-	-	10.70	0.4213			
561042211	27/64	-	-	10.72	0.4220	83	10	10
8663080	-	-	-	10.80	0.4252			
8663090	-	-	-	10.90	0.4291	84	10	10
8663100	-	-	-	11.00	0.4331			
8663110	-	-	-	11.10	0.4370	85	10	10
561043711	7/16	-	-	11.11	0.4374			
8663120	-	-	-	11.20	0.4409	86	10	10
8663130	-	-	-	11.30	0.4449			
8663140	-	-	-	11.40	0.4488	87	10	10
8663150	-	-	-	11.50	0.4528			
561045311	29/64	-	-	11.51	0.4531	88	10	10
8663160	-	-	-	11.60	0.4567			

Packed: 1 pc.
Available WD1 Coating Only.

continued on next page

List No.	Work Material																	
	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
5610	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 5610 (Continued)

WHILE SUPPLIES LAST

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-5D, 3 Flute, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
4 ≤ D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8663170	-	-	-	11.70	0.4606	94	156	12
8663180	-	-	-	11.80	0.4646	95		
8663190	-	-	-	11.90	0.4685	96		
561046911	15/32	-	-	11.91	0.4689	96		
8663200	-	-	-	12.00	0.4724	97	167	13
8663210	-	-	-	12.10	0.4764	98		
8663220	-	-	-	12.20	0.4803	99		
8663230	-	-	-	12.30	0.4843	100		
561048411	31/64	-	-	12.40	0.4882	101	176	13
8663240	-	-	-	12.50	0.4921	102		
8663250	-	-	-	12.60	0.4961	103		
8663260	-	-	-	12.70	0.5000	104		
561050011	1/2	-	-	12.80	0.5039	105	185	14
8663270	-	-	-	12.90	0.5079	106		
8663280	-	-	-	13.00	0.5118	107		
8663290	-	-	-	13.10	0.5157	108		
8663300	-	-	-	13.20	0.5197	109	193	15
8663310	33/64	-	-	13.30	0.5236	110		
8663320	-	-	-	13.40	0.5276	111		
561053111	17/32	-	-	13.49	0.5311	112		
8663350	-	-	-	13.50	0.5315	113	201	16
8663360	-	-	-	13.60	0.5354	114		
8663370	-	-	-	13.70	0.5394	115		
8663380	-	-	-	13.80	0.5433	116		
8663390	-	-	-	13.90	0.5472	117	16	16
8663400	-	-	-	14.00	0.5512	118		
8663410	-	-	-	14.10	0.5551	119		
8663420	-	-	-	14.20	0.5591	120		
561056311	9/16	-	-	14.29	0.5626	121	17	16
8663430	-	-	-	14.30	0.5630	122		
8663440	-	-	-	14.40	0.5669	123		
8663450	-	-	-	14.50	0.5709	124		
8663460	-	-	-	14.60	0.5748	125	18	18
8663470	-	-	-	14.70	0.5787	126		
8663480	-	-	-	14.80	0.5827	127		
8663490	-	-	-	14.90	0.5866	128		
8663500	-	-	-	15.00	0.5906	129	19	16
561059311	19/32	-	-	15.08	0.5937	130		
8663510	-	-	-	15.10	0.5945	131		
8663520	-	-	-	15.20	0.5984	132		
8663530	-	-	-	15.30	0.6024	133	20	16
8663540	-	-	-	15.40	0.6063	134		
8663550	-	-	-	15.50	0.6102	135		
8663560	-	-	-	15.60	0.6142	136		
8663570	-	-	-	15.70	0.6181	137	21	16
8663580	-	-	-	15.80	0.6220	138		
561062511	5/8	-	-	15.88	0.6252	139		
8663590	-	-	-	15.90	0.6260	140		
8663600	-	-	-	16.00	0.6299	141	22	16
561063311	-	-	-	16.10	0.6339	142		

Packed: 1 pc.
Available WD1 Coating Only.





List 5610 (Continued)

WHILE SUPPLIES LAST

SPEED FEED P301	CARBIDE	WD1		30°	SHANK h6
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TRS-HO-5D, 3 Flute, Coolant-Through

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8663650	-	-	-	16.50	0.6496	132	201	17
561065611	21/32	-	-	16.67	0.6563	134		21/32
561066311	-	-	-	16.84	0.6630	135		18
8663700	-	-	-	17.00	0.6693	136	209	17
561068711	11/16	-	-	17.46	0.6874	140		3/4
8663750	-	-	-	17.50	0.6890	143		18
561070311	45/64	-	-	17.86	0.7031	144	217	3/4
8663800	-	-	-	18.00	0.7087	147		18
561071811	23/32	-	-	18.26	0.7189	148		3/4
8663850	-	-	-	18.50	0.7283	152	225	19
8663900	-	-	-	19.00	0.7480	154		3/4
561075011	3/4	-	-	19.05	0.7500	156		20
561075711	-	-	-	19.25	0.7579	160		
8663950	-	-	-	19.50	0.7677			
8664000	-	-	-	20.00	0.7874			

Packed: 1 pc.
Available WD1 Coating Only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5610	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				

good best





List 5630

TRS-HO-10D, 3 Flute, Coolant-Through

NEW

SPEED FEED
P302

CARBIDE

WD1

30°

SHANK
h6



Cutting Diameter Tolerance (h8)		
Size	mm	inch
5 ≤ D ≤ 6	-0.020 / -0.038	-0.0007 / -0.0014
6 < D ≤ 10	-0.025 / -0.047	-0.0009 / -0.0018
10 < D ≤ 15.88	-0.032 / -0.059	-0.0012 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
48159050	-	-	-	5.00	0.1969	65	115	6
563020011	-	-	-	5.10	0.2008	70	128	
563020311	13/64	-	-	5.16	0.2031			
563020411	-	-	-	5.20	0.2047			
563020811	-	-	-	5.30	0.2087			
563021211	-	-	-	5.40	0.2126			
563021311	-	3	-	5.41	0.2130			
8664055	-	-	-	5.50	0.2165			
563021811	7/32	-	-	5.56	0.2188			
563022011	-	-	-	5.60	0.2205			
563022411	-	-	-	5.70	0.2244			
563022811	-	-	-	5.80	0.2283			
563023211	-	-	-	5.90	0.2323			
563023411	15/64	-	-	5.95	0.2344			
8664060	-	-	-	6.00	0.2362			
563024011	-	-	-	6.10	0.2402			
563024411	-	-	-	6.20	0.2441			
563024811	-	-	-	6.30	0.2480			
563025011	1/4	-	E	6.35	0.2500	87	140	8
563025211	-	-	-	6.40	0.2520			
48159065	-	-	-	6.50	0.2559			
563025711	-	-	F	6.53	0.2571			
563025911	-	-	-	6.60	0.2598			
563026311	-	-	-	6.70	0.2638			
563026511	17/64	-	-	6.75	0.2656			
563026711	-	-	-	6.80	0.2677			
563027111	-	-	-	6.90	0.2717			
48159070	-	-	-	7.00	0.2756			
563027911	-	-	-	7.10	0.2795			
563028111	9/32	-	-	7.14	0.2813			
563028311	-	-	-	7.20	0.2835			
563028711	-	-	-	7.30	0.2874			
563029111	-	-	-	7.40	0.2913			
8664075	-	-	-	7.50	0.2953			
563029611	19/64	-	-	7.54	0.2969			
563029911	-	-	-	7.60	0.2992			
563030311	-	-	-	7.70	0.3031			
563030711	-	-	-	7.80	0.3071			
563031111	-	-	-	7.90	0.3110			
563031211	5/16	-	-	7.94	0.3125			
8664080	-	-	-	8.00	0.3150			
563031811	-	-	-	8.10	0.3189			
563032211	-	-	-	8.20	0.3228			
563032611	-	-	-	8.30	0.3268			
563032811	21/64	-	-	8.33	0.3281			
563033011	-	-	-	8.40	0.3307			
563033111	-	-	Q	8.43	0.3319			
48159085	-	-	-	8.50	0.3346			
563033811	-	-	-	8.60	0.3386			
563034211	-	-	-	8.70	0.3425			
563034311	11/32	-	-	8.73	0.3438			
563034611	-	-	-	8.80	0.3465			

Packed: 1 pc.
Available WD1 Coating Only.





List 5630 (Continued)

TRS-HO-10D, 3 Flute, Coolant-Through

NEW
SPEED FEED P302
CARBIDE
WD1
30°
SHANK h6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
563035011	-	-	-	8.90	0.3504	115	165	10
48159090	-	-	-	9.00	0.3543			
563035811	-	-	-	9.10	0.3583	125	190	3/8
563035911	23/64	-	-	9.13	0.3594			
563036211	-	-	-	9.20	0.3622			
563036611	-	-	-	9.30	0.3661			
563037011	-	-	-	9.40	0.3701			
8664095	-	-	-	9.50	0.3740			
563037511	3/8	-	-	9.53	0.3750	130	190	3/8
563037811	-	-	-	9.60	0.3780			
563038111	-	-	-	9.70	0.3819			
563038511	-	-	-	9.80	0.3858			
563038911	-	-	-	9.90	0.3898			
563039011	25/64	-	-	9.92	0.3906			
8664100	-	-	-	10.00	0.3937	140	205	10
563039711	-	-	-	10.10	0.3976			
563040111	-	-	-	10.20	0.4016			
563040511	-	-	-	10.30	0.4055			
563040611	13/32	-	-	10.32	0.4063			
563040911	-	-	-	10.40	0.4094			
563041311	-	-	-	10.50	0.4134	145	205	12
563041711	-	-	-	10.60	0.4173			
563041211	-	-	-	10.70	0.4213			
563042211	27/64	-	-	10.72	0.4219			
563042511	-	-	-	10.80	0.4252			
563042911	-	-	-	10.90	0.4291			
563043311	-	-	-	11.00	0.4331	155	215	12
563043711	-	-	-	11.10	0.4370			
563043811	7/16	-	-	11.11	0.4375			
563044011	-	-	-	11.20	0.4409			
563044411	-	-	-	11.30	0.4449			
563044811	-	-	-	11.40	0.4488			
8664115	-	-	-	11.50	0.4528	175	225	14
563045311	29/64	-	-	11.51	0.4531			
563045611	-	-	-	11.60	0.4567			
563046011	-	-	-	11.70	0.4606			
563046411	-	-	-	11.80	0.4646			
563056811	-	-	-	11.90	0.4685			
8664120	-	-	-	12.00	0.4724	175	225	14
563047611	-	-	-	12.10	0.4764			
563048011	-	-	-	12.20	0.4803			
563048411	-	-	-	12.30	0.4843			
563048811	-	-	-	12.40	0.4882			
563049211	-	-	-	12.50	0.4921			
563049611	-	-	-	12.60	0.4961	175	225	1/2
563050011	1/2	-	-	12.70	0.5000			
563053111	17/32	-	-	13.49	0.5313			
563053211	-	-	-	13.50	0.5315			

Packed: 1 pc.
Available WD1 Coating Only.

continued on next page

List No.	Work Material																			
	P					M			K	N		S		H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels						
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC			
5630	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 5630 (Continued)

TRS-HO-10D, 3 Flute, Coolant-Through

NEW	SPEED FEED P302	CARBIDE	WD1		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
5 ≤ D ≤ 6	-0.020 / -0.038	-0.0007 / -0.0014
6 < D ≤ 10	-0.025 / -0.047	-0.0009 / -0.0018
10 < D ≤ 15.88	-0.032 / -0.059	-0.0012 / -0.0023

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
563055111	-	-	-	14.00	0.5512	180	230	14
563056211	9/16	-	-	14.29	0.5625			5/8
563057011	-	-	-	14.50	0.5709	190	240	16
563062511	5/8	-	-	15.88	0.6250	210	260	5/8

Packed: 1 pc.
Available WD1 Coating Only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5630	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>				

good best





List 5950Ni

WHO55-3D, Coolant-Through

SPEED FEED P303	CARBIDE	WXS	12-20°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
D=3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
595011811	-	-	-	3.00	0.1181	20	62	6
595012511	1/8	-	-	3.18	0.1250			
595013011	-	-	-	3.30	0.1299			
595013411	-	-	-	3.40	0.1339			
595013711	-	-	-	3.49	0.1374			
595013811	-	-	-	3.50	0.1378			
595013911	-	-	-	3.51	0.1382			
595014211	-	-	-	3.60	0.1417			
595014611	-	-	-	3.70	0.1457			
595015011	-	25	-	3.80	0.1496			
595015411	-	-	-	3.90	0.1535			
595015611	5/32	-	-	3.97	0.1563			
595015711	-	-	-	4.00	0.1575			
595016111	-	-	-	4.10	0.1614			
595016311	-	-	-	4.15	0.1634			
595016511	-	-	-	4.20	0.1654			
595016911	-	-	-	4.30	0.1693			
595017111	11/64	-	-	4.37	0.1719			
595017311	-	-	-	4.40	0.1732			
595017711	-	16	-	4.50	0.1772			
595018111	-	-	-	4.60	0.1811			
595018511	-	13	-	4.70	0.1850			
595018711	3/16	-	-	4.76	0.1875			
595018911	-	12	-	4.80	0.1890			
595019311	-	-	-	4.90	0.1929			
595019711	-	-	-	5.00	0.1969			
595020111	-	-	-	5.10	0.2008			
595020311	13/64	-	-	5.16	0.2031			
595020511	-	-	-	5.20	0.2047			
595020611	-	-	-	5.22	0.2055			
595020911	-	-	-	5.30	0.2087			
595021311	-	-	-	5.40	0.2126			
595021711	-	-	-	5.50	0.2165			
595021611	-	-	-	5.53	0.2177			
595021811	7/32	-	-	5.56	0.2188			
595021911	-	-	-	5.56	0.2189			
595022011	-	-	-	5.60	0.2205			
595022411	-	-	-	5.70	0.2244			
595022811	-	-	-	5.80	0.2283			
595023211	-	-	-	5.90	0.2323			
595023411	15/64	-	-	5.95	0.2344			
595023611	-	-	-	6.00	0.2362			

Packed: 1 pc.
Available WXS[®] Coating Only.

continued on next page **EP**

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5950Ni	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best





List 5950Ni (Continued)

SPEED FEED P303	CARBIDE	WXS		12-20°	SHANK h6
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WHO55-3D, Coolant-Through

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
595025011	1/4	-	-	6.35	0.2500	33	83	8	
595025611	-	-	-	6.50	0.2559	33			
595026211	-	-	-	6.65	0.2618	34			
595026511	17/64	-	-	6.75	0.2656	35			
595026811	-	-	-	6.80	0.2677				
595027411	-	-	-	6.96	0.2740	36			
595027611	-	-	-	7.00	0.2756				
595028111	9/32	-	-	7.15	0.2813				
595029511	-	-	-	7.50	0.2953	38			94
595029611	19/64	-	-	7.54	0.2969	39			
595030711	-	-	-	7.80	0.3071	40			
595031211	5/16	-	-	7.94	0.3125				
595031511	-	-	-	8.00	0.3150	41			
595031711	-	-	-	8.04	0.3165				
595032811	21/64	-	-	8.33	0.3281	43	101		
595033411	-	-	-	8.50	0.3346				
595033511	-	-	-	8.52	0.3354	44			
595033811	-	-	-	8.58	0.3378				
595034211	-	-	-	8.70	0.3425	45			
595034311	11/32	-	-	8.73	0.3438				
595034611	-	-	-	8.80	0.3465	46			
595035411	-	-	-	9.00	0.3543				
595035911	23/64	-	-	9.13	0.3594	48		106	
595037011	-	-	-	9.39	0.3697				
595037411	-	-	-	9.50	0.3740	49			
595037511	3/8	-	-	9.53	0.3750				
595038611	-	-	W	9.80	0.3858	50			
595038911	-	-	-	9.90	0.3898				
595039011	25/64	-	-	9.92	0.3906	51			
595039311	-	-	-	9.97	0.3925				
595039411	-	-	-	10.00	0.3937	53			
595040511	-	-	-	10.30	0.4055				
595040611	13/32	-	-	10.32	0.4063	55			
595041311	-	-	-	10.50	0.4134				
595042211	27/64	-	-	10.72	0.4219	56			
595042511	-	-	-	10.80	0.4252				
595042611	-	-	-	10.83	0.4264	58			
595043311	-	-	-	11.00	0.4331				
595043711	7/16	-	-	11.11	0.4375	59			
595045211	-	-	-	11.47	0.4516				
595045411	-	-	-	11.50	0.4528	60			
595045311	29/64	-	-	11.51	0.4531				
595045511	-	-	-	11.56	0.4551	63			
595046511	-	-	-	11.80	0.4646				
595046811	15/32	-	-	11.91	0.4688	65			
595047211	-	-	-	12.00	0.4724				
595048411	31/64	-	-	12.30	0.4844	128			
595050011	1/2	-	-	12.70	0.5000				

Packed: 1 pc.
Available WXS[®] Coating Only.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5950Ni	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best

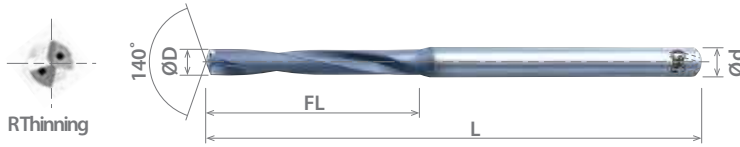




List 5955Ni

WHO55-5D, Coolant-Through

SPEED FEED P303	CARBIDE	WXS	12-20°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
D=3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
595511811	-	-	-	3.00	0.1181	29	78	6
595512511	1/8	-	-	3.18	0.1250			
3316330	-	-	-	3.30	0.1299			
3316340	-	-	-	3.40	0.1339			
3316349	-	-	-	3.49	0.1374			
3316350	-	-	-	3.50	0.1378			
595513911	-	-	-	3.51	0.1382			
3316360	-	-	-	3.60	0.1417			
3316370	-	-	-	3.70	0.1457			
3316380	-	25	-	3.80	0.1496			
3316390	-	-	-	3.90	0.1535			
595515611	5/32	-	-	3.97	0.1563			
3316400	-	-	-	4.00	0.1575			
3316410	-	-	-	4.10	0.1614			
3316415	-	-	-	4.15	0.1634			
3316420	-	-	-	4.20	0.1654			
3316430	-	-	-	4.30	0.1693			
595517111	11/64	-	-	4.37	0.1719			
3316440	-	-	-	4.40	0.1732			
3316450	-	16	-	4.50	0.1772			
3316460	-	-	-	4.60	0.1811			
3316470	-	13	-	4.70	0.1850			
595518711	3/16	-	-	4.76	0.1875			
3316480	-	12	-	4.80	0.1890			
3316490	-	-	-	4.90	0.1929			
3316500	-	-	-	5.00	0.1969			
3316510	-	-	-	5.10	0.2008			
595520311	13/64	-	-	5.16	0.2031			
3316520	-	-	-	5.20	0.2047			
595520611	-	-	-	5.22	0.2055			
3316530	-	-	-	5.30	0.2087			
3316540	-	-	-	5.40	0.2126			
3316550	-	-	-	5.50	0.2165			
595521611	-	-	-	5.53	0.2177			
595521811	7/32	-	-	5.56	0.2188			
3316556	-	-	-	5.60	0.2189			
3316560	-	-	-	5.60	0.2205			
3316570	-	-	-	5.70	0.2244			
3316580	-	-	-	5.80	0.2283			
3316590	-	-	-	5.90	0.2323			
595523411	15/64	-	-	5.95	0.2344			
3316600	-	-	-	6.00	0.2362			

Packed: 1 pc.
Available WXS[®] Coating Only.

continued on next page **EP**

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5955Ni	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 5955Ni (Continued)

SPEED FEED P303	CARBIDE	WXS		12-20°	SHANK h6
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WHO55-5D, Coolant-Through

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
595525011	1/4	-	-	6.35	0.2500	52	102	8
3316650	-	-	-	6.50	0.2559			
595526211	-	-	-	6.65	0.2618	54		
595526511	17/64	-	-	6.75	0.2656	55		
3316680	-	-	-	6.80	0.2677	56		
595527411	-	-	-	6.96	0.2740			
3316700	-	-	-	7.00	0.2756	58		
595528111	9/32	-	-	7.14	0.2813			
3316750	-	-	-	7.50	0.2953	60		
595529611	19/64	-	-	7.54	0.2969	62		
3316780	-	-	-	7.80	0.3071	64		
595531211	5/16	-	-	7.94	0.3125			
3316800	-	-	-	8.00	0.3150	66		
595531711	-	-	-	8.04	0.3165			
595532811	21/64	-	-	8.33	0.3281	68		
3316850	-	-	-	8.50	0.3346			
595533511	-	-	-	8.52	0.3354	70		
3316858	-	-	-	8.58	0.3378			
3316870	-	-	-	8.70	0.3425	72		
595534311	11/32	-	-	8.73	0.3438			
3316880	-	-	-	8.80	0.3465	74		
3316900	-	-	-	9.00	0.3543			
595535911	23/64	-	-	9.13	0.3594	76		
595537011	-	-	-	9.39	0.3697			
3316950	-	-	-	9.50	0.3740	78		
595537511	3/8	-	-	9.53	0.3750			
3316980	-	-	W	9.80	0.3858	80		
595538911	-	-	-	9.90	0.3898			
595539011	25/64	-	-	9.92	0.3906	84		
3316997	-	-	-	9.97	0.3925			
3317000	-	-	-	10.00	0.3937	88		
3317030	-	-	-	10.30	0.4055			
595540611	13/32	-	-	10.32	0.4063	90		
3317050	-	-	-	10.50	0.4134			
595542211	27/64	-	-	10.72	0.4219	92		
3317080	-	-	-	10.80	0.4252			
595542611	-	-	-	10.83	0.4264	94		
3317100	-	-	-	11.00	0.4331			
595543711	7/16	-	-	11.11	0.4375	96		
595545211	-	-	-	11.47	0.4516			
3317150	-	-	-	11.50	0.4528	98		
595545311	29/64	-	-	11.51	0.4531			
3317156	-	-	-	11.56	0.4551	100		
3317180	-	-	-	11.80	0.4646			
595546811	15/32	-	-	11.91	0.4688	104		
3317200	-	-	-	12.00	0.4724			
595548411	31/64	-	-	12.30	0.4844	104		
595550011	1/2	-	-	12.70	0.5000			

Packed: 1 pc.
Available WXS[®] Coating Only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5955Ni	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>			<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best

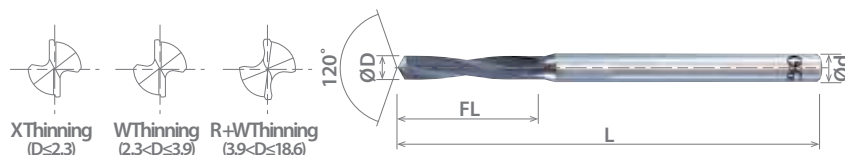




List 5171

WH70-DRL, 55-70 HRC

SPEED FEED P304	CARBIDE	WXS	12°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 18.6	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
3318200	-	-	-	2.00	0.0787	12	42	3
3318210	-	-	-	2.10	0.0827			
3318220	-	-	-	2.20	0.0866	13	43	
3318230	-	-	-	2.30	0.0906			
3318240	-	-	-	2.40	0.0945	14	44	
3318250	-	-	-	2.50	0.0984			
3318260	-	-	-	2.60	0.1024	16	46	
3318270	-	-	-	2.70	0.1063			
3318280	-	-	-	2.80	0.1102			
3318290	-	-	-	2.90	0.1142			
3318300	-	-	-	3.00	0.1181	18	48	
3318310	-	-	-	3.10	0.1220			
3318320	-	-	-	3.20	0.1260	20	50	
3318330	-	-	-	3.30	0.1299			
3318340	-	-	-	3.40	0.1339	22	52	
3318350	-	-	-	3.50	0.1378			
3318360	-	-	-	3.60	0.1417	25	54	
3318370	-	-	-	3.70	0.1457			
3318380	-	25	-	3.80	0.1496	28	56	
3318390	-	-	-	3.90	0.1535			
3318400	-	-	-	4.00	0.1575	32	58	
3318410	-	-	-	4.10	0.1614			
3318420	-	-	-	4.20	0.1654	35	60	
3318430	-	-	-	4.30	0.1693			
3318440	-	-	-	4.40	0.1732	40	62	
3318450	-	16	-	4.50	0.1772			
3318460	-	-	-	4.60	0.1811	42	64	
3318470	-	13	-	4.70	0.1850			
3318480	-	12	-	4.80	0.1890	44	66	
3318490	-	-	-	4.90	0.1929			
3318500	-	-	-	5.00	0.1969	46	68	
3318510	-	-	-	5.10	0.2008			
3318520	-	-	-	5.20	0.2047	48	70	
3318530	-	-	-	5.30	0.2087			
3318540	-	-	-	5.40	0.2126	50	72	
3318550	-	-	-	5.50	0.2165			
3318560	-	-	-	5.60	0.2205	52	74	
3318570	-	-	-	5.70	0.2244			
3318580	-	-	-	5.80	0.2283	54	76	
3318590	-	-	-	5.90	0.2323			
3318600	-	-	-	6.00	0.2362	56	78	
3318610	-	-	-	6.10	0.2402			

Packed: 1 pc.
Available WXS® Coating Only.
EXOCARB® VX taps recommended.

continued on next page

List No.	Work Material															
	P					M			K	N		S	H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels		
	Low 1010 1018	Med. 1035 1045	High 1065				300	400		17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC
5171																<input checked="" type="checkbox"/>

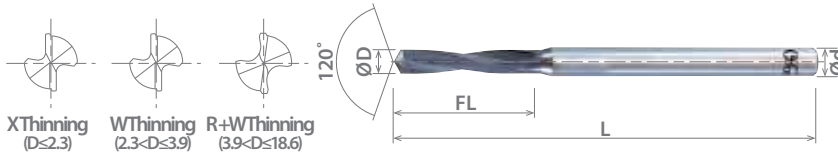
good best





List 5171 (Continued)

WH70-DRL, 55-70 HRC



SPEED FEED P304	CARBIDE	WXS	12°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 18.6	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
3318620	-	-	-	6.20	0.2441	40	83	7
3318630	-	-	-	6.30	0.2480			
3318640	-	-	-	6.40	0.2520			
3318650	-	-	-	6.50	0.2559			
3318660	-	-	-	6.60	0.2598			
3318670	-	-	-	6.70	0.2638			
3318680	-	-	-	6.80	0.2677			
3318690	-	-	I	6.90	0.2717			
3318700	-	-	-	7.00	0.2756			
3318710	-	-	-	7.10	0.2795			
3318720	-	-	-	7.20	0.2835			
3318730	-	-	-	7.30	0.2874			
3318740	-	-	-	7.40	0.2913			
3318750	-	-	-	7.50	0.2953			
3318760	-	-	-	7.60	0.2992			
3318770	-	-	-	7.70	0.3031			
3318780	-	-	-	7.80	0.3071			
3318790	-	-	-	7.90	0.3110			
3318800	-	-	-	8.00	0.3150			
3318810	-	-	-	8.10	0.3189			
3318820	-	-	P	8.20	0.3228			
3318830	-	-	-	8.30	0.3268			
3318840	-	-	-	8.40	0.3307			
3318850	-	-	-	8.50	0.3346			
3318860	-	-	-	8.60	0.3386			
3318870	-	-	-	8.70	0.3425			
3318880	-	-	-	8.80	0.3465			
3318890	-	-	-	8.90	0.3504			
3318900	-	-	-	9.00	0.3543			
3318910	-	-	-	9.10	0.3583			
3318920	-	-	-	9.20	0.3622			
3318930	-	-	-	9.30	0.3661			
3318940	-	-	-	9.40	0.3701			
3318950	-	-	-	9.50	0.3740			
3318960	-	-	-	9.60	0.3780			
3318970	-	-	-	9.70	0.3819			
3318980	-	-	W	9.80	0.3858			
3318990	-	-	-	9.90	0.3898			
3319000	-	-	-	10.00	0.3937			
3319010	-	-	-	10.10	0.3976			
3319020	-	-	-	10.20	0.4016			
3319030	-	-	-	10.30	0.4055			
3319040	-	-	-	10.40	0.4094			
3319050	-	-	-	10.50	0.4134			
3319060	-	-	-	10.60	0.4173			
3319070	-	-	-	10.70	0.4213			
3319080	-	-	-	10.80	0.4252			
3319090	-	-	-	10.90	0.4291			
3319100	-	-	-	11.00	0.4331			
3319110	-	-	-	11.10	0.4370			
3319120	-	-	-	11.20	0.4409			
3319130	-	-	-	11.30	0.4449			

Packed: 1 pc.
Available WXS® Coating Only.
EXOCARB® VX taps recommended.





List 5171 (Continued)

WH70-DRL, 55-70 HRC

SPEED FEED P304	CARBIDE	WXS	12°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
3319140	-	-	-	11.40	0.4488	71	120	12	
3319150	-	-	-	11.50	0.4528				
3319160	-	-	-	11.60	0.4567				
3319170	-	-	-	11.70	0.4606				
3319180	-	-	-	11.80	0.4646				
3319190	-	-	-	11.90	0.4685				
3319200	-	-	-	12.00	0.4724	76	136	16	
517112113	-	-	-	12.10	0.4764				
517112613	-	-	-	12.60	0.4961	79	139		20
517114113	-	-	-	14.10	0.5551	90	150		
517114613	-	-	-	14.60	0.5748				
517115613	-	-	-	15.60	0.6142	96	156		
517116113	-	-	-	16.10	0.6339	102	162	20	
517116613	-	-	-	16.60	0.6535				
517117613	-	-	-	17.60	0.6929	108	168		
517118613	-	-	-	18.60	0.7323	114	174		

Packed: 1 pc.
Available WXS® Coating Only.
EXOCARB® VX taps recommended.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
5171	1010	1035	1065	4140	4340													<input checked="" type="checkbox"/>

good best





List 5172

EX-H-DRL, Tap Extractor

SPEED FEED P304	CARBIDE	BR	SHANK h7
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EDP Number	Diameter mm	Flute Length FL	Overall Length L	Shank Diameter d	Tap Types					
					Straight Fluted		Spiral Pointed		Spiral Fluted	
					Metric	ANSI	Metric	ANSI	Metric	ANSI
87702	2	10	30	2	M3	#4, #5, #6	M3	#4, #5	M3	#4, #5, #6
87703	3	15	40	3	M4, M5	#8, #10	M4	#8, #10	M4, M5	#8, #10
87704	4	20	45	4	M6	1/4, 5/16	M5, M6	1/4	M6	1/4 and 5/16
87705	5	25	50	5	M8, M10	3/8	-	5/16	M8, M10	3/8
87706	6	30	60	6	M12	7/16, 1/2	M8	3/8	M12	7/16, 1/2
87707	7	35	80	7	M14	9/16	M10	7/16	M14	9/16
87708	8	40	80	8	M16	5/8	M12	1/2	M16	5/8
87709	9	45	100	9	M18	3/4	M14	9/16	M18	3/4
87710	10	50	100	10	M20	-	M16	5/8	M20	-
87781	11	55	110	11	M22	7/8	M18	-	M22	7/8
87782	12	60	110	12	M24	1.00	M20	3/4	M24	1.00
87700	2-6 Set	-	-	-	-	-	-	-	-	-

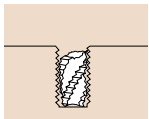
Packed: 1 pc.

Drills are available in 5pc sets (EDP 87700) for Ø2 through Ø6.

For drill diameter selection, use the method outlined below.

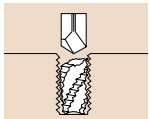
Straight Fluted & Spiral Fluted Taps: 0.46(Tap Ø)<(Drill Ø)<0.75(Tap Ø)

Spiral Pointed Taps: 0.6(Tap Ø)<(Drill Ø)<0.75(Tap Ø)



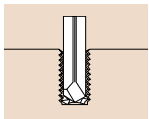
1. Broken Tap

Check how tap is broken. If any portion of the tap is protruding, grind the damaged surface of the tap flush with the workpiece. This will allow the damaged tap to be drilled easier.



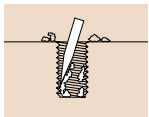
2. Centering of Drill

Position the drill over the center of the tap. Please make sure both the workpiece and drill are properly secured. Make an initial light drill approach, and then quickly retract the drill. For this step, do not use lubrication.



3. Hole Processing

Drill the hole at a fixed feed and speed, stopping the operation occasionally to remove broken chips. In addition, use plenty of high quality cutting oil.



4. Chip Removal

Once the tap has been broken up, the remaining portions of the tap can be removed. For best results, use a scriber. Once the hole is cleaned, tapping can be resumed.

Cutting Conditions and Procedures to Note

1. Use a drilling speed of 65-80SFM.
2. Hand feed of 0.0005~0.001 in/rev is normal.
3. Use a rigid holder.
4. Select a high quality cutting oil and apply in sufficient amounts.
5. This tool should not be used to drill soft steels, aluminum alloys or other soft materials.
6. Resharpener should be done periodically.
7. For through hole processing of heat treated steels, use a spare piece of material underneath the material being drilled as this will prevent breakage caused by sudden torque.
8. **Cannot be used to remove forming taps.**

Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
5172	1010 1018	1035 1045	1065	4140 4340														<input checked="" type="checkbox"/>

good best

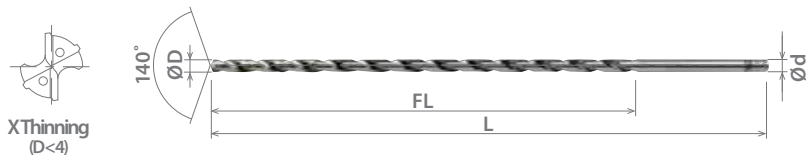




List 5275

CAO-GDXL, 15D-30D, Coolant-Through

SPEED FEED P305	CARBIDE	BR		30°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
D=3	+0/-0.014	+0/-0.0006
3<D≤6	+0/-0.018	+0/-0.0007
6<D≤10	+0/-0.022	+0/-0.0009

EDP Number	Diameter					xD	Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d
8567130	-	-	-	3.00	0.1181	15 x D	55	105	3
8567140	-	-	-	4.00	0.1575		75	125	4
8567340	-	-	-	4.50	0.1772	20 x D	90	140	
8567345	-	16	-				5.00	0.1969	110
8567150	-	-	-	5.00	0.1969	15 x D	90	140	6
8567350	-	-	-			20 x D	115	165	
8567450	-	-	-			30 x D	165	215	
8567355	-	-	-	5.50	0.2165	20 x D	140	190	7
8567455	-	-	-			30 x D	200	250	
8567160	-	-	-			15 x D	110	160	
8567360	-	-	-	6.00	0.2362	20 x D	140	190	8
8567460	-	-	-			30 x D	200	250	
8567165	-	-	-			6.50	0.2559	15 x D	
8567170	-	-	-	7.00	0.2756	20 x D	125	210	9
8567370	-	-	-			30 x D	160	280	
8567470	-	-	-			15 x D	145	195	
8567180	-	-	-	8.00	0.3150	20 x D	180	230	10
8567380	-	-	-			30 x D	265	315	
8567480	-	-	-			15 x D	160	210	
8567190	-	-	-	9.00	0.3543	20 x D	210	260	11
8567390	-	-	-			15 x D	180	240	
8567200	-	-	-	10.00	0.3937	20 x D	230	290	12
8567400	-	-	-			15 x D	180	240	

Packed: 1 pc.
Available Bright finish only.



Work Material																		
List No.	P				Die Steels	M			K	N		S	H					
	Carbon Steels			Alloy Steels		Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5275	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best





EXOCARB® MAX-MINI

High Performance Micro Carbide Drills

List 5310

FHL-GDTS, Miniature, 3 Flute, Up to 20D, 40-65 HRC

SPEED FEED P306	CARBIDE	EXO®	25°	SHANK h6
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1 ≤ D ≤ 3	+0/-0.014	+0/-0.0006



EDP Number	Diameter					Neck Length L1	Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
8569010	-	-	-	1.00	0.0394	20	5.0	57	3	140°
8569011	-	-	-	1.10	0.0433		5.5			
8569012	-	-	-	1.20	0.0472		6.5			
8569013	-	-	-	1.30	0.0512		7.5			
8569014	-	54	-	1.40	0.0551		8.5			
8569015	-	-	-	1.50	0.0591		9.5			
8569016	-	-	-	1.60	0.0630		10.5			
8569017	-	51	-	1.70	0.0669		13.0			
8569018	-	-	-	1.80	0.0709	30	15.0	65	120°	
8569019	-	-	-	1.90	0.0748					
8569020	-	-	-	2.00	0.0787					
8569025	-	-	-	2.50	0.0984					
8569030	-	-	-	3.00	0.1181					

Packed: 1 pc.
Available EXO® coating only.
Shrink fit holders recommended.
Must utilize recommended peck cycle for optimum tool life.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5310	1010 1018	1035 1045	1065	4140 4340										<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best





List 5315

UVM-LDS, Miniature, Pilot

SPEED FEED P307	CARBIDE	SS	30°	SHANK h3
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Cutting Diameter Tolerance		
Size	mm	inch
0.05	+0/-0.003	+0/-0.0001



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8589205	-	-	-	0.05	0.00197	0.075	38	3
8589255	-	-	-					1/8

Packed: 1 pc.
Available Super Smooth coating only.



Work Material

List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
5315	1010 1018	1035 1045	1065	4140 4340															

good best





EXOCARB® MAX-MINI

High Performance Micro Carbide Drills

List 5320

UVM-DRL-5D, Miniature

SPEED FEED P307	CARBIDE	SS	30°	SHANK h3
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Cutting Diameter Tolerance		
Size	mm	inch
0.02≤D≤0.08	+0/-0.003	+0/-0.0001



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8589002	-	-	-	0.02	0.00079	0.12	38	3
8589052	-	-	-	0.03	0.00118			1/8
8589003	-	-	-			0.04		0.00157
8589053	-	-	-	0.05	0.00197			
8589004	-	-	-			0.08		0.00315
8589054	-	-	-	0.08	0.00315			
8589005	-	-	-					
8589055	-	-	-			1/8		
8589008	-	-	-			3		
8589058	-	-	-			1/8		

Packed: 1 pc.
Available Super Smooth coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
5320						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 5325

UVM-DRL-10D, Miniature

SPEED FEED P307	CARBIDE	SS	30°	SHANK h3
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Cutting Diameter Tolerance		
Size	mm	inch
0.02 ≤ D ≤ 0.08	+0 / -0.003	+0 / -0.0001



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8589102	-	-	-	0.02	0.00079	0.22	38	3
8589152	-	-	-	0.03	0.00118			1/8
8589103	-	-	-			0.04		0.00157
8589153	-	-	-	0.05	0.00197			
8589104	-	-	-			0.08		0.00315
8589154	-	-	-	0.08	0.00315			
8589105	-	-	-					
8589155	-	-	-			1/8		
8589108	-	-	-			3		
8589158	-	-	-			1/8		

Packed: 1 pc.
Available Super Smooth coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
5325	1010 1018	1035 1045	1065	4140 4340														

good best



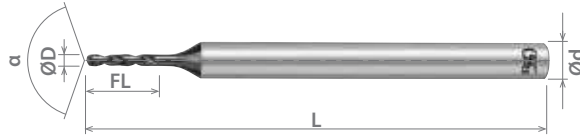


EXOCARB® MAX-MINI

High Performance Miniature Carbide Drills

List 5330

WX-MS-GDS, Precision Drill



SPEED FEED P308	CARBIDE	TiAlN	30°	SHANK h6
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Cutting Diameter Tolerance		
Size	mm	inch
0.02 ≤ D ≤ 5.00	+0 / -0.010	+0 / -0.0004

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
3300020	-	92	-	0.20	0.0079	1.5	38	3	140°
3300021	-	91	-	0.21	0.0083				
3300022	-	90	-	0.22	0.0087				
3300023	-	89	-	0.23	0.0091				
3300024	-	-	-	0.24	0.0094				
3300025	-	-	-	0.25	0.0098				
3300026	-	-	-	0.26	0.0102				
3300027	-	-	-	0.27	0.0106				
3300028	-	85	-	0.28	0.0110				
3300029	-	-	-	0.29	0.0114				
3300030	-	-	-	0.30	0.0118	2.0			
3300031	-	-	-	0.31	0.0122				
3300032	-	-	-	0.32	0.0126				
3300033	-	81	-	0.33	0.0130				
3300034	-	-	-	0.34	0.0134				
3300035	-	-	-	0.35	0.0138				
3300036	-	-	-	0.36	0.0142				
3300037	-	-	-	0.37	0.0146				
3300038	-	-	-	0.38	0.0150				
3300039	-	-	-	0.39	0.0154		2.5		
3300040	-	-	-	0.40	0.0157				
3300041	-	-	-	0.41	0.0161				
3300042	-	-	-	0.42	0.0165				
3300043	-	-	-	0.43	0.0169				
3300044	-	-	-	0.44	0.0173				
3300045	-	-	-	0.45	0.0177				
3300046	-	-	-	0.46	0.0181				
3300047	-	-	-	0.47	0.0185				
3300048	-	-	-	0.48	0.0189	3.0			
3300049	-	-	-	0.49	0.0193				
3300050	-	-	-	0.50	0.0197				
3300051	-	76	-	0.51	0.0201				
3300052	-	-	-	0.52	0.0205				
3300053	-	75	-	0.53	0.0209				
3300054	-	-	-	0.54	0.0213				
3300055	-	-	-	0.55	0.0217				
3300056	-	-	-	0.56	0.0220				
3300057	-	74	-	0.57	0.0224		3.5		
3300058	-	-	-	0.58	0.0228				
3300059	-	-	-	0.59	0.0232				
3300060	-	-	-	0.60	0.0236				
3300061	-	73	-	0.61	0.0240				
3300062	-	-	-	0.62	0.0244				
3300063	-	-	-	0.63	0.0248				
3300064	-	72	-	0.64	0.0252				
3300065	-	-	-	0.65	0.0256				
3300066	-	71	-	0.66	0.0260	4.0			
3300067	-	-	-	0.67	0.0264				
3300068	-	-	-	0.68	0.0268				
3300069	-	-	-	0.69	0.0272				

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

SPEED FEED P308	CARBIDE	TiAlN	30°	GRANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
3300070	-	-	-	0.70	0.0276	4.5	38	3	140°
3300071	-	70	-	0.71	0.0280				
3300072	-	-	-	0.72	0.0283				
3300073	-	-	-	0.73	0.0287				
3300074	-	69	-	0.74	0.0291				
3300075	-	-	-	0.75	0.0295				
3300076	-	-	-	0.76	0.0299				
3300077	-	-	-	0.77	0.0303				
3300078	-	-	-	0.78	0.0307				
3300079	1/32	68	-	0.79	0.0311	5.0			
3300080	-	-	-	0.80	0.0315				
3300081	-	67	-	0.81	0.0319				
3300082	-	-	-	0.82	0.0323				
3300083	-	-	-	0.83	0.0327				
3300084	-	66	-	0.84	0.0331				
3300085	-	-	-	0.85	0.0335				
3300086	-	-	-	0.86	0.0339				
3300087	-	-	-	0.87	0.0343				
3300088	-	-	-	0.88	0.0346	5.5			
3300089	-	65	-	0.89	0.0350				
3300090	-	-	-	0.90	0.0354				
3300091	-	64	-	0.91	0.0358				
3300092	-	-	-	0.92	0.0362				
3300093	-	-	-	0.93	0.0366				
3300094	-	63	-	0.94	0.0370				
3300095	-	-	-	0.95	0.0374				
3300096	-	-	-	0.96	0.0378	6.0			
3300097	-	62	-	0.97	0.0382				
3300098	-	-	-	0.98	0.0386				
3300099	-	61	-	0.99	0.0390				
3300100	-	-	-	1.00	0.0394				
3300101	-	-	-	1.01	0.0398				
3300102	-	60	-	1.02	0.0402				
3300103	-	-	-	1.03	0.0406				
3300104	-	59	-	1.04	0.0409	7.0			
3300105	-	-	-	1.05	0.0413				
3300106	-	-	-	1.06	0.0417				
3300107	-	58	-	1.07	0.0421				
3300108	-	-	-	1.08	0.0425				
3300109	-	57	-	1.09	0.0429				
3300110	-	-	-	1.10	0.0433				
3300111	-	-	-	1.11	0.0437				
3300112	-	-	-	1.12	0.0441	42			
3300113	-	-	-	1.13	0.0445				
3300114	-	-	-	1.14	0.0449				
3300115	-	-	-	1.15	0.0453				

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
5330	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



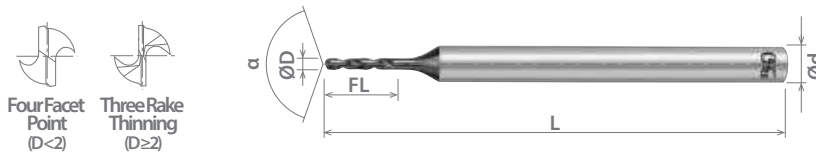


List 5330 (Continued)

WX-MS-GDS, Precision Drill

SPEED FEED P308	CARBIDE	TiAlN	30°	SHANK h6
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Cutting Diameter Tolerance		
Size	mm	inch
0.02 ≤ D ≤ 5.00	+0 / -0.010	+0 / -0.0004



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
3300116	-	-	-	1.16	0.0457	7.0	42	3	140°
3300117	-	-	-	1.17	0.0461				
3300118	-	56	-	1.18	0.0465				
3300119	3/64	-	-	1.19	0.0469				
3300120	-	-	-	1.20	0.0472				
3300121	-	-	-	1.21	0.0476				
3300122	-	-	-	1.22	0.0480				
3300123	-	-	-	1.23	0.0484				
3300124	-	-	-	1.24	0.0488				
3300125	-	-	-	1.25	0.0492				
3300126	-	-	-	1.26	0.0496				
3300127	-	-	-	1.27	0.0500				
3300128	-	-	-	1.28	0.0504				
3300129	-	-	-	1.29	0.0508				
3300130	-	-	-	1.30	0.0512				
3300131	-	-	-	1.31	0.0516				
3300132	-	55	-	1.32	0.0520				
3300133	-	-	-	1.33	0.0524				
3300134	-	-	-	1.34	0.0528				
3300135	-	-	-	1.35	0.0531				
3300136	-	-	-	1.36	0.0535				
3300137	-	-	-	1.37	0.0539				
3300138	-	-	-	1.38	0.0543				
3300139	-	-	-	1.39	0.0547				
3300140	-	54	-	1.40	0.0551				
3300141	-	-	-	1.41	0.0555				
3300142	-	-	-	1.42	0.0559				
3300143	-	-	-	1.43	0.0563				
3300144	-	-	-	1.44	0.0567				
3300145	-	-	-	1.45	0.0571				
3300146	-	-	-	1.46	0.0575				
3300147	-	-	-	1.47	0.0579				
3300148	-	-	-	1.48	0.0583				
3300149	-	-	-	1.49	0.0587				
3300150	-	-	-	1.50	0.0591				
3300151	-	53	-	1.51	0.0594				
3300152	-	-	-	1.52	0.0598				
3300153	-	-	-	1.53	0.0602				
3300154	-	-	-	1.54	0.0606				
3300155	-	-	-	1.55	0.0610				
3300156	-	-	-	1.56	0.0614				
3300157	-	-	-	1.57	0.0618				
3300158	-	-	-	1.58	0.0622				
3300159	1/16	-	-	1.59	0.0626				
3300160	-	-	-	1.60	0.0630				
3300161	-	52	-	1.61	0.0634				
3300162	-	-	-	1.62	0.0638				
3300163	-	-	-	1.63	0.0642				
3300164	-	-	-	1.64	0.0646				
3300165	-	-	-	1.65	0.0650				

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

SPEED FEED P308	CARBIDE	TiAlN	30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
3300166	-	-	-	1.66	0.0654	10	42	3	140°
3300167	-	-	-	1.67	0.0657				
3300168	-	-	-	1.68	0.0661				
3300169	-	-	-	1.69	0.0665				
3300170	-	51	-	1.70	0.0669				
3300171	-	-	-	1.71	0.0673				
3300172	-	-	-	1.72	0.0677				
3300173	-	-	-	1.73	0.0681				
3300174	-	-	-	1.74	0.0685				
3300175	-	-	-	1.75	0.0689				
3300176	-	-	-	1.76	0.0693				
3300177	-	-	-	1.77	0.0697				
3300178	-	50	-	1.78	0.0701	11	42	3	140°
3300179	-	-	-	1.79	0.0705				
3300180	-	-	-	1.80	0.0709				
3300181	-	-	-	1.81	0.0713				
3300182	-	-	-	1.82	0.0717				
3300183	-	-	-	1.83	0.0720				
3300184	-	-	-	1.84	0.0724				
3300185	-	49	-	1.85	0.0728				
3300186	-	-	-	1.86	0.0732				
3300187	-	-	-	1.87	0.0736				
3300188	-	-	-	1.88	0.0740				
3300189	-	-	-	1.89	0.0744				
3300190	-	-	-	1.90	0.0748	12	50	3	140°
3300191	-	-	-	1.91	0.0752				
3300192	-	-	-	1.92	0.0756				
3300193	-	48	-	1.93	0.0760				
3300194	-	-	-	1.94	0.0764				
3300195	-	-	-	1.95	0.0768				
3300196	-	-	-	1.96	0.0772				
3300197	-	-	-	1.97	0.0776				
3300198	5/64	-	-	1.98	0.0780				
3300199	-	47	-	1.99	0.0783				
3300200	-	-	-	2.00	0.0787				
48172201	-	-	-	2.01	0.0791				
48172202	-	-	-	2.02	0.0795				
48172203	-	-	-	2.03	0.0799				
48172204	-	-	-	2.04	0.0803				
3300205	-	-	-	2.05	0.0807				
48172206	-	46	-	2.06	0.0811				
48172207	-	-	-	2.07	0.0815				
48172208	-	45	-	2.08	0.0819				
48172209	-	-	-	2.09	0.0823				
3300210	-	-	-	2.10	0.0827				
48172211	-	-	-	2.11	0.0831				

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

List No.	Work Material																		
	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
5330	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



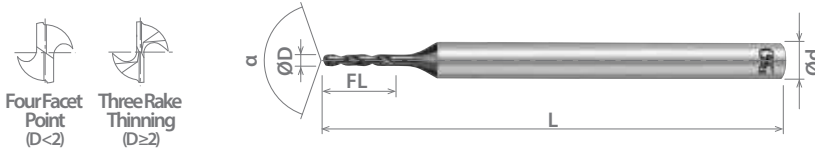


EXOCARB® MAX-MINI

High Performance Miniature Carbide Drills

List 5330 (Continued)

WX-MS-GDS, Precision Drill



SPEED FEED P308	CARBIDE	TiAlN	30°	SHANK h6
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Cutting Diameter Tolerance		
Size	mm	inch
0.02≤D≤5.00	+0 / -0.010	+0 / -0.0004

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
48172212	-	-	-	2.12	0.0835	12	50	3	140°
48172213	-	-	-	2.13	0.0839	13			
48172214	-	-	-	2.14	0.0843				
3300215	-	-	-	2.15	0.0846				
48172216	-	-	-	2.16	0.0850				
48172217	-	-	-	2.17	0.0854				
48172218	-	44	-	2.18	0.0858				
48172219	-	-	-	2.19	0.0862				
3300220	-	-	-	2.20	0.0866				
48172221	-	-	-	2.21	0.0870				
48172222	-	-	-	2.22	0.0874				
48172223	-	-	-	2.23	0.0878				
48172224	-	-	-	2.24	0.0882				
3300225	-	-	-	2.25	0.0886				
48172226	-	43	-	2.26	0.0890				
48172227	-	-	-	2.27	0.0894				
48172228	-	-	-	2.28	0.0898				
48172229	-	-	-	2.29	0.0902				
3300230	-	-	-	2.30	0.0906				
48172231	-	-	-	2.31	0.0909				
48172232	-	-	-	2.32	0.0913				
48172233	-	-	-	2.33	0.0917				
48172234	-	-	-	2.34	0.0921				
3300235	-	-	-	2.35	0.0925				
48172236	-	-	-	2.36	0.0929				
48172237	-	42	-	2.37	0.0933				
48172238	3/32	-	-	2.38	0.0937				
48172239	-	-	-	2.39	0.0941				
3300240	-	-	-	2.40	0.0945				
48172241	-	-	-	2.41	0.0949				
48172242	-	-	-	2.42	0.0953				
48172243	-	-	-	2.43	0.0957				
48172244	-	41	-	2.44	0.0961				
3300245	-	-	-	2.45	0.0965				
48172246	-	-	-	2.46	0.0969				
48172247	-	-	-	2.47	0.0972				
48172248	-	-	-	2.48	0.0976				
48172249	-	40	-	2.49	0.0980				
3300250	-	-	-	2.50	0.0984				
48172251	-	-	-	2.51	0.0988				
48172252	-	-	-	2.52	0.0992				
48172253	-	39	-	2.53	0.0996				
48172254	-	-	-	2.54	0.1000				
3300255	-	-	-	2.55	0.1004				
48172256	-	-	-	2.56	0.1008				
48172257	-	-	-	2.57	0.1012				
48172258	-	38	-	2.58	0.1016				
48172259	-	-	-	2.59	0.1020				
3300260	-	-	-	2.60	0.1024				
48172261	-	-	-	2.61	0.1028				

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

SPEED FEED P308	CARBIDE	TiAlN	30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
48172262	-	-	-	2.62	0.1031	14	50	3	130°
48172263	-	-	-	2.63	0.1035				
48172264	-	37	-	2.64	0.1039				
3300265	-	-	-	2.65	0.1043				
48172266	-	-	-	2.66	0.1047				
48172267	-	-	-	2.67	0.1051				
48172268	-	-	-	2.68	0.1055				
48172269	-	-	-	2.69	0.1059				
3300270	-	-	-	2.70	0.1063				
48172271	-	36	-	2.71	0.1067				
48172272	-	-	-	2.72	0.1071				
48172273	-	-	-	2.73	0.1075				
48172274	-	-	-	2.74	0.1079				
3300275	-	-	-	2.75	0.1083				
48172276	-	-	-	2.76	0.1087				
48172277	-	-	-	2.77	0.1091				
48172278	7/64	-	-	2.78	0.1094				
48172279	-	35	-	2.79	0.1098				
3300280	-	-	-	2.80	0.1102				
48172281	-	-	-	2.81	0.1106				
48172282	-	34	-	2.82	0.1110				
48172283	-	-	-	2.83	0.1114				
48172284	-	-	-	2.84	0.1118				
3300285	-	-	-	2.85	0.1122				
48172286	-	-	-	2.86	0.1126				
48172287	-	33	-	2.87	0.1130				
48172288	-	-	-	2.88	0.1134				
48172289	-	-	-	2.89	0.1138				
3300290	-	-	-	2.90	0.1142				
48172291	-	-	-	2.91	0.1146				
48172292	-	-	-	2.92	0.1150				
48172293	-	-	-	2.93	0.1154				
48172294	-	-	-	2.94	0.1157				
3300295	-	32	-	2.95	0.1161				
48172296	-	-	-	2.96	0.1165				
48172297	-	-	-	2.97	0.1169				
48172298	-	-	-	2.98	0.1173				
48172299	-	-	-	2.99	0.1177				
3300300	-	-	-	3.00	0.1181				
48172301	-	-	-	3.01	0.1185				
48172302	-	-	-	3.02	0.1189				
48172303	-	-	-	3.03	0.1193				
48172304	-	-	-	3.04	0.1197				
3300305	-	31	-	3.05	0.1201				
48172306	-	-	-	3.06	0.1205				
48172307	-	-	-	3.07	0.1209				
					18	56	4		

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

List No.	Work Material																	
	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
5330	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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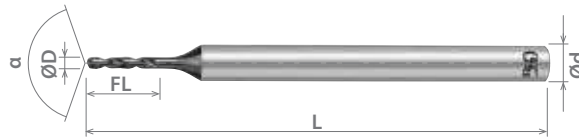


EXOCARB® MAX-MINI

High Performance Miniature Carbide Drills

List 5330 (Continued)

WX-MS-GDS, Precision Drill



SPEED FEED	CARBIDE	TiAlN	30°	SHANK
P308				h6

Cutting Diameter Tolerance		
Size	mm	inch
0.02 ≤ D ≤ 5.00	+0 / -0.010	+0 / -0.0004

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
48172308	-	-	-	3.08	0.1213	18	56	4	130°
48172309	-	-	-	3.09	0.1217				
3300310	-	-	-	3.10	0.1220				
48172311	-	-	-	3.11	0.1224				
48172312	-	-	-	3.12	0.1228				
48172313	-	-	-	3.13	0.1232				
48172314	-	-	-	3.14	0.1236				
3300315	-	-	-	3.15	0.1240				
48172316	-	-	-	3.16	0.1244				
48172317	-	-	-	3.17	0.1248				
48172318	1/8	-	-	3.18	0.1252				
48172319	-	-	-	3.19	0.1256				
3300320	-	-	-	3.20	0.1260				
48172321	-	-	-	3.21	0.1264				
48172322	-	-	-	3.22	0.1268				
48172323	-	-	-	3.23	0.1272				
48172324	-	-	-	3.24	0.1276				
3300325	-	-	-	3.25	0.1280				
48172326	-	30	-	3.26	0.1283				
48172327	-	-	-	3.27	0.1287				
48172328	-	-	-	3.28	0.1291				
48172329	-	-	-	3.29	0.1295				
3300330	-	-	-	3.30	0.1299				
48172331	-	-	-	3.31	0.1303				
48172332	-	-	-	3.32	0.1307				
48172333	-	-	-	3.33	0.1311				
48172334	-	-	-	3.34	0.1315				
3300335	-	-	-	3.35	0.1319				
48172336	-	-	-	3.36	0.1323				
48172337	-	-	-	3.37	0.1327				
48172338	-	-	-	3.38	0.1331				
48172339	-	-	-	3.39	0.1335				
3300340	-	-	-	3.40	0.1339				
48172341	-	-	-	3.41	0.1343				
48172342	-	-	-	3.42	0.1346				
48172343	-	-	-	3.43	0.1350				
48172344	-	-	-	3.44	0.1354				
3300345	-	29	-	3.45	0.1358				
48172346	-	-	-	3.46	0.1362				
48172347	-	-	-	3.47	0.1366				
48172348	-	-	-	3.48	0.1370				
48172349	-	-	-	3.49	0.1374				
3300350	-	-	-	3.50	0.1378				
48172351	-	-	-	3.51	0.1382				
48172352	-	-	-	3.52	0.1386				
48172353	-	-	-	3.53	0.1390				
48172354	-	-	-	3.54	0.1394				
3300355	-	-	-	3.55	0.1398				
48172356	-	-	-	3.56	0.1402				
48172357	9/64	-	-	3.57	0.1406				

Packed: 1 pc.
Available TiAlN coating only.





List 5330 (Continued)

WX-MS-GDS, Precision Drill

SPEED FEED P308	CARBIDE	TiAlN	30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
48172358	-	-	-	3.58	0.1409	20	56	4	130°
48172359	-	-	-	3.59	0.1413				
3300360	-	-	-	3.60	0.1417				
48172361	-	-	-	3.61	0.1421				
48172362	-	-	-	3.62	0.1425				
48172363	-	-	-	3.63	0.1429				
48172364	-	-	-	3.64	0.1433				
3300365	-	-	-	3.65	0.1437				
48172366	-	27	-	3.66	0.1441				
48172367	-	-	-	3.67	0.1445				
48172368	-	-	-	3.68	0.1449				
48172369	-	-	-	3.69	0.1453				
3300370	-	-	-	3.70	0.1457				
48172371	-	-	-	3.71	0.1461				
48172372	-	-	-	3.72	0.1465				
48172373	-	26	-	3.73	0.1469				
48172374	-	-	-	3.74	0.1472				
3300375	-	-	-	3.75	0.1476				
48172376	-	-	-	3.76	0.1480				
48172377	-	-	-	3.77	0.1484				
48172378	-	-	-	3.78	0.1488				
48172379	-	-	-	3.79	0.1492				
3300380	-	25	-	3.80	0.1496				
48172381	-	-	-	3.81	0.1500				
48172382	-	-	-	3.82	0.1504				
48172383	-	-	-	3.83	0.1508				
48172384	-	-	-	3.84	0.1512				
3300385	-	-	-	3.85	0.1516				
48172386	-	24	-	3.86	0.1520				
48172387	-	-	-	3.87	0.1524				
48172388	-	-	-	3.88	0.1528				
48172389	-	-	-	3.89	0.1531				
3300390	-	-	-	3.90	0.1535				
48172391	-	23	-	3.91	0.1539				
48172392	-	-	-	3.92	0.1543				
48172393	-	-	-	3.93	0.1547				
48172394	-	-	-	3.94	0.1551				
3300395	-	-	-	3.95	0.1555				
48172396	-	-	-	3.96	0.1559				
48172397	5/32	-	-	3.97	0.1563				
48172398	-	-	-	3.98	0.1567				
48172399	-	22	-	3.99	0.1571				
3300400	-	-	-	4.00	0.1575				
3300405	-	-	-	4.05	0.1594				
3300410	-	-	-	4.10	0.1614				
3300415	-	-	-	4.15	0.1634				
						64	5		

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

List No.	Work Material																		
	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
5330	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





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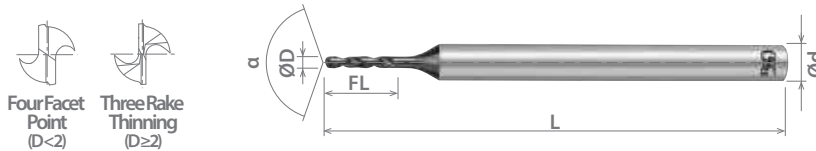
High Performance Miniature Carbide Drills

List 5330 (Continued)

WX-MS-GDS, Precision Drill

SPEED FEED P308	CARBIDE	TiAIN	30°	SHANK h6
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Cutting Diameter Tolerance		
Size	mm	inch
0.02 ≤ D ≤ 5.00	+0 / -0.010	+0 / -0.0004



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
3300420	-	-	-	4.20	0.1654	22	64	5	130°
3300425	-	-	-	4.25	0.1673				
3300430	-	-	-	4.30	0.1693				
3300435	-	-	-	4.35	0.1713				
3300440	-	-	-	4.40	0.1732				
3300445	-	-	-	4.45	0.1752				
3300450	-	16	-	4.50	0.1772	24			
3300455	-	-	-	4.55	0.1791				
3300460	-	-	-	4.60	0.1811				
3300465	-	-	-	4.65	0.1831				
3300470	-	13	-	4.70	0.1850				
3300475	-	-	-	4.75	0.1870	26			
3300480	-	12	-	4.80	0.1890				
3300485	-	-	-	4.85	0.1909				
3300490	-	-	-	4.90	0.1929				
3300495	-	-	-	4.95	0.1949				
3300500	-	-	-	5.00	0.1969				

Packed: 1 pc.
Available TiAIN coating only.



List No.	Work Material																	
	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
5330	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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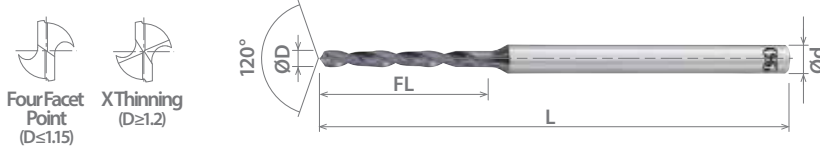


List 5340

MRS-GDL, Precision Drill

SPEED FEED P309	CARBIDE	SS	30°	SHANK h6
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Cutting Diameter Tolerance		
Size	mm	inch
0.50 ≤ D ≤ 3.00	+0 / -0.008	+0 / -0.0003



Four Facet Point (D ≤ 1.15)
XThinning (D ≥ 1.2)

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8577050	-	-	-	0.50	0.0197	6.0	42	3
8577054	-	-	-	0.54	0.0213	6.6		
8577055	-	-	-	0.55	0.0217	6.6		
8577056	-	-	-	0.56	0.0220	7.2	46	
8577060	-	-	-	0.60	0.0236	7.2		
8577063	-	-	-	0.63	0.0248	7.8		
8577064	-	72	-	0.64	0.0252	7.8	50	
8577065	-	-	-	0.65	0.0256	8.4		
8577070	-	-	-	0.70	0.0276	8.4		
8577071	-	70	-	0.71	0.0280	9.0	54	
8577072	-	-	-	0.72	0.0283	9.0		
8577073	-	-	-	0.73	0.0287	9.0		
8577074	-	69	-	0.74	0.0291	9.6	54	
8577075	-	-	-	0.75	0.0295	10.2		
8577080	-	-	-	0.80	0.0315	10.2		
8577081	-	67	-	0.81	0.0319	10.8	54	
8577082	-	-	-	0.82	0.0323	10.8		
8577090	-	-	-	0.90	0.0354	10.8		
8577091	-	64	-	0.91	0.0358	11.4	54	
8577092	-	-	-	0.92	0.0362	12.0		
8577100	-	-	-	1.00	0.0394	12.0		
8577110	-	-	-	1.10	0.0433	13.2	54	
8577111	-	-	-	1.11	0.0437	13.8		
8577112	-	-	-	1.12	0.0441	13.8		
8577115	-	-	-	1.15	0.0453	14.4	54	
8577120	-	-	-	1.20	0.0472	14.4		
8577127	-	-	-	1.27	0.0500	15.6		
8577128	-	-	-	1.28	0.0504	15.6	54	
8577129	-	-	-	1.29	0.0508	16.8		
8577130	-	-	-	1.30	0.0512	16.8		
8577140	-	54	-	1.40	0.0551	17.4	54	
8577145	-	-	-	1.45	0.0571	17.4		
8577146	-	-	-	1.46	0.0575	18.0		
8577147	-	-	-	1.47	0.0579	18.0	54	
8577150	-	-	-	1.50	0.0591	18.0		
8577151	-	53	-	1.51	0.0594	18.6		
8577152	-	-	-	1.52	0.0598	18.6	54	
8577153	-	-	-	1.53	0.0602	18.6		
8577155	-	-	-	1.55	0.0610	19.2		
8577156	-	-	-	1.56	0.0614	19.2		

Packed: 1 pc.
Available Super Smooth coating only.

continued on next page

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
5340	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





EXOCARB® MAX-MINI

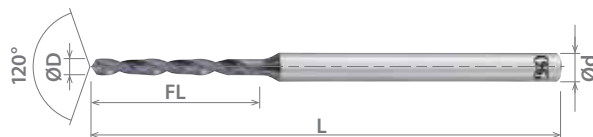
High Performance Miniature Carbide Drills

List 5340 (Continued)

MRS-GDL, Precision Drill

SPEED FEED P309	CARBIDE	SS	30°	SHANK h6
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Cutting Diameter Tolerance		
Size	mm	inch
0.50 ≤ D ≤ 3.00	+0 / -0.008	+0 / -0.0003



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d		
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
8577157	-	-	-	1.57	0.0618	19.2	54	3		
8577160	-	-	-	1.60	0.0630					
8577170	-	51	-	1.70	0.0669	20.4	58			
8577180	-	-	-	1.80	0.0709	21.6				
8577181	-	-	-	1.81	0.0713					
8577182	-	-	-	1.82	0.0717	22.2				
8577183	-	-	-	1.83	0.0720					
8577190	-	-	-	1.90	0.0748	22.8				
8577198	5/64	-	-	1.98	0.0780		24.0			
8577199	-	47	-	1.99	0.0783	24.0				
8577200	-	-	-	2.00	0.0787					
8577210	-	-	-	2.10	0.0827	25.2			62	
8577212	-	-	-	2.12	0.0835					
8577213	-	-	-	2.13	0.0839	25.8				
8577214	-	-	-	2.14	0.0843					
8577220	-	-	-	2.20	0.0866	26.4				
8577229	-	-	-	2.29	0.0902	27.6				
8577230	-	-	-	2.30	0.0906					
8577231	-	-	-	2.31	0.0909	28.2				
8577239	-	-	-	2.39	0.0941	28.8				
8577240	-	-	-	2.40	0.0945					
8577241	-	-	-	2.41	0.0949		66			
8577242	-	-	-	2.42	0.0953	29.4				
8577250	-	-	-	2.50	0.0984	30.0				
8577255	-	-	-	2.55	0.1004	30.6				
8577256	-	-	-	2.56	0.1008					
8577257	-	-	-	2.57	0.1012	31.2				
8577260	-	-	-	2.60	0.1024					
8577270	-	-	-	2.70	0.1063	32.4				
8577277	-	-	-	2.77	0.1091					
8577278	7/64	-	-	2.78	0.1094	33.6				
8577279	-	35	-	2.79	0.1098					
8577280	-	-	-	2.80	0.1102					
8577290	-	-	-	2.90	0.1142	34.8				
8577300	-	-	-	3.00	0.1181	36.0				

Packed: 1 pc.
Available Super Smooth coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels		
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH	6061 7075		Casting	~35 HRC			35-45 HRC	45-50 HRC	50-70 HRC
5340	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



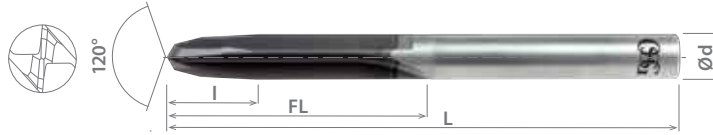


List 7501

Triple Angle

SPEED FEED P310	CARBIDE	DIA	0°
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Tolerance +0/-0.001"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Taper Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	I	L	d
750109816	-	#40	-	2.50	0.0985	15.2	3.8	50.8	2.50
750112916	-	#30	-	3.28	0.1290	20.3	4.8		3.27
750116116	-	#20	-	4.10	0.1615	25.4	5.9	76.2	4.10
750119116	-	#11	-	4.86	0.1915	27.9	7.0	101.6	4.86
750119216	-	#11	-			48.2			
750122116	-	#2	-	5.63	0.2215	33.0	8.0	88.9	5.62
750125116	1/4	-	-	6.38	0.2510	38.1	9.0	139.7	6.37
750125216	1/4	-	-			63.5			
750131316	5/16	-	-	7.96	0.3135	48.2	11.2	101.6	7.96
750137616	3/8	-	-	9.55	0.3760	58.4	13.4	152.4	9.55
750137716	3/8	-	-			96.5			
750143816	7/16	-	-	11.14	0.4385	66.0	15.5	101.6	11.13
750150116	1/2	-	-	12.73	0.5010	76.2	17.7	127.0	12.72

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.
Tri-Flat shank available upon request.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
7501	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

Good Best





List 7520

Low Helix

SPEED FEED P310	CARBIDE	DIA	5°
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Tolerance
+0/-0.001"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Taper Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	I	L	d
752009816	-	#40	-	2.50	0.0985	15.2	7.0	50.8	2.50
752012916	-	#30	-	3.28	0.1290	20.3	9.0		3.27
752016116	-	#20	-	4.10	0.1615	25.4	11.2	76.2	4.10
752019216	-	#11	-	4.86	0.1915	27.9	13.2		4.86
752022116	-	#2	-	5.63	0.2215	33.0	15.2	88.9	5.62
752025116	1/4	-	-	6.38	0.2510	38.1	17.2		6.37
752031316	5/16	-	-	7.96	0.3135	48.2	21.4	101.6	7.96
752037616	3/8	-	-	9.55	0.3760	58.4	25.6		9.55
752043816	7/16	-	-	11.14	0.4385	66.0	29.8		11.13
752050116	1/2	-	-	12.73	0.5010	76.2	34.0	127.0	12.72

Packed: 1 pc.
 Available Diamond coating only.
 Drills are oversize over nominal.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
7520	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			

Good Best





List 7500

Tapered Drill/Reamer

SPEED FEED P310	CARBIDE	DIA	0°
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Tolerance
+0/-0.001"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Taper Length	Overall Length	Shank Diameter	
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	I	L	d	
750009816	-	#40	-	2.50	0.0985	14.5	5.0	76.2	2.50	
750012816	-	#30	-	3.26	0.1285	18.9	6.5		152.4	3.26
750012916	-		-			-		31.9		8.1
750016116	-	#20	-	4.10	0.1615	23.8	9.4	152.4	4.76	
750016216	-	-	-	-	-	40.1				9.5
750018716	3/16	-	-	4.76	0.1875	46.7	9.6	152.4	4.85	
750019016	-	#11	-	4.83	0.1900	47.3				9.6
750019116	-		-				-	4.85	0.1910	
750019216	-		-	-	4.86	0.1920	47.7			152.4
750019316	-		-	-				5.54	0.2180	
750019416	-		-	-	5.63	0.2215	55.2			12.5
750019516	-		-	-				6.35	0.2500	
750019716	-	-	-	6.38	0.2510	37.1	15.6			152.4
750021816	7/32	-	-					7.94	0.3125	
750022116	-	#2	-	7.96	0.3135	62.0	18.7			152.4
750025016	-	-	-					9.53	0.3750	
750025116	-	-	-	9.55	0.3760	74.4	24.8			152.4
750025316	1/4	-	-					11.14	0.4385	
750025416	-	-	-	12.73	0.5010	99.5	24.8			152.4
750025516	-	-	-					-	-	
750031216	-	-	-	-	-	-	-	-	-	
750031316	-	-	-	-	-	-	-	-	-	
750031416	-	-	-	-	-	-	-	-	-	
750031516	-	-	-	-	-	-	-	-	-	
750037516	-	-	-	-	-	-	-	-	-	
750037616	-	-	-	-	-	-	-	-	-	
750037716	-	-	-	-	-	-	-	-	-	
750037816	-	-	-	-	-	-	-	-	-	
750043816	7/16	-	-	-	-	-	-	-	-	
750050116	1/2	-	-	-	-	-	-	-	-	

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.
Tri-Flat shank available upon request.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CFES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
7500	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Good Best





List 7530

High Helix

SPEED FEED P310	CARBIDE	DIA	40°
Tolerance +0/-0.001"			



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	D		FL	L	d
				mm	Inch			
753009816	-	#40	-	2.50	0.0985	15.2	50.8	2.50
753012916	-	#30	-	3.28	0.1290	20.3	76.2	3.27
753016116	-	#20	-	4.10	0.1615	25.4	101.6	4.10
753019116	-	#11	-	4.86	0.1915	27.9		4.86
753022116	-	#2	-	5.63	0.2215	33.0		5.62
753025116	1/4	-	-	6.38	0.2510	38.1		6.37
753031316	5/16	-	-	7.96	0.3135	48.2	152.4	7.96
753037616	3/8	-	-	9.55	0.3760	58.4		9.55
753043816	7/16	-	-	11.14	0.4385	66.0		11.13
753050116	1/2	-	-	12.73	0.5010	76.2		12.72

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
7530	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		

Good Best





List 7532

Stack Drill

SPEED FEED P311	CARBIDE	DIA	40°
Tolerance +0/-0.001"			



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	D		FL	L	d
				mm	Inch			
753209816	-	#40	-	2.50	0.0985	15.2	50.8	2.50
753212916	-	#30	-	3.28	0.1290	20.3	76.2	3.27
753216116	-	#20	-	4.10	0.1615	25.4	101.6	4.10
753219116	-	#11	-	4.86	0.1915	27.9		4.86
753222116	-	#2	-	5.63	0.2215	33.0		5.62
753225116	1/4	-	-	6.38	0.2510	38.1		6.37
753231316	5/16	-	-	7.96	0.3135	48.2	152.4	7.96
753237616	3/8	-	-	9.55	0.3760	58.4		9.55
753243816	7/16	-	-	11.14	0.4385	66.0		11.13
753250116	1/2	-	-	12.73	0.5010	76.2		12.72

Packed: 1 pc.
Available Diamond coating only.
Drills are oversize over nominal.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
7532	<input checked="" type="checkbox"/>									<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Good Best





EXOCARB® AERO-H

Stack Drill for All Stack Applications

List 5732

Stack Drill

SPEED FEED P311	CARBIDE	TiAlN	40°
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Tolerance
+0/-0.0011"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	D		FL	L	d
				mm	Inch			
573219111	-	#11	-	4.86	0.1915			4.86
573225111	1/4	-	-	6.38	0.2510	50.8	101.6	6.37
573237611	3/8	-	-	9.55	0.3760			9.55
573250111	1/2	-	-	12.73	0.5010	101.6	152.4	12.72

Packed: 1 pc.
Available TiAlN coating only.
Drills are oversize over nominal.



Work Material

List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
5732	<input checked="" type="checkbox"/>								<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Good Best

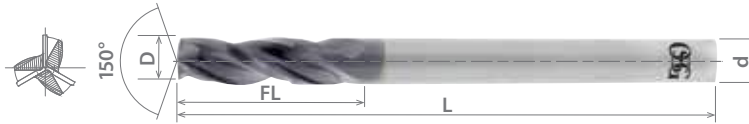




List HP700

Three Flute Drill

SPEED FEED P311	CARBIDE	TiAlN	30°
Tolerance +0/-0.001"			



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	D		FL	L	d
				mm	Inch			
HP700-0980	-	#40	-	2.49	0.0980	12.7	38.1	2.48
HP700-1285	-	#30	-	3.26	0.1285			3.26
HP700-1610	-	#20	-	4.09	0.1610			4.08
HP700-1910	-	#11	-	4.85	0.1910			4.85
HP700-2500	1/4	-	-	6.35	0.2500	15.8		6.35
HP700-2512	1/4	-	-	4.09 x 6.35	#20 x 0.250 Step			

Packed: 1 pc.
Available TiAlN coating only.
Tri-Flat shank available upon request.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
HP700	<input checked="" type="checkbox"/>									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Good Best





CARBIDE AERO-D-REAM

Carbide Drill/Reamer for Composites

List 257

Tapered Drill/Reamer

SPEED FEED P310	CARBIDE	BR	0°
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Tolerance +0.0005"/-0



EDP Number	Approximate Hole Size					Flute Length FL	Taper Length I	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
257-0980	-	#40	-	2.49	0.0980	14.4	5.1	76.2	2.48
257-1094	7/64	-	-	2.78	0.1094	16.1	5.6		2.77
257-1250	1/8	-	-	3.18	0.1250	18.4	6.4		3.17
257-1280	-	-	-	3.25	0.1280	31.9	6.5	152.4	3.25
257-1285	-	#30	-	3.26	0.1285	18.9	6.6	76.2	3.26
257-1286	-	-	-			32.0		152.4	
257-1299	-	-	-	3.30	0.1299	19.2	76.2	3.29	
257-1406	9/64	-	-	3.57	0.1406	20.7		7.2	3.57
257-1440	-	#27	-	3.66	0.1440	21.2		7.3	3.65
257-1562	5/32	-	-	3.97	0.1562	23.0	7.9	3.96	
257-1570	-	#22	-	3.99	0.1570	23.2	8.0	3.98	
257-1610	-	#20	-	4.09	0.1610	23.7	8.2	152.4	4.08
257-1616	-	#20	-			40.1			
257-1630	-	-	-	4.14	0.1630	24.1	8.3	4.14	
257-1719	11/64	-	-	4.37	0.1719	25.4	8.7	4.36	
257-1870	-	-	-	4.75	0.1870	27.6	9.4	4.74	
257-1875	3/16	-	-	4.76	0.1875	27.7	9.5	4.76	
257-1900	-	-	-	4.83	0.1900	47.3	9.6	101.6	4.82
257-1906	-	-	-					152.4	
257-1910	-	-	-	4.85	0.1910	47.6	9.6	76.2	4.85
257-1916	-	#11	-						
257-1920	-	-	-	4.88	0.1920	47.8	9.7	4.87	
257-1930	-	-	-	4.90	0.1930	48.1		4.90	
257-1935	-	#10	-	4.91	0.1935	48.2	9.8	4.91	
257-1940	-	-	-	4.93	0.1940	48.3		4.92	
257-2010	-	#7	-	5.11	0.2010	50.1	10.1	5.10	
257-2031	13/64	-	-	5.16	0.2031	50.6	10.2	5.15	
257-2040	-	#6	-	5.18	0.2040	50.8	10.3	5.18	
257-2055	-	#5	-	5.22	0.2055	51.2	10.4	5.21	
257-2180	-	-	-	5.54	0.2180	54.3	11.0	5.53	
257-2188	7/32	-	-	5.56	0.2188	54.5		5.55	
257-2186	7/32	-	-			54.3	152.4		
257-2210	-	#2	-	5.61	0.2210	55.1	11.1	5.61	
257-2280	-	#1	-	5.79	0.2280	56.8	11.5	5.79	
257-2344	15/64	-	-	5.95	0.2344	58.4	11.8	5.95	
257-2500	1/4	-	-	6.35	0.2500	54.3	12.5	152.4	6.35
257-2506	1/4	-	-			62.3			
257-2510	-	-	-	6.38	0.2510	62.6	12.6	101.6	6.37
257-2516	-	-	-					152.4	
257-2520	-	-	-	6.40	0.2520	62.8	12.7	6.40	
257-2530	-	-	-	6.43	0.2530	63.0		6.42	
257-2656	17/64	-	-	6.75	0.2656	66.2		13.3	6.74
257-2812	9/32	-	-	7.14	0.2812	70.1	14.1	7.14	
257-2969	19/64	-	-	7.54	0.2969	74.0	14.9	7.54	
257-3120	-	-	-	7.92	0.3120	46.1	15.6	7.92	
257-3125	5/16	-	-	7.94	0.3125	46.2		7.93	
257-3135	-	-	-	7.96	0.3135	46.3	15.7	7.96	
257-3280	21/64	-	-	8.33	0.3280	48.4	16.4	8.33	
257-3438	11/32	-	-	8.73	0.3438	50.8	17.2	8.73	
257-3500	-	-	-	8.89	0.3500	51.7	17.5	8.89	
257-3594	23/64	-	-	9.13	0.3594	53.1	17.9	9.12	

Packed: 1 pc.
Brazed shanks available on request: Threaded, Quick Change and Tri-Flat.





List 257 (Continued)

Tapered Drill/Reamer

SPEED FEED P310	CARBIDE	BR	0°
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EDP Number	Approximate Hole Size					Flute Length FL	Taper Length I	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
257-3750	3/8	-	-	9.53	0.3750	55.4	18.7	101.6	9.52
257-3756	3/8	-	-			74.4			
257-3906	25/64	-	-	9.91	0.3900	77.4	19.4	152.4	9.90
257-4066	13/32	-	-	10.31	0.4060	80.6	20.2		10.31
257-4376	7/16	-	-	11.11	0.4375	86.8	21.8		11.11
257-5006	1/2	-	-	12.70	0.5000	99.3	24.9		12.70

Packed: 1 pc.

Brazed shanks available on request: Threaded, Quick Change and Tri-Flat.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
257	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			

good best





List HP243

3D



R Thinning

SPEED FEED	CARBIDE	WD1	30°	SHANK h6
P312				

Cutting Diameter Tolerance (m7)		
Size	mm	inch
1 ≤ D ≤ 3	+0.002 / +0.012	+0.0001 / +0.0005
3 < D ≤ 6	+0.004 / +0.016	+0.0002 / +0.0006
6 < D ≤ 10	+0.006 / +0.021	+0.0002 / +0.0008
10 < D ≤ 18	+0.007 / +0.025	+0.0003 / +0.0010
18 < D ≤ 20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP243-0394	-	-	-	1.00	0.0394	7	35	3
HP243-0433	-	-	-	1.10	0.0433			
HP243-0469	3/64	-	-	1.19	0.0469			
HP243-0472	-	-	-	1.20	0.0472	8		
HP243-0512	-	-	-	1.30	0.0512			
HP243-0551	-	-	-	1.40	0.0551			
HP243-0591	-	-	-	1.50	0.0591	9		
HP243-0626	1/16	-	-	1.59	0.0626			
HP243-0630	-	-	-	1.60	0.0630			
HP243-0669	-	-	-	1.70	0.0669	10		
HP243-0709	-	-	-	1.80	0.0709			
HP243-0748	-	-	-	1.90	0.0748			
HP243-0780	5/64	-	-	1.98	0.0780	11		
HP243-0787	-	-	-	2.00	0.0787			
HP243-0827	-	-	-	2.10	0.0827			
HP243-0866	-	-	-	2.20	0.0866	13		
HP243-0906	-	-	-	2.30	0.0906			
HP243-0937	3/32	-	-	2.38	0.0937			
HP243-0945	-	-	-	2.40	0.0945	15		
HP243-0984	-	-	-	2.50	0.0984			
HP243-1024	-	-	-	2.60	0.1024			
HP243-1063	-	-	-	2.70	0.1063	17		
HP243-1094	7/64	-	-	2.78	0.1094			
HP243-1102	-	-	-	2.80	0.1102			
HP243-1142	-	-	-	2.90	0.1142	20		
HP243-1181	-	-	-	3.00	0.1181			
HP243-1220	-	-	-	3.10	0.1220			
HP243-1248	1/8	-	-	3.17	0.1248	24		
HP243-1260	-	-	-	3.20	0.1260			
HP243-1299	-	-	-	3.30	0.1299			
HP243-1339	-	-	-	3.40	0.1339	28		
HP243-1378	-	-	-	3.50	0.1378			
HP243-1406	9/64	-	-	3.57	0.1406			
HP243-1417	-	-	-	3.60	0.1417	6		
HP243-1457	-	-	-	3.70	0.1457			
HP243-1496	-	25	-	3.80	0.1496			
HP243-1535	-	-	-	3.90	0.1535	66		
HP243-1563	5/32	-	-	3.97	0.1563			
HP243-1575	-	-	-	4.00	0.1575			
HP243-1610	-	20	-	4.09	0.1610	24		
HP243-1614	-	-	-	4.10	0.1614			
HP243-1654	-	-	-	4.20	0.1654			
HP243-1693	-	-	-	4.30	0.1693	28		
HP243-1720	11/64	-	-	4.37	0.1720			
HP243-1732	-	-	-	4.40	0.1732			
HP243-1772	-	16	-	4.50	0.1772	6		
HP243-1811	-	-	-	4.60	0.1811			
HP243-1831	-	-	-	4.65	0.1831			
HP243-1850	-	13	-	4.70	0.1850	28		
HP243-1874	3/16	-	-	4.76	0.1874			

Packed: 1 pc.
Available WD1 coating only.





List HP243 (Continued)

3D



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP243-1890	-	12	-	4.80	0.1890	28	66	6
HP243-1929	-	-	-	4.90	0.1929			
HP243-1969	-	-	-	5.00	0.1969			
HP243-2008	-	-	-	5.10	0.2008			
HP243-2031	13/64	-	-	5.16	0.2031			
HP243-2047	-	-	-	5.20	0.2047			
HP243-2087	-	-	-	5.30	0.2087			
HP243-2126	-	-	-	5.40	0.2126			
HP243-2130	-	3	-	5.41	0.2130			
HP243-2165	-	-	-	5.50	0.2165			
HP243-2189	7/32	-	-	5.56	0.2189			
HP243-2205	-	-	-	5.60	0.2205			
HP243-2244	-	-	-	5.70	0.2244			
HP243-2283	-	-	-	5.80	0.2283			
HP243-2323	-	-	-	5.90	0.2323			
HP243-2343	15/64	-	-	5.95	0.2343			
HP243-2362	-	-	-	6.00	0.2362			
HP243-2402	-	-	-	6.10	0.2402			
HP243-2441	-	-	-	6.20	0.2441			
HP243-2480	-	-	-	6.30	0.2480			
HP243-2500	1/4	-	E	6.35	0.2500			
HP243-2520	-	-	-	6.40	0.2520			
HP243-2559	-	-	-	6.50	0.2559			
HP243-2571	-	-	F	6.53	0.2571			
HP243-2598	-	-	-	6.60	0.2598			
HP243-2638	-	-	-	6.70	0.2638			
HP243-2657	17/64	-	-	6.75	0.2657			
HP243-2677	-	-	-	6.80	0.2677			
HP243-2717	-	-	I	6.90	0.2717			
HP243-2756	-	-	-	7.00	0.2756			
HP243-2795	-	-	-	7.10	0.2795			
HP243-2811	9/32	-	-	7.14	0.2811			
HP243-2835	-	-	-	7.20	0.2835			
HP243-2874	-	-	-	7.30	0.2874			
HP243-2913	-	-	-	7.40	0.2913			
HP243-2953	-	-	-	7.50	0.2953			
HP243-2969	19/64	-	-	7.54	0.2969			
HP243-2992	-	-	-	7.60	0.2992			
HP243-3031	-	-	-	7.70	0.3031			
HP243-3071	-	-	-	7.80	0.3071			
HP243-3110	-	-	-	7.90	0.3110			
HP243-3126	5/16	-	-	7.94	0.3126			
HP243-3150	-	-	-	8.00	0.3150			
HP243-3189	-	-	-	8.10	0.3189			
HP243-3228	-	-	P	8.20	0.3228			
HP243-3268	-	-	-	8.30	0.3268			

Packed: 1 pc.
Available WD1 coating only.

continued on next page

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP243	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>			

good best





List HP243 (Continued)

3D



SPEED FEED P312	CARBIDE	WD1	30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
1 ≤ D ≤ 3	+0.002 / +0.012	+0.0001 / +0.0005
3 < D ≤ 6	+0.004 / +0.016	+0.0002 / +0.0006
6 < D ≤ 10	+0.006 / +0.021	+0.0002 / +0.0008
10 < D ≤ 18	+0.007 / +0.025	+0.0003 / +0.0010
18 < D ≤ 20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP243-3280	21/64	-	-	8.33	0.3280	47	89	10
HP243-3307	-	-	-	8.40	0.3307			
HP243-3319	-	-	Q	8.43	0.3319			
HP243-3346	-	-	-	8.50	0.3346			
HP243-3386	-	-	-	8.60	0.3386			
HP243-3425	-	-	-	8.70	0.3425			
HP243-3437	11/32	-	-	8.73	0.3437			
HP243-3465	-	-	-	8.80	0.3465			
HP243-3504	-	-	-	8.90	0.3504			
HP243-3543	-	-	-	9.00	0.3543			
HP243-3583	-	-	-	9.10	0.3583			
HP243-3594	23/64	-	-	9.13	0.3594			
HP243-3622	-	-	-	9.20	0.3622			
HP243-3642	-	-	-	9.25	0.3642			
HP243-3661	-	-	-	9.30	0.3661			
HP243-3701	-	-	-	9.40	0.3701			
HP243-3740	-	-	-	9.50	0.3740			
HP243-3748	3/8	-	-	9.52	0.3748			
HP243-3780	-	-	-	9.60	0.3780			
HP243-3819	-	-	-	9.70	0.3819			
HP243-3858	-	-	W	9.80	0.3858			
HP243-3898	-	-	-	9.90	0.3898			
HP243-3906	25/64	-	-	9.92	0.3906			
HP243-3937	-	-	-	10.00	0.3937			
HP243-3976	-	-	-	10.10	0.3976			
HP243-4016	-	-	-	10.20	0.4016			
HP243-4055	-	-	-	10.30	0.4055			
HP243-4063	13/32	-	-	10.32	0.4063			
HP243-4094	-	-	-	10.40	0.4094			
HP243-4134	-	-	-	10.50	0.4134			
HP243-4173	-	-	-	10.60	0.4173			
HP243-4213	-	-	-	10.70	0.4213			
HP243-4220	27/64	-	-	10.72	0.4220			
HP243-4252	-	-	-	10.80	0.4252			
HP243-4291	-	-	-	10.90	0.4291			
HP243-4331	-	-	-	11.00	0.4331			
HP243-4370	-	-	-	11.10	0.4370			
HP243-4374	7/16	-	-	11.11	0.4374			
HP243-4409	-	-	-	11.20	0.4409			
HP243-4449	-	-	-	11.30	0.4449			
HP243-4488	-	-	-	11.40	0.4488			
HP243-4528	-	-	-	11.50	0.4528			
HP243-4531	29/64	-	-	11.51	0.4531			
HP243-4567	-	-	-	11.60	0.4567			
HP243-4606	-	-	-	11.70	0.4606			
HP243-4646	-	-	-	11.80	0.4646			
HP243-4685	-	-	-	11.90	0.4685			
HP243-4689	15/32	-	-	11.91	0.4689			
HP243-4724	-	-	-	12.00	0.4724			

Packed: 1 pc.
Available WD1 coating only.





List HP243 (Continued)

SPEED FEED P312	CARBIDE	WD1	30°	SHANK h6
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3D

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP243-4764	-	-	-	12.10	0.4764	60	107	14
HP243-4803	-	-	-	12.20	0.4803			
HP243-4843	31/64	-	-	12.30	0.4843			
HP243-4882	-	-	-	12.40	0.4882			
HP243-4921	-	-	-	12.50	0.4921			
HP243-4961	-	-	-	12.60	0.4961			
HP243-5000	1/2	-	-	12.70	0.5000			
HP243-5039	-	-	-	12.80	0.5039			
HP243-5079	-	-	-	12.90	0.5079			
HP243-5118	-	-	-	13.00	0.5118			
HP243-5157	33/64	-	-	13.10	0.5157			
HP243-5197	-	-	-	13.20	0.5197			
HP243-5236	-	-	-	13.30	0.5236			
HP243-5276	-	-	-	13.40	0.5276			
HP243-5311	17/32	-	-	13.49	0.5311			
HP243-5315	-	-	-	13.50	0.5315			
HP243-5394	-	-	-	13.70	0.5394			
HP243-5512	-	-	-	14.00	0.5512			
HP243-5626	9/16	-	-	14.29	0.5626			
HP243-5709	-	-	-	14.50	0.5709			
HP243-5780	37/64	-	-	14.68	0.5780			
HP243-5787	-	-	-	14.70	0.5787			
HP243-5906	-	-	-	15.00	0.5906			
HP243-5937	19/32	-	-	15.08	0.5937			
HP243-6102	-	-	-	15.50	0.6102			
HP243-6181	-	-	-	15.70	0.6181			
HP243-6248	5/8	-	-	15.87	0.6248			
HP243-6299	-	-	-	16.00	0.6299			
HP243-6339	-	-	-	16.10	0.6339			
HP243-6496	-	-	-	16.50	0.6496			
HP243-6563	21/32	-	-	16.67	0.6563			
HP243-6693	-	-	-	17.00	0.6693			
HP243-6890	-	-	-	17.50	0.6890			
HP243-7087	-	-	-	18.00	0.7087			
HP243-7283	-	-	-	18.50	0.7283			
HP243-7480	-	-	-	19.00	0.7480			
HP243-7500	3/4	-	-	19.05	0.7500			
HP243-7579	-	-	-	19.25	0.7579			
HP243-7677	-	-	-	19.50	0.7677			
HP243-7874	-	-	-	20.00	0.7874			

Packed: 1 pc.
Available WD1 coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP243	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>			

good best





List HP245

5D



SPEED FEED P312	CARBIDE	WD1	30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
1 ≤ D ≤ 3	+0.002 / +0.012	+0.0001 / +0.0005
3 < D ≤ 6	+0.004 / +0.016	+0.0002 / +0.0006
6 < D ≤ 10	+0.006 / +0.021	+0.0002 / +0.0008
10 < D ≤ 18	+0.007 / +0.025	+0.0003 / +0.0010
18 < D ≤ 20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP245-0394	-	-	-	1.00	0.0394	9	38	3
HP245-0433	-	-	-	1.10	0.0433			
HP245-0469	3/64	-	-	1.19	0.0469			
HP245-0472	-	-	-	1.20	0.0472	11		
HP245-0512	-	-	-	1.30	0.0512			
HP245-0551	-	-	-	1.40	0.0551	12		
HP245-0591	-	-	-	1.50	0.0591			
HP245-0626	1/16	-	-	1.59	0.0626	14	45	
HP245-0630	-	-	-	1.60	0.0630			
HP245-0669	-	-	-	1.70	0.0669			
HP245-0709	-	-	-	1.80	0.0709	16		
HP245-0748	-	-	-	1.90	0.0748			
HP245-0780	5/64	-	-	1.98	0.0780	18		
HP245-0787	-	-	-	2.00	0.0787			
HP245-0827	-	-	-	2.10	0.0827	20	50	
HP245-0866	-	-	-	2.20	0.0866			
HP245-0906	-	-	-	2.30	0.0906			
HP245-0937	3/32	-	-	2.38	0.0937	22		
HP245-0945	-	-	-	2.40	0.0945			
HP245-0984	-	-	-	2.50	0.0984	23		56
HP245-1024	-	-	-	2.60	0.1024			
HP245-1063	-	-	-	2.70	0.1063			
HP245-1094	7/64	-	-	2.78	0.1094	28	66	
HP245-1102	-	-	-	2.80	0.1102			
HP245-1142	-	-	-	2.90	0.1142	28		
HP245-1181	-	-	-	3.00	0.1181			
HP245-1220	-	-	-	3.10	0.1220			
HP245-1248	1/8	-	-	3.17	0.1248	28		
HP245-1260	-	-	-	3.20	0.1260			
HP245-1299	-	-	-	3.30	0.1299	28		
HP245-1339	-	-	-	3.40	0.1339			
HP245-1378	-	-	-	3.50	0.1378			
HP245-1406	9/64	-	-	3.57	0.1406	36		74
HP245-1417	-	-	-	3.60	0.1417			
HP245-1457	-	-	-	3.70	0.1457	36		
HP245-1496	-	25	-	3.80	0.1496			
HP245-1535	-	-	-	3.90	0.1535			
HP245-1563	5/32	-	-	3.97	0.1563	36		
HP245-1575	-	-	-	4.00	0.1575			
HP245-1610	-	20	-	4.09	0.1610	36		
HP245-1614	-	-	-	4.10	0.1614			
HP245-1654	-	-	-	4.20	0.1654			
HP245-1693	-	-	-	4.30	0.1693	44	82	
HP245-1720	11/64	-	-	4.37	0.1720			
HP245-1732	-	-	-	4.40	0.1732			
HP245-1772	-	16	-	4.50	0.1772			
HP245-1811	-	-	-	4.60	0.1811			
HP245-1831	-	-	-	4.65	0.1831			
HP245-1850	-	13	-	4.70	0.1850			
HP245-1874	3/16	-	-	4.76	0.1874			

Packed: 1 pc.
Available WD1 coating only.



List HP245 (Continued)

5D

SPEED FEED	CARBIDE	WD1	30°	GRIND h6
P312				

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP245-1890	-	12	-	4.80	0.1890	44	82	6
HP245-1929	-	-	-	4.90	0.1929			
HP245-1969	-	-	-	5.00	0.1969			
HP245-2008	-	-	-	5.10	0.2008			
HP245-2031	13/64	-	-	5.16	0.2031			
HP245-2047	-	-	-	5.20	0.2047			
HP245-2087	-	-	-	5.30	0.2087			
HP245-2126	-	-	-	5.40	0.2126			
HP245-2130	-	3	-	5.41	0.2130			
HP245-2165	-	-	-	5.50	0.2165			
HP245-2189	7/32	-	-	5.56	0.2189			
HP245-2205	-	-	-	5.60	0.2205			
HP245-2244	-	-	-	5.70	0.2244			
HP245-2283	-	-	-	5.80	0.2283			
HP245-2323	-	-	-	5.90	0.2323			
HP245-2343	15/64	-	-	5.95	0.2343			
HP245-2362	-	-	-	6.00	0.2362			
HP245-2402	-	-	-	6.10	0.2402			
HP245-2441	-	-	-	6.20	0.2441			
HP245-2480	-	-	-	6.30	0.2480			
HP245-2500	1/4	-	E	6.35	0.2500			
HP245-2520	-	-	-	6.40	0.2520			
HP245-2559	-	-	-	6.50	0.2559			
HP245-2571	-	-	F	6.53	0.2571			
HP245-2598	-	-	-	6.60	0.2598			
HP245-2638	-	-	-	6.70	0.2638			
HP245-2657	17/64	-	-	6.75	0.2657			
HP245-2677	-	-	-	6.80	0.2677			
HP245-2717	-	-	I	6.90	0.2717			
HP245-2756	-	-	-	7.00	0.2756			
HP245-2795	-	-	-	7.10	0.2795			
HP245-2811	9/32	-	-	7.14	0.2811			
HP245-2835	-	-	-	7.20	0.2835			
HP245-2874	-	-	-	7.30	0.2874			
HP245-2913	-	-	-	7.40	0.2913			
HP245-2953	-	-	-	7.50	0.2953			
HP245-2969	19/64	-	-	7.54	0.2969			
HP245-2992	-	-	-	7.60	0.2992			
HP245-3031	-	-	-	7.70	0.3031			
HP245-3071	-	-	-	7.80	0.3071			
HP245-3110	-	-	-	7.90	0.3110			
HP245-3126	5/16	-	-	7.94	0.3126			
HP245-3150	-	-	-	8.00	0.3150			
HP245-3189	-	-	-	8.10	0.3189			
HP245-3228	-	-	P	8.20	0.3228			
HP245-3268	-	-	-	8.30	0.3268			
						61	103	10

Packed: 1 pc.
Available WD1 coating only.

▶ continued on next page ▶

Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP245	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>			

good best





List HP245 (Continued)

5D



SPEED FEED	CARBIDE	WD1	30°	SHANK h6
P312				

Cutting Diameter Tolerance (m7)		
Size	mm	inch
1 ≤ D ≤ 3	+0.002 / +0.012	+0.0001 / +0.0005
3 < D ≤ 6	+0.004 / +0.016	+0.0002 / +0.0006
6 < D ≤ 10	+0.006 / +0.021	+0.0002 / +0.0008
10 < D ≤ 18	+0.007 / +0.025	+0.0003 / +0.0010
18 < D ≤ 20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP245-3280	21/64	-	-	8.33	0.3280	61	103	10
HP245-3307	-	-	-	8.40	0.3307			
HP245-3319	-	-	Q	8.43	0.3319			
HP245-3346	-	-	-	8.50	0.3346			
HP245-3386	-	-	-	8.60	0.3386			
HP245-3425	-	-	-	8.70	0.3425			
HP245-3437	11/32	-	-	8.73	0.3437			
HP245-3465	-	-	-	8.80	0.3465			
HP245-3504	-	-	-	8.90	0.3504			
HP245-3543	-	-	-	9.00	0.3543			
HP245-3583	-	-	-	9.10	0.3583			
HP245-3594	23/64	-	-	9.13	0.3594			
HP245-3622	-	-	-	9.20	0.3622			
HP245-3642	-	-	-	9.25	0.3642			
HP245-3661	-	-	-	9.30	0.3661			
HP245-3701	-	-	-	9.40	0.3701			
HP245-3740	-	-	-	9.50	0.3740			
HP245-3748	3/8	-	-	9.52	0.3748			
HP245-3780	-	-	-	9.60	0.3780			
HP245-3819	-	-	-	9.70	0.3819			
HP245-3858	-	-	W	9.80	0.3858			
HP245-3898	-	-	-	9.90	0.3898			
HP245-3906	25/64	-	-	9.92	0.3906			
HP245-3937	-	-	-	10.00	0.3937			
HP245-3976	-	-	-	10.10	0.3976			
HP245-4016	-	-	-	10.20	0.4016			
HP245-4055	-	-	-	10.30	0.4055			
HP245-4063	13/32	-	-	10.32	0.4063			
HP245-4094	-	-	-	10.40	0.4094			
HP245-4134	-	-	-	10.50	0.4134			
HP245-4173	-	-	-	10.60	0.4173			
HP245-4213	-	-	-	10.70	0.4213			
HP245-4220	27/64	-	-	10.72	0.4220			
HP245-4252	-	-	-	10.80	0.4252			
HP245-4291	-	-	-	10.90	0.4291			
HP245-4331	-	-	-	11.00	0.4331			
HP245-4370	-	-	-	11.10	0.4370			
HP245-4374	7/16	-	-	11.11	0.4374			
HP245-4409	-	-	-	11.20	0.4409			
HP245-4449	-	-	-	11.30	0.4449			
HP245-4488	-	-	-	11.40	0.4488			
HP245-4528	-	-	-	11.50	0.4528			
HP245-4531	29/64	-	-	11.51	0.4531			
HP245-4567	-	-	-	11.60	0.4567			
HP245-4606	-	-	-	11.70	0.4606			
HP245-4646	-	-	-	11.80	0.4646			
HP245-4685	-	-	-	11.90	0.4685			
HP245-4689	15/32	-	-	11.91	0.4689			
HP245-4724	-	-	-	12.00	0.4724			

Packed: 1 pc.
Available WD1 coating only.



List HP245 (Continued)

5D



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP245-4764	-	-	-	12.10	0.4764	77	124	14
HP245-4803	-	-	-	12.20	0.4803			
HP245-4843	31/64	-	-	12.30	0.4843			
HP245-4882	-	-	-	12.40	0.4882			
HP245-4921	-	-	-	12.50	0.4921			
HP245-4961	-	-	-	12.60	0.4961			
HP245-5000	1/2	-	-	12.70	0.5000			
HP245-5039	-	-	-	12.80	0.5039			
HP245-5079	-	-	-	12.90	0.5079			
HP245-5118	-	-	-	13.00	0.5118			
HP245-5157	33/64	-	-	13.10	0.5157			
HP245-5197	-	-	-	13.20	0.5197			
HP245-5236	-	-	-	13.30	0.5236			
HP245-5394	-	-	-	13.70	0.5394			
HP245-5276	-	-	-	13.40	0.5276			
HP245-5311	17/32	-	-	13.49	0.5311			
HP245-5315	-	-	-	13.50	0.5315			
HP245-5512	-	-	-	14.00	0.5512			
HP245-5626	9/16	-	-	14.29	0.5626			
HP245-5709	-	-	-	14.50	0.5709			
HP245-5780	37/64	-	-	14.68	0.5780			
HP245-5787	-	-	-	14.70	0.5787			
HP245-5906	-	-	-	15.00	0.5906			
HP245-5937	19/32	-	-	15.08	0.5937			
HP245-6102	-	-	-	15.50	0.6102			
HP245-6181	-	-	-	15.70	0.6181			
HP245-6248	5/8	-	-	15.87	0.6248			
HP245-6299	-	-	-	16.00	0.6299			
HP245-6339	-	-	-	16.10	0.6339			
HP245-6496	-	-	-	16.50	0.6496			
HP245-6563	21/32	-	-	16.67	0.6563			
HP245-6693	-	-	-	17.00	0.6693			
HP245-6890	-	-	-	17.50	0.6890			
HP245-7087	-	-	-	18.00	0.7087			
HP245-7283	-	-	-	18.50	0.7283			
HP245-7480	-	-	-	19.00	0.7480			
HP245-7500	3/4	-	-	19.05	0.7500			
HP245-7579	-	-	-	19.25	0.7579			
HP245-7677	-	-	-	19.50	0.7677			
HP245-7874	-	-	-	20.00	0.7874			

Packed: 1 pc.
Available WD1 coating only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP245	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>		<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List HP253

3D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
D=3	+0.002 / +0.012	+0.0001 / +0.0005
3<D≤6	+0.004 / +0.016	+0.0002 / +0.0006
6<D≤10	+0.006 / +0.021	+0.0002 / +0.0008
10<D≤18	+0.007 / +0.025	+0.0003 / +0.0010
18<D≤20	+0.008 / +0.029	+0.0003 / +0.0011



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP253-1181	-	-	-	3.00	0.1181	20	62	
HP253-1220	-	-	-	3.10	0.1220			
HP253-1248	1/8	-	-	3.17	0.1248			
HP253-1260	-	-	-	3.20	0.1260			
HP253-1299	-	-	-	3.30	0.1299			
HP253-1339	-	-	-	3.40	0.1339			
HP253-1378	-	-	-	3.50	0.1378			
HP253-1406	9/64	-	-	3.57	0.1406			
HP253-1417	-	-	-	3.60	0.1417			
HP253-1457	-	-	-	3.70	0.1457			
HP253-1496	-	25	-	3.80	0.1496	24	6	
HP253-1535	-	-	-	3.90	0.1535			
HP253-1563	5/32	-	-	3.97	0.1563			
HP253-1575	-	-	-	4.00	0.1575			
HP253-1610	-	20	-	4.09	0.1610			
HP253-1614	-	-	-	4.10	0.1614			
HP253-1654	-	-	-	4.20	0.1654			
HP253-1693	-	-	-	4.30	0.1693			
HP253-1720	11/64	-	-	4.37	0.1720			
HP253-1732	-	-	-	4.40	0.1732			
HP253-1772	-	16	-	4.50	0.1772	28	66	
HP253-1811	-	-	-	4.60	0.1811			
HP253-1831	-	-	-	4.65	0.1831			
HP253-1850	-	13	-	4.70	0.1850			
HP253-1874	3/16	-	-	4.76	0.1874			
HP253-1890	-	12	-	4.80	0.1890			
HP253-1929	-	-	-	4.90	0.1929			
HP253-1969	-	-	-	5.00	0.1969			
HP253-2008	-	-	-	5.10	0.2008			
HP253-2031	13/64	-	-	5.16	0.2031			
HP253-2047	-	-	-	5.20	0.2047	34	79	8
HP253-2087	-	-	-	5.30	0.2087			
HP253-2126	-	-	-	5.40	0.2126			
HP253-2130	-	3	-	5.41	0.2130			
HP253-2165	-	-	-	5.50	0.2165			
HP253-2189	7/32	-	-	5.56	0.2189			
HP253-2205	-	-	-	5.60	0.2205			
HP253-2244	-	-	-	5.70	0.2244			
HP253-2283	-	-	-	5.80	0.2283			
HP253-2323	-	-	-	5.90	0.2323			
HP253-2343	15/64	-	-	5.95	0.2343			
HP253-2362	-	-	-	6.00	0.2362			
HP253-2402	-	-	-	6.10	0.2402			
HP253-2441	-	-	-	6.20	0.2441			
HP253-2480	-	-	-	6.30	0.2480			
HP253-2500	1/4	-	E	6.35	0.2500			
HP253-2520	-	-	-	6.40	0.2520			
HP253-2559	-	-	-	6.50	0.2559			
HP253-2571	-	-	F	6.53	0.2571			
HP253-2598	-	-	-	6.60	0.2598			

Packed: 1 pc.
Available WD1 coating only.





List HP253 (Continued)

3D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP253-2638	-	-	-	6.70	0.2638	34	79	8
HP253-2657	17/64	-	-	6.75	0.2657			
HP253-2677	-	-	-	6.80	0.2677			
HP253-2717	-	-	I	6.90	0.2717			
HP253-2756	-	-	-	7.00	0.2756			
HP253-2795	-	-	-	7.10	0.2795			
HP253-2811	9/32	-	-	7.14	0.2811			
HP253-2835	-	-	-	7.20	0.2835			
HP253-2874	-	-	-	7.30	0.2874			
HP253-2913	-	-	-	7.40	0.2913			
HP253-2953	-	-	-	7.50	0.2953			
HP253-2969	19/64	-	-	7.54	0.2969			
HP253-2992	-	-	-	7.60	0.2992			
HP253-3031	-	-	-	7.70	0.3031			
HP253-3071	-	-	-	7.80	0.3071			
HP253-3110	-	-	-	7.90	0.3110			
HP253-3126	5/16	-	-	7.94	0.3126			
HP253-3150	-	-	-	8.00	0.3150			
HP253-3189	-	-	-	8.10	0.3189			
HP253-3228	-	-	P	8.20	0.3228			
HP253-3268	-	-	-	8.30	0.3268			
HP253-3280	21/64	-	-	8.33	0.3280			
HP253-3307	-	-	-	8.40	0.3307			
HP253-3319	-	-	Q	8.43	0.3319			
HP253-3346	-	-	-	8.50	0.3346			
HP253-3386	-	-	-	8.60	0.3386			
HP253-3425	-	-	-	8.70	0.3425			
HP253-3437	11/32	-	-	8.73	0.3437			
HP253-3465	-	-	-	8.80	0.3465			
HP253-3504	-	-	-	8.90	0.3504			
HP253-3543	-	-	-	9.00	0.3543			
HP253-3583	-	-	-	9.10	0.3583			
HP253-3594	23/64	-	-	9.13	0.3594			
HP253-3622	-	-	-	9.20	0.3622			
HP253-3642	-	-	-	9.25	0.3642			
HP253-3661	-	-	-	9.30	0.3661			
HP253-3701	-	-	-	9.40	0.3701			
HP253-3740	-	-	-	9.50	0.3740			
HP253-3748	3/8	-	-	9.52	0.3748			
HP253-3780	-	-	-	9.60	0.3780			
HP253-3819	-	-	-	9.70	0.3819			
HP253-3858	-	-	W	9.80	0.3858			
HP253-3898	-	-	-	9.90	0.3898			
HP253-3906	25/64	-	-	9.92	0.3906			
HP253-3937	-	-	-	10.00	0.3937			
HP253-3976	-	-	-	10.10	0.3976			
						55	102	12

Packed: 1 pc.
Available WD1 coating only.

continued on next page

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP253	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List HP253 (Continued)

3D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
D=3	+0.002 / +0.012	+0.0001 / +0.0005
3<D≤6	+0.004 / +0.016	+0.0002 / +0.0006
6<D≤10	+0.006 / +0.021	+0.0002 / +0.0008
10<D≤18	+0.007 / +0.025	+0.0003 / +0.0010
18<D≤20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP253-4016	-	-	-	10.20	0.4016	55	102	12
HP253-4055	-	-	-	10.30	0.4055			
HP253-4063	13/32	-	-	10.32	0.4063			
HP253-4094	-	-	-	10.40	0.4094			
HP253-4134	-	-	-	10.50	0.4134			
HP253-4173	-	-	-	10.60	0.4173			
HP253-4213	-	-	-	10.70	0.4213			
HP253-4220	27/64	-	-	10.72	0.4220			
HP253-4252	-	-	-	10.80	0.4252			
HP253-4291	-	-	-	10.90	0.4291			
HP253-4331	-	-	-	11.00	0.4331			
HP253-4370	-	-	-	11.10	0.4370			
HP253-4374	7/16	-	-	11.11	0.4374			
HP253-4409	-	-	-	11.20	0.4409			
HP253-4449	-	-	-	11.30	0.4449			
HP253-4488	-	-	-	11.40	0.4488			
HP253-4528	-	-	-	11.50	0.4528			
HP253-4531	29/64	-	-	11.51	0.4531			
HP253-4567	-	-	-	11.60	0.4567			
HP253-4606	-	-	-	11.70	0.4606			
HP253-4646	-	-	-	11.80	0.4646			
HP253-4685	-	-	-	11.90	0.4685			
HP253-4689	15/32	-	-	11.91	0.4689			
HP253-4724	-	-	-	12.00	0.4724			
HP253-4764	-	-	-	12.10	0.4764			
HP253-4803	-	-	-	12.20	0.4803			
HP253-4843	31/64	-	-	12.30	0.4843			
HP253-4882	-	-	-	12.40	0.4882			
HP253-4921	-	-	-	12.50	0.4921			
HP253-4961	-	-	-	12.60	0.4961			
HP253-5000	1/2	-	-	12.70	0.5000			
HP253-5039	-	-	-	12.80	0.5039			
HP253-5079	-	-	-	12.90	0.5079			
HP253-5118	-	-	-	13.00	0.5118			
HP253-5157	33/64	-	-	13.10	0.5157			
HP253-5197	-	-	-	13.20	0.5197			
HP253-5236	-	-	-	13.30	0.5236			
HP253-5276	-	-	-	13.40	0.5276			
HP253-5311	17/32	-	-	13.49	0.5311			
HP253-5315	-	-	-	13.50	0.5315			
HP253-5394	-	-	-	13.70	0.5394			
HP253-5512	-	-	-	14.00	0.5512			
HP253-5626	9/16	-	-	14.29	0.5626			
HP253-5709	-	-	-	14.50	0.5709			
HP253-5780	37/64	-	-	14.68	0.5780			
HP253-5787	-	-	-	14.70	0.5787			
HP253-5906	-	-	-	15.00	0.5906			
HP253-5937	19/32	-	-	15.08	0.5937			
HP253-6102	-	-	-	15.50	0.6102			
HP253-6181	-	-	-	15.70	0.6181			

Packed: 1 pc.
Available WD1 coating only.



List HP253 (Continued)

3D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP253-6248	5/8	-	-	15.87	0.6248	65	115	16
HP253-6299	-	-	-	16.00	0.6299			
HP253-6339	-	-	-	16.10	0.6339			
HP253-6496	-	-	-	16.50	0.6496	73	123	18
HP253-6563	21/32	-	-	16.67	0.6563			
HP253-6693	-	-	-	17.00	0.6693			
HP253-6890	-	-	-	17.50	0.6890	79	131	20
HP253-7087	-	-	-	18.00	0.7087			
HP253-7283	-	-	-	18.50	0.7283			
HP253-7480	-	-	-	19.00	0.7480	79	131	20
HP253-7500	3/4	-	-	19.05	0.7500			
HP253-7579	-	-	-	19.25	0.7579			
HP253-7677	-	-	-	19.50	0.7677			
HP253-7874	-	-	-	20.00	0.7874			

Packed: 1 pc.
Available WD1 coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP253	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





HY-PRO® CARB

Performance Coolant-Through Carbide Drills

List HP255

5D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
D=3	+0.002 / +0.012	+0.0001 / +0.0005
3<D≤6	+0.004 / +0.016	+0.0002 / +0.0006
6<D≤10	+0.006 / +0.021	+0.0002 / +0.0008
10<D≤18	+0.007 / +0.025	+0.0003 / +0.0010
18<D≤20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP255-1181	-	-	-	3.00	0.1181	28	66	6
HP255-1220	-	-	-	3.10	0.1220			
HP255-1248	1/8	-	-	3.17	0.1248			
HP255-1260	-	-	-	3.20	0.1260			
HP255-1299	-	-	-	3.30	0.1299			
HP255-1339	-	-	-	3.40	0.1339			
HP255-1378	-	-	-	3.50	0.1378			
HP255-1406	9/64	-	-	3.57	0.1406			
HP255-1417	-	-	-	3.60	0.1417			
HP255-1457	-	-	-	3.70	0.1457			
HP255-1496	-	25	-	3.80	0.1496	36	74	6
HP255-1535	-	-	-	3.90	0.1535			
HP255-1563	5/32	-	-	3.97	0.1563			
HP255-1575	-	-	-	4.00	0.1575			
HP255-1610	-	20	-	4.09	0.1610			
HP255-1614	-	-	-	4.10	0.1614			
HP255-1654	-	-	-	4.20	0.1654			
HP255-1693	-	-	-	4.30	0.1693			
HP255-1720	11/64	-	-	4.37	0.1720			
HP255-1732	-	-	-	4.40	0.1732			
HP255-1772	-	16	-	4.50	0.1772	44	82	6
HP255-1811	-	-	-	4.60	0.1811			
HP255-1831	-	-	-	4.65	0.1831			
HP255-1850	-	13	-	4.70	0.1850			
HP255-1874	3/16	-	-	4.76	0.1874			
HP255-1890	-	12	-	4.80	0.1890			
HP255-1929	-	-	-	4.90	0.1929			
HP255-1969	-	-	-	5.00	0.1969			
HP255-2008	-	-	-	5.10	0.2008			
HP255-2031	13/64	-	-	5.16	0.2031			
HP255-2047	-	-	-	5.20	0.2047	53	91	8
HP255-2087	-	-	-	5.30	0.2087			
HP255-2126	-	-	-	5.40	0.2126			
HP255-2130	-	3	-	5.41	0.2130			
HP255-2165	-	-	-	5.50	0.2165			
HP255-2189	7/32	-	-	5.56	0.2189			
HP255-2205	-	-	-	5.60	0.2205			
HP255-2244	-	-	-	5.70	0.2244			
HP255-2283	-	-	-	5.80	0.2283			
HP255-2323	-	-	-	5.90	0.2323			
HP255-2343	15/64	-	-	5.95	0.2343			
HP255-2362	-	-	-	6.00	0.2362			
HP255-2402	-	-	-	6.10	0.2402			
HP255-2441	-	-	-	6.20	0.2441			
HP255-2480	-	-	-	6.30	0.2480			
HP255-2500	1/4	-	E	6.35	0.2500			
HP255-2520	-	-	-	6.40	0.2520			
HP255-2559	-	-	-	6.50	0.2559			
HP255-2571	-	-	F	6.53	0.2571			
HP255-2598	-	-	-	6.60	0.2598			

Packed: 1 pc.
Available WD1 coating only.





List HP255 (Continued)

5D, Coolant-Through



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP255-2638	-	-	-	6.70	0.2638	53	91	8
HP255-2657	17/64	-	-	6.75	0.2657			
HP255-2677	-	-	-	6.80	0.2677			
HP255-2717	-	-	I	6.90	0.2717			
HP255-2756	-	-	-	7.00	0.2756			
HP255-2795	-	-	-	7.10	0.2795			
HP255-2811	9/32	-	-	7.14	0.2811			
HP255-2835	-	-	-	7.20	0.2835			
HP255-2874	-	-	-	7.30	0.2874			
HP255-2913	-	-	-	7.40	0.2913			
HP255-2953	-	-	-	7.50	0.2953			
HP255-2969	19/64	-	-	7.54	0.2969			
HP255-2992	-	-	-	7.60	0.2992			
HP255-3031	-	-	-	7.70	0.3031			
HP255-3071	-	-	-	7.80	0.3071			
HP255-3110	-	-	-	7.90	0.3110			
HP255-3126	5/16	-	-	7.94	0.3126			
HP255-3150	-	-	-	8.00	0.3150			
HP255-3189	-	-	-	8.10	0.3189			
HP255-3228	-	-	P	8.20	0.3228			
HP255-3268	-	-	-	8.30	0.3268			
HP255-3280	21/64	-	-	8.33	0.3280			
HP255-3307	-	-	-	8.40	0.3307			
HP255-3319	-	-	Q	8.43	0.3319			
HP255-3346	-	-	-	8.50	0.3346			
HP255-3386	-	-	-	8.60	0.3386			
HP255-3425	-	-	-	8.70	0.3425			
HP255-3437	11/32	-	-	8.73	0.3437			
HP255-3465	-	-	-	8.80	0.3465			
HP255-3504	-	-	-	8.90	0.3504			
HP255-3543	-	-	-	9.00	0.3543			
HP255-3583	-	-	-	9.10	0.3583			
HP255-3594	23/64	-	-	9.13	0.3594			
HP255-3622	-	-	-	9.20	0.3622			
HP255-3642	-	-	-	9.25	0.3642			
HP255-3661	-	-	-	9.30	0.3661			
HP255-3701	-	-	-	9.40	0.3701			
HP255-3740	-	-	-	9.50	0.3740			
HP255-3748	3/8	-	-	9.52	0.3748			
HP255-3780	-	-	-	9.60	0.3780			
HP255-3819	-	-	-	9.70	0.3819			
HP255-3858	-	-	W	9.80	0.3858			
HP255-3898	-	-	-	9.90	0.3898			
HP255-3906	25/64	-	-	9.92	0.3906			
HP255-3937	-	-	-	10.00	0.3937			
						61	103	10

Packed: 1 pc.
Available WD1 coating only.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP255	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





List HP255 (Continued)

5D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
D=3	+0.002 / +0.012	+0.0001 / +0.0005
3<D≤6	+0.004 / +0.016	+0.0002 / +0.0006
6<D≤10	+0.006 / +0.021	+0.0002 / +0.0008
10<D≤18	+0.007 / +0.025	+0.0003 / +0.0010
18<D≤20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP255-3976	-	-	-	10.10	0.3976	71	118	12
HP255-4016	-	-	-	10.20	0.4016			
HP255-4055	-	-	-	10.30	0.4055			
HP255-4063	13/32	-	-	10.32	0.4063			
HP255-4094	-	-	-	10.40	0.4094			
HP255-4134	-	-	-	10.50	0.4134			
HP255-4173	-	-	-	10.60	0.4173			
HP255-4213	-	-	-	10.70	0.4213			
HP255-4220	27/64	-	-	10.72	0.4220			
HP255-4252	-	-	-	10.80	0.4252			
HP255-4291	-	-	-	10.90	0.4291			
HP255-4331	-	-	-	11.00	0.4331			
HP255-4370	-	-	-	11.10	0.4370			
HP255-4374	7/16	-	-	11.11	0.4374			
HP255-4409	-	-	-	11.20	0.4409			
HP255-4449	-	-	-	11.30	0.4449			
HP255-4488	-	-	-	11.40	0.4488			
HP255-4528	-	-	-	11.50	0.4528			
HP255-4531	29/64	-	-	11.51	0.4531			
HP255-4567	-	-	-	11.60	0.4567			
HP255-4606	-	-	-	11.70	0.4606			
HP255-4646	-	-	-	11.80	0.4646			
HP255-4685	-	-	-	11.90	0.4685			
HP255-4689	15/32	-	-	11.91	0.4689			
HP255-4724	-	-	-	12.00	0.4724			
HP255-4764	-	-	-	12.10	0.4764			
HP255-4803	-	-	-	12.20	0.4803			
HP255-4843	31/64	-	-	12.30	0.4843			
HP255-4882	-	-	-	12.40	0.4882			
HP255-4921	-	-	-	12.50	0.4921			
HP255-4961	-	-	-	12.60	0.4961			
HP255-5000	1/2	-	-	12.70	0.5000			
HP255-5039	-	-	-	12.80	0.5039			
HP255-5079	-	-	-	12.90	0.5079			
HP255-5118	-	-	-	13.00	0.5118			
HP255-5157	33/64	-	-	13.10	0.5157			
HP255-5197	-	-	-	13.20	0.5197			
HP255-5236	-	-	-	13.30	0.5236			
HP255-5276	-	-	-	13.40	0.5276			
HP255-5311	17/32	-	-	13.49	0.5311			
HP255-5315	-	-	-	13.50	0.5315			
HP255-5394	-	-	-	13.70	0.5394			
HP255-5512	-	-	-	14.00	0.5512			
HP255-5626	9/16	-	-	14.29	0.5626			
HP255-5709	-	-	-	14.50	0.5709			
HP255-5780	37/64	-	-	14.68	0.5780			
HP255-5787	-	-	-	14.70	0.5787			
HP255-5906	-	-	-	15.00	0.5906			
HP255-5937	19/32	-	-	15.08	0.5937			
HP255-6102	-	-	-	15.50	0.6102			

Packed: 1 pc.
Available WD1 coating only.





List HP255 (Continued)

5D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP255-6181	-	-	-	15.70	0.6181	83	133	16
HP255-6248	5/8	-	-	15.87	0.6248			
HP255-6299	-	-	-	16.00	0.6299			
HP255-6339	-	-	-	16.10	0.6339	93	143	18
HP255-6496	-	-	-	16.50	0.6496			
HP255-6563	21/32	-	-	16.67	0.6563			
HP255-6693	-	-	-	17.00	0.6693			
HP255-6890	-	-	-	17.50	0.6890			
HP255-7087	-	-	-	18.00	0.7087	101	153	20
HP255-7283	-	-	-	18.50	0.7283			
HP255-7480	-	-	-	19.00	0.7480			
HP255-7500	3/4	-	-	19.05	0.7500			
HP255-7579	-	-	-	19.25	0.7579			
HP255-7677	-	-	-	19.50	0.7677			
HP255-7874	-	-	-	20.00	0.7874			

Packed: 1 pc.
Available WD1 coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP255	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List HP258

8D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
D=3	+0.002 / +0.012	+0.0001 / +0.0005
3<D≤6	+0.004 / +0.016	+0.0002 / +0.0006
6<D≤10	+0.006 / +0.021	+0.0002 / +0.0008
10<D≤18	+0.007 / +0.025	+0.0003 / +0.0010
18<D≤20	+0.008 / +0.029	+0.0003 / +0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP258-1181	-	-	-	3.00	0.1181	34	77	4
HP258-1220	-	-	-	3.10	0.1220	36		
HP258-1248	1/8	-	-	3.17	0.1248	43		
HP258-1260	-	-	-	3.20	0.1260	36	77	
HP258-1299	-	-	-	3.30	0.1299			
HP258-1339	-	-	-	3.40	0.1339			
HP258-1378	-	-	-	3.50	0.1378	43	81	
HP258-1406	9/64	-	-	3.57	0.1406			
HP258-1417	-	-	-	3.60	0.1417			
HP258-1457	-	-	-	3.70	0.1457	36	77	
HP258-1496	-	25	-	3.80	0.1496	45	85	
HP258-1535	-	-	-	3.90	0.1535	43	81	
HP258-1563	5/32	-	-	3.97	0.1563			
HP258-1575	-	-	-	4.00	0.1575			
HP258-1610	-	20	-	4.09	0.1610	45	85	
HP258-1614	-	-	-	4.10	0.1614	50	90	
HP258-1654	-	-	-	4.20	0.1654			
HP258-1693	-	-	-	4.30	0.1693			
HP258-1720	11/64	-	-	4.37	0.1720	45	85	
HP258-1732	-	-	-	4.40	0.1732	50	90	
HP258-1772	-	16	-	4.50	0.1772			
HP258-1811	-	-	-	4.60	0.1811			
HP258-1831	-	-	-	4.65	0.1831	45	85	
HP258-1850	-	13	-	4.70	0.1850	50	90	
HP258-1874	3/16	-	-	4.76	0.1874			
HP258-1890	-	-	-	4.80	0.1890			
HP258-1929	-	-	-	4.90	0.1929	57	97	
HP258-1969	-	-	-	5.00	0.1969			
HP258-2008	-	-	-	5.10	0.2008			
HP258-2031	13/64	-	-	5.16	0.2031	66	106	
HP258-2047	-	-	-	5.20	0.2047			
HP258-2087	-	-	-	5.30	0.2087			
HP258-2126	-	-	-	5.40	0.2126	66	106	
HP258-2130	-	3	-	5.41	0.2130			
HP258-2165	-	-	-	5.50	0.2165			
HP258-2189	7/32	-	-	5.56	0.2189	66	106	
HP258-2205	-	-	-	5.60	0.2205			
HP258-2244	-	-	-	5.70	0.2244			
HP258-2283	-	-	-	5.80	0.2283	66	106	
HP258-2323	-	-	-	5.90	0.2323			
HP258-2343	15/64	-	-	5.95	0.2343			
HP258-2362	-	-	-	6.00	0.2362	66	106	
HP258-2402	-	-	-	6.10	0.2402			
HP258-2441	-	-	-	6.20	0.2441			
HP258-2480	-	-	-	6.30	0.2480	66	106	
HP258-2500	1/4	-	E	6.35	0.2500			
HP258-2520	-	-	-	6.40	0.2520			
HP258-2559	-	-	-	6.50	0.2559	66	106	
HP258-2571	-	-	F	6.53	0.2571			
HP258-2598	-	-	-	6.60	0.2598			

Packed: 1 pc.
Available WD1 coating only.





List HP258 (Continued)

8D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1		30°	SHANK h6
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP258-2638	-	-	-	6.70	0.2638	66	106	8
HP258-2657	17/64	-	-	6.75	0.2657			
HP258-2677	-	-	-	6.80	0.2677			
HP258-2717	-	-	I	6.90	0.2717			
HP258-2756	-	-	-	7.00	0.2756			
HP258-2795	-	-	-	7.10	0.2795			
HP258-2811	9/32	-	-	7.14	0.2811			
HP258-2835	-	-	-	7.20	0.2835			
HP258-2874	-	-	-	7.30	0.2874			
HP258-2913	-	-	-	7.40	0.2913			
HP258-2953	-	-	-	7.50	0.2953			
HP258-2969	19/64	-	-	7.54	0.2969			
HP258-2992	-	-	-	7.60	0.2992			
HP258-3031	-	-	-	7.70	0.3031			
HP258-3071	-	-	-	7.80	0.3071			
HP258-3110	-	-	-	7.90	0.3110			
HP258-3126	5/16	-	-	7.94	0.3126			
HP258-3150	-	-	-	8.00	0.3150			
HP258-3189	-	-	-	8.10	0.3189			
HP258-3228	-	-	P	8.20	0.3228			
HP258-3268	-	-	-	8.30	0.3268			
HP258-3280	21/64	-	-	8.33	0.3280			
HP258-3307	-	-	-	8.40	0.3307			
HP258-3319	-	-	Q	8.43	0.3319			
HP258-3346	-	-	-	8.50	0.3346			
HP258-3386	-	-	-	8.60	0.3386			
HP258-3425	-	-	-	8.70	0.3425			
HP258-3437	11/32	-	-	8.73	0.3437			
HP258-3465	-	-	-	8.80	0.3465			
HP258-3504	-	-	-	8.90	0.3504			
HP258-3543	-	-	-	9.00	0.3543			
HP258-3583	-	-	-	9.10	0.3583			
HP258-3594	23/64	-	-	9.13	0.3594			
HP258-3622	-	-	-	9.20	0.3622			
HP258-3642	-	-	-	9.25	0.3642			
HP258-3661	-	-	-	9.30	0.3661			
HP258-3701	-	-	-	9.40	0.3701			
HP258-3740	-	-	-	9.50	0.3740			
HP258-3748	3/8	-	-	9.52	0.3748			
HP258-3780	-	-	-	9.60	0.3780			
HP258-3819	-	-	-	9.70	0.3819			
HP258-3858	-	-	W	9.80	0.3858			
HP258-3898	-	-	-	9.90	0.3898			
HP258-3906	25/64	-	-	9.92	0.3906			
HP258-3937	-	-	-	10.00	0.3937			

Packed: 1 pc.
Available WD1 coating only.

continued on next page

Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP258	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List HP258 (Continued)

8D, Coolant-Through

SPEED FEED P313	CARBIDE	WD1	30°	SHANK h6
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Cutting Diameter Tolerance (m7)		
Size	mm	inch
D=3	+0.002 / +0.012	+0.0001 / +0.0005
3<D≤6	+0.004 / +0.016	+0.0002 / +0.0006
6<D≤10	+0.006 / +0.021	+0.0002 / +0.0008
10<D≤18	+0.007 / +0.025	+0.0003 / +0.0010
18<D≤20	+0.008 / +0.029	+0.0003 / +0.0011



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
HP258-3976	-	-	-	10.10	0.3976	106	155	12
HP258-4016	-	-	-	10.20	0.4016			
HP258-4055	-	-	-	10.30	0.4055			
HP258-4063	13/32	-	-	10.32	0.4063			
HP258-4094	-	-	-	10.40	0.4094			
HP258-4134	-	-	-	10.50	0.4134			
HP258-4173	-	-	-	10.60	0.4173			
HP258-4213	-	-	-	10.70	0.4213			
HP258-4220	27/64	-	-	10.72	0.4220			
HP258-4252	-	-	-	10.80	0.4252			
HP258-4291	-	-	-	10.90	0.4291			
HP258-4331	-	-	-	11.00	0.4331			
HP258-4370	-	-	-	11.10	0.4370			
HP258-4374	7/16	-	-	11.11	0.4374			
HP258-4409	-	-	-	11.20	0.4409			
HP258-4449	-	-	-	11.30	0.4449			
HP258-4488	-	-	-	11.40	0.4488			
HP258-4528	-	-	-	11.50	0.4528			
HP258-4531	29/64	-	-	11.51	0.4531			
HP258-4567	-	-	-	11.60	0.4567			
HP258-4606	-	-	-	11.70	0.4606			
HP258-4646	-	-	-	11.80	0.4646			
HP258-4685	-	-	-	11.90	0.4685			
HP258-4689	15/32	-	-	11.91	0.4689			
HP258-4724	-	-	-	12.00	0.4724			
HP258-4764	-	-	-	12.10	0.4764			
HP258-4803	-	-	-	12.20	0.4803			
HP258-4843	31/64	-	-	12.30	0.4843			
HP258-4882	-	-	-	12.40	0.4882			
HP258-4921	-	-	-	12.50	0.4921			
HP258-4961	-	-	-	12.60	0.4961			
HP258-5000	1/2	-	-	12.70	0.5000			
HP258-5039	-	-	-	12.80	0.5039			
HP258-5079	-	-	-	12.90	0.5079			
HP258-5118	-	-	-	13.00	0.5118			
HP258-5157	33/64	-	-	13.10	0.5157			
HP258-5197	-	-	-	13.20	0.5197			
HP258-5236	-	-	-	13.30	0.5236			
HP258-5276	-	-	-	13.40	0.5276			
HP258-5311	17/32	-	-	13.49	0.5311			
HP258-5315	-	-	-	13.50	0.5315			
HP258-5394	-	-	-	13.70	0.5394			
HP258-5512	-	-	-	14.00	0.5512			
HP258-5626	9/16	-	-	14.29	0.5626			
HP258-5709	-	-	-	14.50	0.5709			
HP258-5780	37/64	-	-	14.68	0.5780			
HP258-5787	-	-	-	14.70	0.5787			
HP258-5906	-	-	-	15.00	0.5906			
HP258-5937	19/32	-	-	15.08	0.5937			
HP258-6102	-	-	-	15.50	0.6102			
						152	204	16

Packed: 1 pc.
Available WD1 coating only.



List HP258 (Continued)

8D, Coolant-Through

SPEED FEED	CARBIDE	WD1	30°	SHANK h6
P313				

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP258-6181	-	-	-	15.70	0.6181	152	204	16
HP258-6248	5/8	-	-	15.87	0.6248			
HP258-6299	-	-	-	16.00	0.6299			
HP258-6496	-	-	-	16.50	0.6496	171	223	18
HP258-6563	21/32	-	-	16.67	0.6563			
HP258-6693	-	-	-	17.00	0.6693			
HP258-6890	-	-	-	17.50	0.6890	190	244	20
HP258-7087	-	-	-	18.00	0.7087			
HP258-7283	-	-	-	18.50	0.7283			
HP258-7480	-	-	-	19.00	0.7480	190	244	20
HP258-7500	3/4	-	-	19.05	0.7500			
HP258-7677	-	-	-	19.50	0.7677			
HP258-7874	-	-	-	20.00	0.7874			

Packed: 1 pc.
Available WD1 coating only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP258	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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HY-PRO[®] CARB

CNC Multi-Purpose Centering Drill and Chamfering Tool

SPEED
FEED
P314

List 738

CNC Multi-Purpose Centering Drill & Chamfering Tool



60°

Holders				
EDP Number	Point Angle	Overall Length	Max. Diameter	Shank Diameter
73808100	60°	4-21/64	0.418	5/8

Packed: 1 pc.

Precise Ground Inserts		
EDP Number	Type	Application
73818119	NK1010-60	Aluminum, Cast Iron AlCrN
73801300	-	L-15 Replacement Screw

Packed: 10 pcs.
Insert Radius: 0.4 mm



90°



118°

Holders				
EDP Number	Point Angle	Overall Length	Max. Diameter	Shank Diameter
73801000	90°	4-1/2	0.500	5/8
73802000	118°		0.625	
73804000	100°	0.550		
73805000	90°	8	0.500	
73806000	118°		0.625	

Packed: 1 pc.

Precise Ground Inserts		
EDP Number	Type	Application
73811000	NK1010	Aluminum, Cast Iron
73812000	NK2020	Steel
73801100	-	L-6 Replacement Screw

Packed: 10 pcs.
Insert Radius: 0.6 mm



90°



120°

Holders				
EDP Number	Point Angle	Overall Length	Max. Diameter	Shank Diameter
73809000	90°	5-1/8	0.866 (22mm)	3/4
73809100	120°		0.984 (25mm)	1
73809200	90°	8	0.866 (22mm)	1
73809300	120°		0.984 (25mm)	1-1/4

Packed: 1 pc.

Precise Ground Inserts		
EDP Number	Type	Application
73819000	NK2020	For Steel
73819100	NK1010	For Cast & Aluminum
73819011	NK6060	For Steel TiAlN
73819111	NK8080	For Cast & Aluminum TiAlN
73801200	-	L-10 Replacement Screw

Packed: 10 pcs.
Insert Radius: 0.6 mm



List 738 (Continued)

SPEED
FEED
P314

CNC Multi-Purpose Centering Drill & Chamfering Tool



90°

Holders				
EDP Number	Point Angle	Overall Length	Max. Diameter	Shank Diameter
73803000	90°	4-1/8	0.315	3/8
73803500		6-1/2		

Packed: 1 pc.

Precise Ground Inserts		
EDP Number	Type	Application
73813005	NK5050	Aluminum, Cast Iron
73801400	-	L-13 Replacement Screw

Packed: 10 pcs.
Insert Radius: 0.2 mm



90°

Holders				
EDP Number	Point Angle	Overall Length	Max. Diameter	Shank Diameter
73807000	90°	5-1/8	1.18	3/4

Packed: 1 pc.

Precise Ground Inserts		
EDP Number	Type	Application
73817000	2001	General Purpose
73801100	-	L-6 Replacement Screw

Packed: 10 pcs.
Holder requires two (2) inserts.
Inserts have 3 edges per side and are 2 sided.
Insert Radius: 0.6mm



List 738 (Accessories)

Accessories	
EDP Number	Application
73801500	N-5 Wrench for L-13 screws
73801600	K-3 Wrench for L-6 & L-10 screws
73801700	N-6 Wrench for L-15 screws



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
738	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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List 215

SPEED FEED P315-316	CARBIDE	BR	15°
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Cutting Diameter Tolerance		
Size	mm	inch
1.0≤D≤12.7	+0 / -0.013	+0 / -0.0005



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d		
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
215-0394	-	-	-	1.00	0.0394	13	38	1.00		
215-0433	-	-	-	1.10	0.0433			1.10		
215-0465	-	56	-	1.18	0.0465			1.18		
215-0469	3/64	-	-	1.19	0.0469			3/64		
215-0472	-	-	-	1.20	0.0472			1.20		
215-0512	-	-	-	1.30	0.0512			1.30		
215-0520	-	55	-	1.32	0.0520			1.32		
215-0550	-	54	-	1.40	0.0550			1.40		
215-0551	-	54	-		0.0551					
215-0591	-	-	-	1.50	0.0591			1.50		
215-0595	-	53	-	1.51	0.0595			1.51		
215-0625	1/16	-	-	1.59	0.0625			16	41	1/16
215-0630	-	-	-	1.60	0.0630			18	43	1.60
215-0635	-	52	-	1.61	0.0635	17	1.61			
215-0669	-	51	-	1.70	0.0669	18	1.70			
215-0670	-	51	-		0.0670	17				
215-0700	-	50	-	1.78	0.0700	17	1.78			
215-0709	-	-	-	1.80	0.0709	18	1.80			
215-0730	-	49	-	1.85	0.0730	17	1.85			
215-0748	-	-	-	1.90	0.0748	18	1.90			
215-0760	-	48	-	1.93	0.0760	17	1.93			
215-0781	5/64	-	-	1.98	0.0781		5/64			
215-0785	-	47	-	1.99	0.0785	19	44	1.99		
215-0787	-	-	-	2.00	0.0787		45	2.00		
215-0810	-	46	-	2.06	0.0810		44	2.06		
215-0820	-	45	-	2.08	0.0820			2.08		
215-0827	-	-	-	2.10	0.0827		45	2.10		
215-0860	-	44	-	2.18	0.0860		44	2.18		
215-0866	-	-	-	2.20	0.0866		45	2.20		
215-0890	-	43	-	2.26	0.0890		44	2.26		
215-0906	-	-	-	2.30	0.0906		45	2.30		
215-0935	-	42	-	2.37	0.0935		44	2.37		
215-0938	3/32	-	-	2.38	0.0938			3/32		
215-0945	-	-	-	2.40	0.0945		21	46	2.40	
215-0960	-	41	-	2.44	0.0960			2.44		
215-0980	-	40	-	2.49	0.0980	2.49				
215-0984	-	-	-	2.50	0.0984	2.50				
215-0995	-	39	-	2.53	0.0995	2.53				
215-1015	-	38	-	2.58	0.1015	2.58				
215-1024	-	-	-	2.60	0.1024	2.60				
215-1040	-	37	-	2.64	0.1040	2.64				
215-1063	-	-	-	2.70	0.1063	2.70				
215-1065	-	36	-	2.71	0.1065	2.71				
215-1094	7/64	-	-	2.78	0.1094	22		48	7/64	
215-1100	-	35	-	2.79	0.1100			2.79		
215-1102	-	-	-	2.80	0.1102			2.80		
215-1110	-	34	-	2.82	0.1110		2.82			
215-1130	-	33	-	2.87	0.1130		2.87			
215-1142	-	-	-	2.90	0.1142		2.90			
215-1160	-	32	-	2.95	0.1160		2.95			

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.





List 215 (Continued)

SPEED FEED P315-316	CARBIDE	BR	15°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
215-1181	-	-	-	3.00	0.1181	22	48	3.00	
215-1200	-	31	-	3.05	0.1200			3.05	
215-1220	-	-	-	3.10	0.1220			3.10	
215-1250	1/8	-	-	3.18	0.1250	24	52	1/8	
215-1260	-	-	-	3.20	0.1260			3.20	
215-1285	-	30	-	3.26	0.1285			3.26	
215-1299	-	-	-	3.30	0.1299			3.30	
215-1339	-	-	-	3.40	0.1339			3.40	
215-1360	-	29	-	3.45	0.1360			3.45	
215-1378	-	-	-	3.50	0.1378			3.50	
215-1405	-	28	-	3.57	0.1405			49	3.57
215-1406	9/64	28	-	3.57	0.1406				9/64
215-1417	-	-	-	3.60	0.1417			25	52
215-1440	-	27	-	3.66	0.1440	3.66			
215-1457	-	-	-	3.70	0.1457	3.70			
215-1470	-	26	-	3.73	0.1470	3.73			
215-1495	-	25	-	3.80	0.1495	3.80			
215-1496	-	25	-		0.1496				
215-1520	-	24	-	3.86	0.1520	3.86			
215-1535	-	-	-	3.90	0.1535	3.90			
215-1540	-	23	-	3.91	0.1540	3.91			
215-1562	5/32	-	-	3.97	0.1562	27	54		
215-1570	-	22	-	3.99	0.1570			3.99	
215-1575	-	-	-	4.00	0.1575			4.00	
215-1590	-	21	-	4.04	0.1590			54	4.04
215-1610	-	20	-	4.09	0.1610				4.09
215-1614	-	-	-	4.10	0.1614			53	4.10
215-1654	-	-	-	4.20	0.1654				4.20
215-1660	-	19	-	4.22	0.1660			4.22	
215-1693	-	-	-	4.30	0.1693			4.30	
215-1695	-	18	-	4.31	0.1695			54	4.31
215-1719	11/64	-	-	4.37	0.1719	11/64			
215-1730	-	17	-	4.39	0.1730	56	4.39		
215-1732	-	-	-	4.40	0.1732	55	4.40		
215-1770	-	16	-	4.50	0.1770	56	4.50		
215-1772	-	16	-		0.1772				
215-1800	-	15	-	4.57	0.1800	56	4.57		
215-1811	-	-	-	4.60	0.1811	55	4.60		
215-1820	-	-	-	4.62	0.1820	56	4.62		
215-1850	-	13	-	4.70	0.1850		4.70		
215-1875	3/16	-	-	4.76	0.1875	3/16			
215-1890	-	12	-	4.80	0.1890	4.80			
215-1910	-	11	-	4.85	0.1910	30	57	4.85	
215-1929	-	-	-	4.90	0.1929			4.90	
215-1935	-	10	-	4.92	0.1935			4.92	
215-1960	-	9	-	4.98	0.1960			4.98	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

continued on next page

Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
215	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

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List 215 (Continued)

SPEED FEED P315-316	CARBIDE	BR	15°
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Cutting Diameter Tolerance		
Size	mm	inch
1.0≤D≤12.7	+0 / -0.013	+0 / -0.0005



FourFacet Point (D≤1.5)

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d		
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
215-1968	-	-	-	5.00	0.1969	30	57	5.00		
215-1990	-	8	-	5.05	0.1990			5.05		
215-2008	-	-	-	5.10	0.2008			5.10		
215-2010	-	7	-	5.11	0.2010			5.11		
215-2031	13/64	-	-	5.16	0.2031			13/64		
215-2040	-	6	-	5.18	0.2040	32	60	5.18		
215-2047	-	-	-	5.20	0.2047			5.20		
215-2055	-	5	-	5.22	0.2055			5.22		
215-2087	-	-	-	5.30	0.2087			5.30		
215-2090	-	4	-	5.31	0.2090			5.31		
215-2126	-	-	-	5.40	0.2126			5.40		
215-2130	-	3	-	5.41	0.2130			5.41		
215-2165	-	-	-	5.50	0.2165			5.50		
215-2188	7/32	-	-	5.56	0.2188			7/32		
215-2205	-	-	-	5.60	0.2205			33	61	5.60
215-2210	-	2	-	5.61	0.2210	62	5.61			
215-2244	-	-	-	5.70	0.2244	61	5.70			
215-2280	-	1	-	5.79	0.2280	62	62	5.79		
215-2283	-	-	-	5.80	0.2283			5.80		
215-2323	-	-	-	5.90	0.2323	61	61	5.90		
215-2340	-	-	A	5.94	0.2340			5.94		
215-2344	15/64	-	-	5.95	0.2344	62	62	15/64		
215-2362	-	-	-	6.00	0.2362			61	6.00	
215-2380	-	-	B	6.05	0.2380	35	64	6.05		
215-2402	-	-	-	6.10	0.2402			63	6.10	
215-2420	-	-	C	6.15	0.2420			64	6.15	
215-2441	-	-	-	6.20	0.2441			63	6.20	
215-2460	-	-	D	6.25	0.2460			64	6.25	
215-2480	-	-	-	6.30	0.2480			63	6.30	
215-2500	1/4	-	E	6.35	0.2500			64	1/4	
215-2520	-	-	-	6.40	0.2520			63	63	6.40
215-2559	-	-	-	6.50	0.2559					6.50
215-2570	-	-	F	6.53	0.2570			37	67	6.53
215-2598	-	-	-	6.60	0.2598	6.60				
215-2610	-	-	G	6.63	0.2610	6.63				
215-2638	-	-	-	6.70	0.2638	6.70				
215-2656	17/64	-	-	6.75	0.2656	17/64				
215-2660	-	-	H	6.76	0.2660	38	68	6.76		
215-2677	-	-	-	6.80	0.2677			6.80		
215-2717	-	-	I	6.90	0.2717			6.90		
215-2720	-	-	I	6.91	0.2720			6.91		
215-2756	-	-	-	7.00	0.2756			7.00		
215-2770	-	-	J	7.04	0.2770			7.04		
215-2795	-	-	-	7.10	0.2795			7.10		
215-2810	-	-	K	7.14	0.2810			7.14		
215-2812	9/32	-	-	7.14	0.2812			9/32		
215-2835	-	-	-	7.20	0.2835			40	70	7.20
215-2874	-	-	-	7.30	0.2874	7.30				
215-2900	-	-	L	7.37	0.2900	7.37				
215-2913	-	-	-	7.40	0.2913	7.40				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



List 215 (Continued)

SPEED FEED	CARBIDE	BR	15°
P315-316			

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
215-2950	-	-	M	7.49	0.2950	40	70	7.49
215-2953	-	-	-	7.50	0.2953			7.50
215-2969	19/64	-	-	7.54	0.2969			19/64
215-2992	-	-	-	7.60	0.2992	41	71	7.60
215-3020	-	-	N	7.67	0.3020			7.67
215-3031	-	-	-	7.70	0.3031			7.70
215-3071	-	-	-	7.80	0.3071	43	75	7.80
215-3110	-	-	-	7.90	0.3110			7.90
215-3125	5/16	-	-	7.94	0.3125			5/16
215-3150	-	-	-	8.00	0.3150	44	78	8.00
215-3160	-	-	O	8.03	0.3160			8.03
215-3189	-	-	-	8.10	0.3189			8.10
215-3228	-	-	P	8.20	0.3228	46	79	8.20
215-3230	-	-	P	8.20	0.3230			8.20
215-3268	-	-	-	8.30	0.3268			8.30
215-3281	21/64	-	-	8.33	0.3281	48	83	21/64
215-3307	-	-	-	8.40	0.3307			8.40
215-3320	-	-	Q	8.43	0.3320			8.43
215-3346	-	-	-	8.50	0.3346	49	84	8.50
215-3386	-	-	-	8.60	0.3386			8.60
215-3390	-	-	R	8.61	0.3390			8.61
215-3425	-	-	-	8.70	0.3425	47	76	8.70
215-3438	11/32	-	-	8.73	0.3438			11/32
215-3465	-	-	-	8.80	0.3465			8.80
215-3480	-	-	S	8.84	0.3480	45	75	8.84
215-3504	-	-	-	8.90	0.3504			8.90
215-3543	-	-	-	9.00	0.3543			9.00
215-3580	-	-	T	9.09	0.3580	43	73	9.09
215-3583	-	-	-	9.10	0.3583			9.10
215-3594	23/64	-	-	9.13	0.3594			23/64
215-3622	-	-	-	9.20	0.3622	42	72	9.20
215-3661	-	-	-	9.30	0.3661			9.30
215-3680	-	-	U	9.35	0.3680			9.35
215-3701	-	-	-	9.40	0.3701	41	71	9.40
215-3740	-	-	-	9.50	0.3740			9.50
215-3750	3/8	-	-	9.53	0.3750			3/8
215-3770	-	-	V	9.58	0.3770	40	70	9.58
215-3780	-	-	-	9.60	0.3780			9.60
215-3819	-	-	-	9.70	0.3819			9.70
215-3858	-	-	W	9.80	0.3858	39	69	9.80
215-3860	-	-	W	9.80	0.3860			9.80
215-3898	-	-	-	9.90	0.3898			9.90
215-3906	25/64	-	-	9.92	0.3906	38	68	25/64
215-3937	-	-	-	10.00	0.3937			10.00
215-3970	-	-	X	10.08	0.3970			10.08
215-3976	-	-	-	10.10	0.3976	10.10		

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

➔ continued on next page ➔

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
215	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

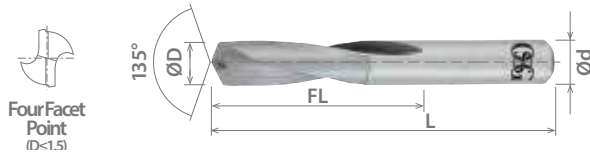
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List 215 (Continued)

SPEED FEED P315-316	CARBIDE	BR	15°
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Cutting Diameter Tolerance		
Size	mm	inch
1.0 ≤ D ≤ 12.7	+0 / -0.013	+0 / -0.0005

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
215-4016	-	-	-	10.20	0.4016	49	84	10.20
215-4040	-	-	Y	10.26	0.4040			10.26
215-4055	-	-	-	10.30	0.4055			10.30
215-4062	13/32	-	-	10.32	0.4062			13/32
215-4094	-	-	-	10.40	0.4094	51	86	10.40
215-4130	-	-	Z	10.49	0.4130			10.49
215-4134	-	-	-	10.50	0.4134			10.50
215-4173	-	-	-	10.60	0.4173			10.60
215-4213	-	-	-	10.70	0.4213	52	87	10.70
215-4219	27/64	-	-	10.72	0.4219			27/64
215-4252	-	-	-	10.80	0.4252			10.80
215-4291	-	-	-	10.90	0.4291			10.90
215-4331	-	-	-	11.00	0.4331	54	90	11.00
215-4370	-	-	-	11.10	0.4370			11.10
215-4375	7/16	-	-	11.11	0.4375			7/16
215-4409	-	-	-	11.20	0.4409			11.20
215-4449	-	-	-	11.30	0.4449	56	92	11.30
215-4488	-	-	-	11.40	0.4488			11.40
215-4528	-	-	-	11.50	0.4528			11.50
215-4531	29/64	-	-	11.51	0.4531			29/64
215-4567	-	-	-	11.60	0.4567	57	95	11.60
215-4606	-	-	-	11.70	0.4606			11.70
215-4646	-	-	-	11.80	0.4646			11.80
215-4685	-	-	-	11.90	0.4685			11.90
215-4688	15/32	-	-	11.91	0.4688	56	94	15/32
215-4724	-	-	-	12.00	0.4724			12.00
215-4844	31/64	-	-	12.30	0.4844			31/64
215-5000	1/2	-	-	12.70	0.5000			1/2

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
215	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

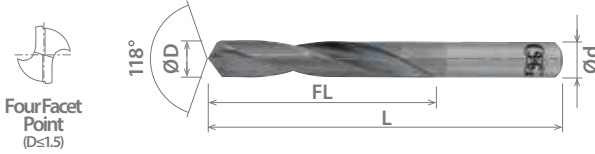
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List 220D

SPEED FEED P315-316	CARBIDE	BR	20°
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Four Facet Point (D≤1.5)

Cutting Diameter Tolerance		
Size	mm	inch
1.18≤D≤12.7	+0 / -0.013	+0 / -0.0005

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
220-0465	-	56	-	1.18	0.0465	19	38	1.18
220-0469	3/64	-	-	1.19	0.0469			3/64
220-0520	-	55	-	1.32	0.0520			1.32
220-0550	-	54	-	1.40	0.0550			1.40
220-0591	-	-	-	1.50	0.0591			1.50
220-0595	-	53	-	1.51	0.0595			1.51
220-0625	1/16	-	-	1.59	0.0625			1/16
220-0635	-	52	-	1.61	0.0635			1.61
220-0670	-	51	-	1.70	0.0670			1.70
220-0700	-	50	-	1.78	0.0700			1.78
220-0730	-	49	-	1.85	0.0730	1.85		
220-0760	-	48	-	1.93	0.0760	1.93		
220-0781	5/64	-	-	1.98	0.0781	22	44	5/64
220-0785	-	47	-	1.99	0.0785			1.99
220-0787	-	-	-	2.00	0.0787			2.00
220-0810	-	46	-	2.06	0.0810			2.06
220-0820	-	45	-	2.08	0.0820			2.08
220-0860	-	44	-	2.18	0.0860			2.18
220-0890	-	43	-	2.26	0.0890	2.26		
220-0935	-	42	-	2.37	0.0935	25	51	2.37
220-0938	3/32	-	-	2.38	0.0938			3/32
220-0960	-	41	-	2.44	0.0960			2.44
220-0980	-	40	-	2.49	0.0980			2.49
220-0984	-	-	-	2.50	0.0984			2.50
220-0995	-	39	-	2.53	0.0995			2.53
220-1015	-	38	-	2.58	0.1015			2.58
220-1040	-	37	-	2.64	0.1040			2.64
220-1065	-	36	-	2.71	0.1065			2.71
220-1094	7/64	-	-	2.78	0.1094			7/64
220-1100	-	35	-	2.79	0.1100	2.79		
220-1110	-	34	-	2.82	0.1110	32	57	2.82
220-1130	-	33	-	2.87	0.1130			2.87
220-1160	-	32	-	2.95	0.1160			2.95
220-1181	-	-	-	3.00	0.1181			3.00
220-1200	-	31	-	3.05	0.1200			3.05
220-1250	1/8	-	-	3.18	0.1250			1/8
220-1285	-	30	-	3.26	0.1285			3.26
220-1360	-	29	-	3.45	0.1360			3.45
220-1378	-	-	-	3.50	0.1378			3.50
220-1405	-	28	-	3.57	0.1405			3.57

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

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Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	H			
	Carbon Steels			Alloy Steels 4140 4340		Stainless Steels				Aluminum 6061 7075	Casting			Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH						6061 7075	6Al4V (30 HRC)	~35 HRC	35-45 HRC
220D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				

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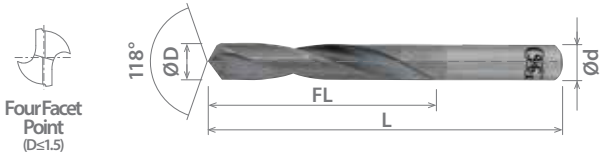




List 220D (Continued)

SPEED FEED P315-316	CARBIDE	BR	20°
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Cutting Diameter Tolerance		
Size	mm	inch
1.18≤D≤12.7	+0 / -0.013	+0 / -0.0005



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
220-1406	9/64	28	-	3.57	0.1406	35	64	9/64
220-1440	-	27	-	3.66	0.1440			3.66
220-1470	-	26	-	3.73	0.1470			3.73
220-1495	-	25	-	3.80	0.1495			3.80
220-1520	-	24	-	3.86	0.1520			3.86
220-1540	-	23	-	3.91	0.1540			3.91
220-1562	5/32	-	-	3.97	0.1562			5/32
220-1570	-	22	-	3.99	0.1570			3.99
220-1575	-	-	-	4.00	0.1575			4.00
220-1590	-	21	-	4.04	0.1590			4.04
220-1610	-	20	-	4.09	0.1610			4.09
220-1660	-	19	-	4.22	0.1660			4.22
220-1695	-	18	-	4.31	0.1695			4.31
220-1719	11/64	-	-	4.37	0.1719			11/64
220-1730	-	17	-	4.39	0.1730	4.39		
220-1770	-	16	-	4.50	0.1770	4.50		
220-1772	-	16	-	4.50	0.1770	4.50		
220-1800	-	15	-	4.57	0.1800	4.57		
220-1820	-	14	-	4.62	0.1820	4.62		
220-1850	-	13	-	4.70	0.1850	4.70		
220-1875	3/16	-	-	4.76	0.1875	3/16		
220-1890	-	12	-	4.80	0.1890	4.80		
220-1910	-	11	-	4.85	0.1910	4.85		
220-1935	-	10	-	4.92	0.1935	4.92		
220-1960	-	9	-	4.98	0.1960	4.98		
220-1968	-	-	-	5.00	0.1969	5.00		
220-1990	-	8	-	5.05	0.1990	5.05		
220-2010	-	7	-	5.11	0.2010	5.11		
220-2031	13/64	-	-	5.16	0.2031	13/64		
220-2040	-	6	-	5.18	0.2040	5.18		
220-2055	-	5	-	5.22	0.2055	5.22		
220-2090	-	4	-	5.31	0.2090	5.31		
220-2130	-	3	-	5.41	0.2130	5.41		
220-2165	-	-	-	5.50	0.2165	5.50		
220-2188	7/32	-	-	5.56	0.2188	7/32		
220-2210	-	2	-	5.61	0.2210	5.61		
220-2280	-	1	-	5.79	0.2280	5.79		
220-2340	-	-	A	5.94	0.2340	5.94		
220-2344	15/64	-	-	5.95	0.2344	15/64		
220-2362	-	-	-	6.00	0.2362	6.00		
220-2380	-	-	B	6.05	0.2380	6.05		
220-2420	-	-	C	6.15	0.2420	6.15		
220-2460	-	-	D	6.25	0.2460	6.25		
220-2500	1/4	-	E	6.35	0.2500	1/4		
220-2559	-	-	-	6.50	0.2559	6.50		
220-2570	-	-	F	6.53	0.2570	6.53		
220-2610	-	-	G	6.63	0.2610	6.63		
220-2656	17/64	-	-	6.75	0.2656	17/64		
220-2660	-	-	H	6.76	0.2660	6.76		
220-2720	-	-	I	6.91	0.2720	6.91		

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAIN.



List 220D (Continued)

SPEED FEED P315-316	CARBIDE	BR	20°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
220-2756	-	-	-	7.00	0.2756	54	89	7.00
220-2770	-	-	J	7.04	0.2770			7.04
220-2810	9/32	-	K	7.14	0.2810			9/32
220-2812	9/32	-	-	-	0.2812			-
220-2900	-	-	L	7.37	0.2900	60	95	7.37
220-2950	-	-	M	7.49	0.2950			7.49
220-2953	-	-	-	7.50	0.2953			7.50
220-2969	19/64	-	-	7.54	0.2969			19/64
220-3020	-	-	N	7.67	0.3020			7.67
220-3125	5/16	-	-	7.94	0.3125			5/16
220-3150	-	-	-	8.00	0.3150			8.00
220-3160	-	-	O	8.03	0.3160			8.03
220-3230	-	-	P	8.20	0.3230			8.20
220-3281	21/64	-	-	8.33	0.3281			64
220-3320	-	-	Q	8.43	0.3320	8.43		
220-3346	-	-	-	8.50	0.3346	8.50		
220-3390	-	-	R	8.61	0.3390	8.61		
220-3438	11/32	-	-	8.73	0.3438	11/32		
220-3480	-	-	S	8.84	0.3480	8.84		
220-3543	-	-	-	9.00	0.3543	9.00		
220-3580	-	-	T	9.09	0.3580	9.09		
220-3594	23/64	-	-	9.13	0.3594	23/64		
220-3680	-	-	U	9.35	0.3680	9.35		
220-3740	-	-	-	9.50	0.3740	70	108	9.50
220-3750	3/8	-	-	9.53	0.3750			3/8
220-3770	-	-	V	9.58	0.3770			9.58
220-3860	-	-	W	9.80	0.3860			9.80
220-3906	25/64	-	-	9.92	0.3906	73	114	25/64
220-3937	-	-	-	10.00	0.3937			10.00
220-3970	-	-	X	10.08	0.3970			10.08
220-4040	-	-	Y	10.26	0.4040			10.26
220-4062	13/32	-	-	10.32	0.4062			13/32
220-4130	-	-	Z	10.49	0.4130			10.49
220-4134	-	-	-	10.50	0.4134			10.50
220-4219	27/64	-	-	10.72	0.4219			27/64
220-4331	-	-	-	11.00	0.4331			11.00
220-4375	7/16	-	-	11.11	0.4375			7/16
220-4528	-	-	-	11.50	0.4528	76	121	11.50
220-4531	29/64	-	-	11.51	0.4531			29/64
220-4688	15/32	-	-	11.91	0.4688			15/32
220-4724	-	-	-	12.00	0.4724			12.00
220-4844	31/64	-	-	12.30	0.4844			31/64
220-5000	1/2	-	-	12.70	0.5000			1/2

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
220D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				

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List 233

Three Flute



SPEED FEED P315-316	CARBIDE	BR	30°
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Cutting Diameter Tolerance		
Size	mm	inch
3.00 ≤ D ≤ 19.05	+0 / -0.013	+0 / -0.0005

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
233-1181	-	-	-	3.00	0.1181	32	57	3.00
233-1250	1/8	-	-	3.18	0.1250			3.18
233-1406	9/64	28	-	3.57	0.1406	35	64	3.57
233-1562	5/32	-	-	3.97	0.1562			3.97
233-1719	11/64	-	-	4.37	0.1719	41	70	4.37
233-1875	3/16	-	-	4.76	0.1875			4.76
233-2031	13/64	-	-	5.16	0.2031	44	76	5.16
233-2188	7/32	-	-	5.56	0.2188			5.56
233-2344	15/64	-	-	5.95	0.2344	51	83	5.95
233-2362	-	-	-	6.00	0.2362			6.00
233-2500	1/4	-	E	6.35	0.2500	54	89	6.35
233-2656	17/64	-	-	6.75	0.2656			6.75
233-2812	9/32	-	-	7.14	0.2812	60	95	7.14
233-2969	19/64	-	-	7.54	0.2969			7.54
233-3125	5/16	-	-	7.94	0.3125	64	102	7.94
233-3150	-	-	-	8.00	0.3150			8.00
233-3281	21/64	-	-	8.33	0.3281	70	108	8.33
233-3438	11/32	-	-	8.73	0.3438			8.73
233-3594	23/64	-	-	9.13	0.3594	73	114	9.13
233-3750	3/8	-	-	9.53	0.3750			9.53
233-3906	25/64	-	-	9.92	0.3906	76	121	9.92
233-3937	-	-	-	10.00	0.3937			10.00
233-4062	13/32	-	-	10.32	0.4062	79	128	10.32
233-4219	27/64	-	-	10.72	0.4219			10.72
233-4375	7/16	-	-	11.11	0.4375	82	135	11.11
233-4531	29/64	-	-	11.51	0.4531			11.51
233-4688	15/32	-	-	11.91	0.4688	85	142	11.91
233-4724	-	-	-	12.00	0.4724			12.00
233-4844	31/64	-	-	12.30	0.4844	88	149	12.30
233-5000	1/2	-	-	12.70	0.5000			12.70
233-5312	17/32	-	-	13.49	0.5312	91	156	13.49
233-5512	-	-	-	14.00	0.5512			14.00
233-5625	9/16	-	-	14.29	0.5625	94	163	14.29
233-6250	5/8	-	-	15.88	0.6250			15.88
233-6299	-	-	-	16.00	0.6299	108	170	16.00
233-7500	3/4	-	-	19.05	0.7500			19.05

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
233	<input type="checkbox"/>								<input type="checkbox"/>									

good best





List 200

SPEED FEED P315-316	CARBIDE	BR	0°
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FourFacet Point (D≤1.5)

Cutting Diameter Tolerance		
Size	mm	inch
1.18≤D≤12.7	+0 / -0.013	+0 / -0.0005

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
200-0465	-	56	-	1.18	0.0465	13	38	1.18
200-0469	3/64	-	-	1.19	0.0469			3/64
200-0520	-	55	-	1.32	0.0520			1.32
200-0550	-	54	-	1.40	0.0550			1.40
200-0591	-	-	-	1.50	0.0591			1.50
200-0595	-	53	-	1.51	0.0595	1.51		
200-0625	1/16	-	-	1.59	0.0625	16	41	1/16
200-0635	-	52	-	1.61	0.0635	17	43	1.61
200-0670	-	51	-	1.70	0.0670			1.70
200-0700	-	50	-	1.78	0.0700			1.78
200-0730	-	49	-	1.85	0.0730			1.85
200-0760	-	48	-	1.93	0.0760			1.93
200-0781	5/64	-	-	1.98	0.0781	19	44	5/64
200-0785	-	47	-	1.99	0.0785			1.99
200-0787	-	-	-	2.00	0.0787			2.00
200-0810	-	46	-	2.06	0.0810			2.06
200-0820	-	45	-	2.08	0.0820			2.08
200-0860	-	44	-	2.18	0.0860	21	46	2.18
200-0890	-	43	-	2.26	0.0890			2.26
200-0935	-	42	-	2.37	0.0935			2.37
200-0938	3/32	-	-	2.38	0.0938			3/32
200-0960	-	41	-	2.44	0.0960			2.44
200-0980	-	40	-	2.49	0.0980	22	48	2.49
200-0984	-	-	-	2.50	0.0984			2.50
200-0995	-	39	-	2.53	0.0995			2.53
200-1015	-	38	-	2.58	0.1015			2.58
200-1040	-	37	-	2.64	0.1040			2.64
200-1065	-	36	-	2.71	0.1065	24	49	2.71
200-1094	7/64	-	-	2.78	0.1094			7/64
200-1100	-	35	-	2.79	0.1100			2.79
200-1110	-	34	-	2.82	0.1110			2.82
200-1130	-	33	-	2.87	0.1130			2.87
200-1160	-	32	-	2.95	0.1160	24	49	2.95
200-1181	-	-	-	3.00	0.1181			3.00
200-1200	-	31	-	3.05	0.1200			3.05
200-1250	1/8	-	-	3.18	0.1250			1/8
200-1285	-	30	-	3.26	0.1285			3.26
200-1360	-	29	-	3.45	0.1360	24	49	3.45
200-1378	-	-	-	3.50	0.1378			3.50
200-1405	-	28	-	3.57	0.1405			3.57

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

continued on next page

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
200	<input type="checkbox"/>								<input type="checkbox"/>									

good best





List 200 (Continued)

SPEED FEED P315-316	CARBIDE	BR	0°
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Cutting Diameter Tolerance		
Size	mm	inch
1.18≤D≤12.7	+0 / -0.013	+0 / -0.0005



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
200-1406	9/64	28	-	3.57	0.1406	24	49	9/64
200-1440	-	27	-	3.66	0.1440			3.66
200-1470	-	26	-	3.73	0.1470	25	52	3.73
200-1495	-	25	-	3.80	0.1495			3.80
200-1520	-	24	-	3.86	0.1520	27	54	3.86
200-1540	-	23	-	3.91	0.1540			3.91
200-1562	5/32	-	-	3.97	0.1562	29	56	5/32
200-1570	-	22	-	3.99	0.1570			3.99
200-1575	-	-	-	4.00	0.1575	30	57	4.00
200-1590	-	21	-	4.04	0.1590			4.04
200-1610	-	20	-	4.09	0.1610	32	60	4.09
200-1660	-	19	-	4.22	0.1660			4.22
200-1695	-	18	-	4.31	0.1695	33	62	4.31
200-1719	11/64	-	-	4.37	0.1719			4.37
200-1730	-	17	-	4.39	0.1730	35	64	4.39
200-1770	-	16	-	4.50	0.1770			4.50
200-1772	-	16	-	4.50	0.1772	37	67	4.50
200-1800	-	15	-	4.57	0.1800			4.57
200-1820	-	14	-	4.62	0.1820	38	68	4.62
200-1850	-	13	-	4.70	0.1850			4.70
200-1875	3/16	-	-	4.76	0.1875	37	67	3/16
200-1890	-	12	-	4.80	0.1890			4.80
200-1910	-	11	-	4.85	0.1910	35	64	4.85
200-1935	-	10	-	4.92	0.1935			4.92
200-1960	-	9	-	4.98	0.1960	33	62	4.98
200-1968	-	-	-	5.00	0.1969			5.00
200-1990	-	8	-	5.05	0.1990	32	60	5.05
200-2010	-	7	-	5.11	0.2010			5.11
200-2031	13/64	-	-	5.16	0.2031	30	57	13/64
200-2040	-	6	-	5.18	0.2040			5.18
200-2055	-	5	-	5.22	0.2055	29	56	5.22
200-2090	-	4	-	5.31	0.2090			5.31
200-2130	-	3	-	5.41	0.2130	27	54	5.41
200-2165	-	-	-	5.50	0.2165			5.50
200-2188	7/32	-	-	5.56	0.2188	25	52	7/32
200-2210	-	2	-	5.61	0.2210			5.61
200-2280	-	1	-	5.79	0.2280	23	50	5.79
200-2340	-	-	A	5.94	0.2340			5.94
200-2344	15/64	-	-	5.95	0.2344	21	48	15/64
200-2362	-	-	-	6.00	0.2362			6.00
200-2380	-	-	B	6.05	0.2380	19	46	6.05
200-2420	-	-	C	6.15	0.2420			6.15
200-2460	-	-	D	6.25	0.2460	17	44	6.25
200-2500	1/4	-	E	6.35	0.2500			6.35
200-2559	-	-	-	6.50	0.2559	15	42	6.50
200-2570	-	-	F	6.53	0.2570			6.53
200-2610	-	-	G	6.63	0.2610	13	40	6.63
200-2656	17/64	-	-	6.75	0.2656			6.75
200-2660	-	-	H	6.76	0.2660	11	38	6.76
200-2720	-	-	I	6.91	0.2720			6.91

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



List 200 (Continued)

SPEED FEED P315-316	CARBIDE	BR	0°
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EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
200-2756	-	-	-	7.00	0.2756	38	68	7.00
200-2770	-	-	J	7.04	0.2770			7.04
200-2810	9/32	-	K	7.14	0.2810			9/32
200-2812	9/32	-	-	-	0.2812	40	70	9/32
200-2900	-	-	L	7.37	0.2900			7.37
200-2950	-	-	M	7.49	0.2950			7.49
200-2953	-	-	-	7.50	0.2953	41	71	7.50
200-2969	19/64	-	-	7.54	0.2969			19/64
200-3020	-	-	N	7.67	0.3020			7.67
200-3125	5/16	-	-	7.94	0.3125	43	75	5/16
200-3150	-	-	-	8.00	0.3150			8.00
200-3160	-	-	O	8.03	0.3160			8.03
200-3230	-	-	P	8.20	0.3230	44	78	8.20
200-3281	21/64	-	-	8.33	0.3281			21/64
200-3320	-	-	Q	8.43	0.3320			8.43
200-3346	-	-	-	8.50	0.3346	46	79	8.50
200-3390	-	-	R	8.61	0.3390			8.61
200-3438	11/32	-	-	8.73	0.3438			11/32
200-3480	-	-	S	8.84	0.3480	48	83	8.84
200-3543	-	-	-	9.00	0.3543			9.00
200-3580	-	-	T	9.09	0.3580			9.09
200-3594	23/64	-	-	9.13	0.3594	49	84	23/64
200-3680	-	-	U	9.35	0.3680			9.35
200-3740	-	-	-	9.50	0.3740			9.50
200-3750	3/8	-	-	9.53	0.3750	51	86	3/8
200-3770	-	-	V	9.58	0.3770			9.58
200-3860	-	-	W	9.80	0.3860			9.80
200-3906	25/64	-	-	9.92	0.3906	52	87	25/64
200-3937	-	-	-	10.00	0.3937			10.00
200-3970	-	-	X	10.08	0.3970			10.08
200-4040	-	-	Y	10.26	0.4040	54	90	10.26
200-4062	13/32	-	-	10.32	0.4062			13/32
200-4130	-	-	Z	10.49	0.4130			10.49
200-4134	-	-	-	10.50	0.4134	56	94	10.50
200-4219	27/64	-	-	10.72	0.4219			27/64
200-4331	-	-	-	11.00	0.4331			11.00
200-4375	7/16	-	-	11.11	0.4375	57	95	11.11
200-4528	-	-	-	11.50	0.4528			11.50
200-4531	29/64	-	-	11.51	0.4531			29/64
200-4688	15/32	-	-	11.91	0.4688	54	92	15/32
200-4724	-	-	-	12.00	0.4724			12.00
200-4844	31/64	-	-	12.30	0.4844			31/64
200-5000	1/2	-	-	12.70	0.5000	57	95	12.70

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
200	<input type="checkbox"/>								<input type="checkbox"/>									

good best

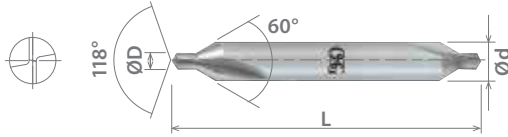




List 235

CARBIDE	BR	0°
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Cutting Diameter Tolerance		
Size	mm	inch
3/64 ≤ D ≤ 7/32	+0.076 / -0	+0.003 / -0



EDP Number	Diameter	Tool Number	Overall Length	Shank Diameter
			L	d
235-0010	3/64	1	1-1/4	1/8
235-0020	5/64	2	1-7/8	3/16
235-0030	7/64	3	2	1/4
235-0040	1/8	4	2-1/8	5/16
235-0050	3/16	5	2-3/4	7/16
235-0060	7/32	6	3	1/2

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
235	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

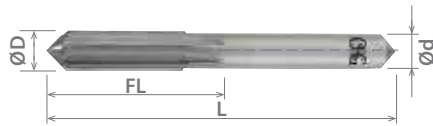
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List 300D

SPEED FEED P317	CARBIDE	BR
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Cutting Tolerance			
Size	Diameter (in)	Shank Dia. (in)	No. of Flutes
0.80mm-6.45mm	+0.025/+0.0102	+0.0001/+0.0004	4
6.451mm-13mm	+0.025/+0.0127	+0.0001/+0.0005	6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
300-0315	-	-	-	0.80	0.0315	10	38	0.70
300-0354	-	-	-	0.90	0.0354			0.80
300-0394	-	-	-	1.00	0.0394			1.00
300-0433	-	-	-	1.10	0.0433			1.04
300-0465	-	56	-	1.18	0.0465			
300-0469	3/64	-	-	1.19	0.0469			
300-0472	-	-	-	1.20	0.0472			
300-0512	-	-	-	1.30	0.0512			1.32
300-0520	-	55	-	1.32	0.0520			
300-0550	-	54	-	1.40	0.0550			
300-0551	-	-	-	1.40	0.0551			
300-0591	-	-	-	1.50	0.0591			
300-0595	-	53	-	1.51	0.0595			
300-0625	1/16	-	-	1.59	0.0625			
300-0630	-	-	-	1.60	0.0630			
300-0635	-	52	-	1.61	0.0635			
300-0669	-	-	-	1.70	0.0669	44	1.59	
300-0670	-	51	-	1.70	0.0670			
300-0700	-	50	-	1.78	0.0700			
300-0709	-	-	-	1.80	0.0709			
300-0730	-	49	-	1.85	0.0730			
300-0748	-	-	-	1.90	0.0748			
300-0760	-	48	-	1.93	0.0760			
300-0781	5/64	-	-	1.98	0.0781			
300-0785	-	47	-	1.99	0.0785			
300-0787	-	-	-	2.00	0.0787			
300-0810	-	46	-	2.06	0.0810	51	1.98	
300-0820	-	45	-	2.08	0.0820			
300-0827	-	-	-	2.10	0.0827			
300-0860	-	44	-	2.18	0.0860			
300-0866	-	-	-	2.20	0.0866	12		50
300-0890	-	43	-	2.26	0.0890	13		51
300-0906	-	-	-	2.30	0.0906	12		50
300-0935	-	42	-	2.37	0.0935	13		51
300-0938	3/32	-	-	2.38	0.0938			
300-0945	-	-	-	2.40	0.0945	12		50
300-0960	-	41	-	2.44	0.0960	16	57	2.38
300-0980	-	40	-	2.49	0.0980			
300-0984	-	-	-	2.50	0.0984			
300-0995	-	39	-	2.53	0.0995			
300-1015	-	38	-	2.58	0.1015			

Packed: 1 pc.

continued on next page

Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
300D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

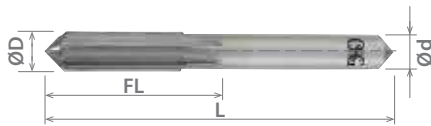
good best





List 300D (Continued)

SPEED FEED	CARBIDE	BR
P317		



Cutting Tolerance			
Size	Diameter (in)	Shank Dia. (in)	No. of Flutes
0.80mm-6.45mm	+0.025/+0.102	+0.0001/+0.0004	4
6.451mm-13mm	+0.025/+0.127	+0.0001/+0.0005	6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d		
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
300-1024	-	-	-	2.60	0.1024	16	57	2.38		
300-1040	-	37	-	2.64	0.1040					
300-1063	-	-	-	2.70	0.1063					
300-1065	-	36	-	2.71	0.1065					
300-1094	7/64	-	-	2.78	0.1094					
300-1100	-	35	-	2.79	0.1100					
300-1102	-	-	-	2.80	0.1102					
300-1110	-	34	-	2.82	0.1110					
300-1130	-	33	-	2.87	0.1130					
300-1142	-	-	-	2.90	0.1142					
300-1160	-	32	-	2.95	0.1160					
300-1181	-	-	-	3.00	0.1181					
300-1200	-	31	-	3.05	0.1200					
300-1220	-	-	-	3.10	0.1220					
300-1250	1/8	-	-	3.18	0.1250					
300-1260	-	-	-	3.20	0.1260					
300-1285	-	30	-	3.26	0.1285					
300-1299	-	-	-	3.30	0.1299					
300-1339	-	-	-	3.40	0.1339					
300-1360	-	29	-	3.45	0.1360					
300-1378	-	-	-	3.50	0.1378					
300-1405	-	28	-	-	0.1405	3.18				
300-1406	9/64	28	-	3.57	0.1406					
300-1417	-	-	-	3.60	0.1417					
300-1440	-	27	-	3.66	0.1440					
300-1457	-	-	-	3.70	0.1457					
300-1470	-	26	-	3.73	0.1470	19	64	3.57		
300-1495	-	25	-	3.80	0.1495					
300-1496	-	-	-	3.80	0.1496					
300-1520	-	24	-	3.86	0.1520					
300-1535	-	-	-	3.90	0.1535					
300-1540	-	23	-	3.91	0.1540					
300-1562	5/32	-	-	3.97	0.1562					
300-1570	-	22	-	3.99	0.1570					
300-1575	-	-	-	4.00	0.1575					
300-1590	-	21	-	4.04	0.1590					
300-1610	-	20	-	4.09	0.1610					
300-1614	-	-	-	4.10	0.1614			22	70	3.97
300-1654	-	-	-	4.20	0.1654					
300-1660	-	19	-	4.22	0.1660					
300-1693	-	-	-	4.30	0.1693					
300-1695	-	18	-	4.31	0.1695					
300-1719	11/64	-	-	4.37	0.1719					
300-1730	-	17	-	4.39	0.1730					
300-1732	-	-	-	4.40	0.1732					
300-1770	-	16	-	4.50	0.1770					
300-1772	-	-	-	4.50	0.1772					
300-1800	-	15	-	4.57	0.1800					
300-1811	-	-	-	4.60	0.1811					
300-1820	-	14	-	4.62	0.1820					
										4.37

Packed: 1 pc.



List 300D (Continued)

SPEED FEED	CARBIDE	BR
P317		

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
300-1850	-	13	-	4.70	0.1850	22	70	4.37
300-1875	3/16	-	-	4.76	0.1875			
300-1890	-	12	-	4.80	0.1890			
300-1910	-	11	-	4.85	0.1910			
300-1929	-	-	-	4.90	0.1929			
300-1935	-	10	-	4.92	0.1935			
300-1960	-	9	-	4.98	0.1960			
300-1969	-	-	-	5.00	0.1969			
300-1990	-	8	-	5.05	0.1990			
300-2008	-	-	-	5.10	0.2008			
300-2010	-	7	-	5.11	0.2010			
300-2031	13/64	-	-	5.16	0.2031	25	76	4.76
300-2040	-	6	-	5.18	0.2040			
300-2047	-	-	-	5.20	0.2047			
300-2055	-	5	-	5.22	0.2055			
300-2087	-	-	-	5.30	0.2087			
300-2090	-	4	-	5.31	0.2090			
300-2126	-	-	-	5.40	0.2126			
300-2130	-	3	-	5.41	0.2130			
300-2165	-	-	-	5.50	0.2165			
300-2188	7/32	-	-	5.56	0.2188			
300-2205	-	-	-	5.60	0.2205	29	83	6.35
300-2210	-	2	-	5.61	0.2210			
300-2244	-	-	-	5.70	0.2244			
300-2280	-	1	-	5.79	0.2280			
300-2283	-	-	-	5.80	0.2283			
300-2323	-	-	-	5.90	0.2323			
300-2340	-	-	A	5.94	0.2340			
300-2344	15/64	-	-	5.95	0.2344			
300-2362	-	-	-	6.00	0.2362			
300-2380	-	-	B	6.05	0.2380			
300-2402	-	-	-	6.10	0.2402	29	83	6.35
300-2420	-	-	C	6.15	0.2420			
300-2441	-	-	-	6.20	0.2441			
300-2460	-	-	D	6.25	0.2460			
300-2480	-	-	-	6.30	0.2480			
300-2500	1/4	-	E	6.35	0.2500			
300-2520	-	-	-	6.40	0.2520			
300-2559	-	-	-	6.50	0.2559			
300-2570	-	-	F	6.53	0.2570			
300-2598	-	-	-	6.60	0.2598			
300-2610	-	-	G	6.63	0.2610			
300-2638	-	-	-	6.70	0.2638			
300-2656	17/64	-	-	6.75	0.2656			
300-2660	-	-	H	6.76	0.2660			
300-2677	-	-	-	6.80	0.2677			

Packed: 1 pc.

➔ continued on next page ➔

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels				
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
300D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

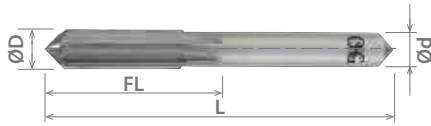
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List 300D (Continued)

SPEED FEED	CARBIDE	BR
P317		



Cutting Tolerance			
Size	Diameter (in)	Shank Dia. (in)	No. of Flutes
0.80mm-6.45mm	+0.025/+0.02	+0.0001/+0.0004	4
6.451mm-13mm	+0.025/+0.027	+0.0001/+0.0005	6

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
300-2717	-	-	-	6.90	0.2717	29	83	6.35
300-2720	-	-	I	6.91	0.2720			
300-2756	-	-	-	7.00	0.2756			
300-2770	-	-	J	7.04	0.2770			
300-2795	-	-	-	7.10	0.2795			
300-2810	9/32	-	K	7.14	0.2810			
300-2812	9/32	-	-		0.2812			
300-2835	-	-	-	7.20	0.2835			
300-2874	-	-	-	7.30	0.2874			
300-2900	-	-	L	7.37	0.2900			
300-2913	-	-	-	7.40	0.2913			
300-2950	-	-	M	7.49	0.2950			
300-2953	-	-	-	7.50	0.2953			
300-2969	19/64	-	-	7.54	0.2969			
300-2992	-	-	-	7.60	0.2992			
300-3020	-	-	N	7.67	0.3020			
300-3031	-	-	-	7.70	0.3031			
300-3071	-	-	-	7.80	0.3071			
300-3110	-	-	-	7.90	0.3110			
300-3125	5/16	-	-	7.94	0.3125			
300-3150	-	-	-	8.00	0.3150			
300-3160	-	-	O	8.03	0.3160			
300-3189	-	-	-	8.10	0.3189			
300-3228	-	-	-	8.20	0.3228			
300-3230	-	-	P		0.3230			
300-3268	-	-	-	8.30	0.3268			
300-3281	21/64	-	-	8.33	0.3281			
300-3307	-	-	-	8.40	0.3307			
300-3320	-	-	Q	8.43	0.3320			
300-3346	-	-	-	8.50	0.3346			
300-3386	-	-	-	8.60	0.3386			
300-3390	-	-	R	8.61	0.3390			
300-3425	-	-	-	8.70	0.3425			
300-3438	11/32	-	-	8.73	0.3438			
300-3465	-	-	-	8.80	0.3465			
300-3480	-	-	S	8.84	0.3480			
300-3504	-	-	-	8.90	0.3504			
300-3543	-	-	-	9.00	0.3543			
300-3580	-	-	T	9.09	0.3580			
300-3583	-	-	-	9.10	0.3583			
300-3594	23/64	-	-	9.13	0.3594			
300-3622	-	-	-	9.20	0.3622			
300-3661	-	-	-	9.30	0.3661			
300-3680	-	-	U	9.35	0.3680			
300-3701	-	-	-	9.40	0.3701			
300-3740	-	-	-	9.50	0.3740			
300-3750	3/8	-	-	9.53	0.3750			
300-3770	-	-	V	9.58	0.3770			
300-3780	-	-	-	9.60	0.3780			
300-3819	-	-	-	9.70	0.3819			

Packed: 1 pc.



List 300D (Continued)

SPEED FEED P317	CARBIDE	BR
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
300-3858	-	-	-	9.80	0.3858	32	89	9.13
300-3860	-	-	W		0.3860			
300-3898	-	-	-	9.90	0.3898			
300-3906	25/64	-	-	9.92	0.3906			
300-3937	-	-	-	10.00	0.3937			
300-3970	-	-	X	10.08	0.3970			
300-3976	-	-	-	10.10	0.3976			
300-4016	-	-	-	10.20	0.4016			
300-4040	-	-	Y	10.26	0.4040			
300-4055	-	-	-	10.30	0.4055			
300-4062	13/32	-	-	10.32	0.4062			
300-4094	-	-	-	10.40	0.4094			
300-4130	-	-	Z	10.49	0.4130			
300-4134	-	-	-	10.50	0.4134			
300-4173	-	-	-	10.60	0.4173			
300-4213	-	-	-	10.70	0.4213			
300-4219	27/64	-	-	10.72	0.4219			
300-4252	-	-	-	10.80	0.4252			
300-4291	-	-	-	10.90	0.4291			
300-4331	-	-	-	11.00	0.4331			
300-4370	-	-	-	11.10	0.4370			
300-4375	7/16	-	-	11.11	0.4375			
300-4409	-	-	-	11.20	0.4409			
300-4449	-	-	-	11.30	0.4449			
300-4488	-	-	-	11.40	0.4488			
300-4528	-	-	-	11.50	0.4528			
300-4531	29/64	-	-	11.51	0.4531			
300-4567	-	-	-	11.60	0.4567			
300-4606	-	-	-	11.70	0.4606			
300-4646	-	-	-	11.80	0.4646			
300-4685	-	-	-	11.90	0.4685			
300-4688	15/32	-	-	11.91	0.4688			
300-4724	-	-	-	12.00	0.4724			
300-4764	-	-	-	12.10	0.4764			
300-4803	-	-	-	12.20	0.4803			
300-4843	-	-	-	12.30	0.4843			
300-4844	31/64	-	-	12.30	0.4844			
300-4882	-	-	-	12.40	0.4882			
300-4921	-	-	-	12.50	0.4921			
300-4961	-	-	-	12.60	0.4961			
300-5000	1/2	-	-	12.70	0.5000			
300-5079	-	-	-	12.90	0.5079			
300-5118	-	-	-	13.00	0.5118			

Packed: 1 pc.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
300D	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

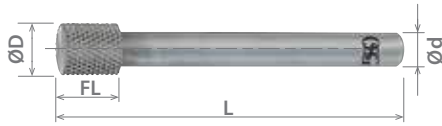
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List 750

CARBIDE BR



EDP Number	Diameter	Flute Length	Maximum DOC	Overall Length	Shank Diameter
		FL		L	d
750-0625	1/16	1/8	1/2	1-1/2	1/8
750-0781	5/64	5/32			
750-0938	3/32	3/16			
750-1094	7/64	7/32			
750-1250	1/8	1/4	5/8	2	3/16
750-1406	9/64	5/16			
750-1562	5/32	11/64			
750-1719	11/64	3/16			
750-1875	3/16	9/32	3/4	2	1/4
750-2031	13/64	7/32			
750-2188	7/32	5/16			
750-2344	15/64	11/32			
750-2500	1/4	3/8	-	2-1/2	1/4
750-2812	9/32				
750-3125	5/16				
750-3438	11/32				
750-3750	3/8				

Packed: 1 pc.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
750	1010 1018	1035 1045	1065	4140 4340														

good best



List 700

CARBIDE BR

Single Flute



EDP Number	Diameter	Overall Length	Shank Diameter	Included Angle Degree	
	D	L	d	α	
700-1250	1/8*	1-1/2	1/8	60	
700-1251				82	
700-1252				90	
700-1875	3/16*	2	3/16	60	
700-1871				82	
700-1872				90	
700-2500	1/4*	2-9/16	1/4	60	
700-2501				82	
700-2502				90	
700-3750	3/8	2-9/16	1/4	60	
700-3751		2-7/16		82	
700-3752				90	
700-5000	1/2	2-5/8	1/4	60	
700-5001					82
700-5002					90
700-6250	5/8	2-13/16	3/8	60	
700-6251		2-5/8		82	
700-6252		3-1/16		90	
700-6253		2-7/8		60	
700-6254				82	
700-6255				90	
700-7500	3/4	3	1/2	60	
700-7501		2-7/8		82	
700-7502				90	
700-1000	1	3-1/4	1/2	60	
700-1001		3		82	
700-1002				90	

Packed: 1 pc.

*Indicates Solid Carbide. All others have hardened steel shanks.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
700	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

good best

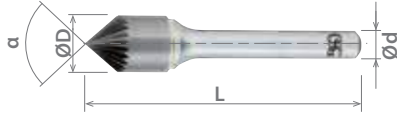




List 701

CARBIDE BR

Multiple Flute



EDP Number	Diameter	Overall Length	Shank Diameter	Included Angle Degree	No. of Flutes	
	D	L	d	α		
701-2500	1/4*	2	1/4	60	18	
701-2501				82		
701-2502				90		
701-3750	3/8	2-3/16		60	20	
701-3751		2-5/16		82		
701-3752				90		
701-5000	1/2	2-1/8		3/8	60	24
701-5001					82	
701-5002					90	
701-6250	5/8	3	60		30	
701-6251		2-7/8	82			
701-6252		90				
701-7500	3/4	3	60		36	
701-7501		2-7/8	82			
701-7502			90			
701-1000	1	3	1/2	60	46	
701-1001				82		
701-1002				90		

Packed: 1 pc.

*Indicates Solid Carbide. All others have hardened steel shanks.



Work Material

List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
701	1010	1035	1065	4140															
	1018	1045		4340															

good best



List 706

CARBIDE BR

6 Flute



EDP Number	Diameter	Overall Length	Shank Diameter	Included Angle Degree			
	D	L	d	α			
706-2500-060	1/4*	2	1/4	60			
706-2500-082				82			
706-2500-090				90			
706-3750-060	3/8	2-1/2		60			
706-3750-082		2-3/8		82			
706-3750-090		2-5/8		90			
706-5000-060	1/2	2-1/2		3/8	60		
706-5000-082					82		
706-5000-090					90		
706-6250-060	5/8	3	1/2		60		
706-6250-082		2-7/8			82		
706-6250-090		3			90		
706-7500-060	3/4	2-7/8			1/2	60	
706-7500-082						3-1/4	82
706-7500-090						3	90
706-1000-060	1	3		1/2		60	
706-1000-082						82	
706-1000-090						90	

Packed: 1 pc.

*Indicates Solid Carbide. All others have hardened steel shanks.



Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
706	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>							

good best

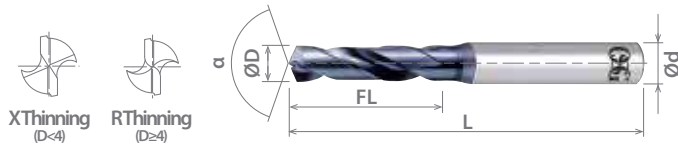




List 1900

VPH-GDS, Ideal for Difficult to Machine Materials

SPEED FEED P318-319	XPM	V	STUB	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8599005	-	-	-	0.50	0.0197	3.0	38	3	130°
8608055	-	-	-	0.55	0.0217	3.5			
8608056	-	-	-	0.56	0.0220				
8608057	-	74	-	0.57	0.0224	4.5			
8599006	-	-	-	0.60	0.0236				
8608061	-	73	-	0.61	0.0240	5.5			
8608063	-	-	-	0.63	0.0248				
8608065	-	-	-	0.65	0.0256	7.0			
8608066	-	71	-	0.66	0.0260				
8608068	-	-	-	0.68	0.0268	9.0			
8608069	-	-	-	0.69	0.0272				
8599007	-	-	-	0.70	0.0276	41			
8608071	-	70	-	0.71	0.0280				
8608074	-	69	-	0.74	0.0291	4			
8608075	-	-	-	0.75	0.0295				
8599008	-	-	-	0.80	0.0315	3			
8608082	-	-	-	0.82	0.0323				
8608083	-	-	-	0.83	0.0327	5			
8608085	-	-	-	0.85	0.0335				
8608088	-	-	-	0.88	0.0346	4			
8608089	-	65	-	0.89	0.0350				
8599009	-	-	-	0.90	0.0354	3			
8608094	-	63	-	0.94	0.0370				
8608095	-	-	-	0.95	0.0374	5			
8608099	-	61	-	0.99	0.0390				
8599010	-	-	-	1.00	0.0394	4			
8608102	-	60	-	1.02	0.0402				
8608104	-	59	-	1.04	0.0409	3			
8608105	-	-	-	1.05	0.0413		4		
8608106	-	-	-	1.06	0.0417	5			
8608107	-	58	-	1.07	0.0421		3		
8608109	-	57	-	1.09	0.0429	4			
8608113	-	-	-	1.13	0.0445		5		
8608114	-	-	-	1.14	0.0449	3			
8608118	-	56	-	1.18	0.0465		4		
8608119	3/64	-	-	1.19	0.0469	5			
8608122	-	-	-	1.22	0.0480		3		
8608124	-	-	-	1.24	0.0488	4			
8608125	-	-	-	1.25	0.0492		5		
8608126	-	-	-	1.26	0.0496	3			
8608127	-	-	-	1.27	0.0500		4		
8608128	-	-	-	1.28	0.0504	5			
8608129	-	-	-	1.29	0.0508		3		
8599013	-	-	-	1.30	0.0512	4			
8608131	-	-	-	1.31	0.0516		5		
8608132	-	55	-	1.32	0.0520	3			
8599014	-	54	-	1.40	0.0551		4		
8608146	-	-	-	1.46	0.0575	5			
8608147	-	-	-	1.47	0.0579		3		
8608148	-	-	-	1.48	0.0583	4			

Packed: 1 pc.
Available V coating only.



List 1900 (Continued)

SPEED FEED P318-319	XPM	V	STUB	30°
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VPH-GDS, Ideal for Difficult to Machine Materials

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8599015	-	-	-	1.50	0.0591	9.0	41	3	130°
8608151	-	53	-	1.51	0.0594	10.0	42		
8608153	-	-	-	1.53	0.0602				
8608155	-	-	-	1.55	0.0610				
8608159	1/16	-	-	1.59	0.0626				
8608161	-	52	-	1.61	0.0634				
8608162	-	-	-	1.62	0.0638				
8608163	-	-	-	1.63	0.0642				
8608164	-	-	-	1.64	0.0646				
8608166	-	-	-	1.66	0.0654				
8608169	-	-	-	1.69	0.0665				
8599017	-	51	-	1.70	0.0669	11.0	43	3	130°
8608176	-	-	-	1.76	0.0693				
8608177	-	-	-	1.77	0.0697				
8608178	-	50	-	1.78	0.0701				
8599018	-	-	-	1.80	0.0709				
8608182	-	-	-	1.82	0.0717				
8608185	-	49	-	1.85	0.0728				
8608193	-	48	-	1.93	0.0760				
8608198	5/64	-	-	1.98	0.0780				
8608199	-	47	-	1.99	0.0783				
9599020	-	-	-	2.00	0.0787	12.0	44	4	130°
8608203	-	-	-	2.03	0.0799				
8608204	-	-	-	2.04	0.0803				
8608206	-	46	-	2.06	0.0811				
8608208	-	45	-	2.08	0.0819				
9599021	-	-	-	2.10	0.0827				
8608213	-	-	-	2.13	0.0839				
8608215	-	-	-	2.15	0.0846				
8608216	-	-	-	2.16	0.0850				
8608218	-	44	-	2.18	0.0858				
9599022	-	-	-	2.20	0.0866	13.0	45	3	130°
8608222	-	-	-	2.22	0.0874				
8608226	-	43	-	2.26	0.0890				
9599023	-	-	-	2.30	0.0906				
8608231	-	-	-	2.31	0.0909				
8608233	-	-	-	2.33	0.0917				
8608237	-	42	-	2.37	0.0933				
8608238	3/32	-	-	2.38	0.0937				
9599024	-	-	-	2.40	0.0945				
8608244	-	41	-	2.44	0.0961				
8608246	-	-	-	2.46	0.0969	14.0	46	4	130°
8608249	-	40	-	2.49	0.0980				
9599025	-	-	-	2.50	0.0984				
8608253	-	39	-	2.53	0.0996				
8608258	-	38	I	2.58	0.1016				

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1900	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

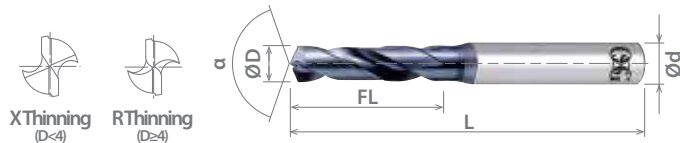




List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

SPEED FEED P318-319	XPM	V	STUB	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
9599026	-	-	-	2.60	0.1024	14.0	46	3	130°
8608264	-	37	-	2.64	0.1039				
9599027	-	-	-	2.70	0.1063				
8608271	-	36	-	2.71	0.1067				
8608278	7/64	-	-	2.78	0.1094	16.0	48	3	
8608279	-	35	-	2.79	0.1098				
9599028	-	-	-	2.80	0.1102				
8608281	-	-	-	2.81	0.1106				
8608282	-	34	-	2.82	0.1110	18.0	50	130°	
8608287	-	33	-	2.87	0.1130				
9599029	-	-	-	2.90	0.1142				
8608295	-	32	-	2.95	0.1161				
9599030	-	-	-	3.00	0.1181	20.0	52	4	
8608305	-	31	P	3.05	0.1201				
9599031	-	-	-	3.10	0.1220				
8608318	1/8	-	-	3.18	0.1252				
8608319	-	-	-	3.19	0.1256	22.0	54	6	
9599032	-	-	-	3.20	0.1260				
8608326	-	30	-	3.26	0.1283				
9599033	-	-	-	3.30	0.1299				
8608336	-	-	-	3.36	0.1323	24.0	68	6	
9599034	-	-	-	3.40	0.1339				
8608345	-	29	-	3.45	0.1358				
9599035	-	-	-	3.50	0.1378				
8608352	-	-	-	3.52	0.1386	22.0	54	6	
8608357	-	28	-	3.57	0.1406				
9599036	-	-	-	3.60	0.1417				
8608366	-	27	-	3.66	0.1441				
9599037	-	-	-	3.70	0.1457	24.0	68	6	
8608373	-	26	-	3.73	0.1469				
8608377	-	-	-	3.77	0.1484				
9599038	-	25	-	3.80	0.1496				
8608386	-	24	-	3.86	0.1520	66	6	6	
9599039	-	-	W	3.90	0.1535				
8608391	-	23	-	3.91	0.1539				
8608397	5/32	-	-	3.97	0.1563				
8608399	-	22	-	3.99	0.1571	24.0	68	6	
9599040	-	-	-	4.00	0.1575				
8608404	-	21	-	4.04	0.1591				
8608409	-	20	-	4.09	0.1610				
9599041	-	-	-	4.10	0.1614	66	6	6	
8608415	-	-	-	4.15	0.1634				
9599042	-	-	-	4.20	0.1654				
8608422	-	19	-	4.22	0.1661				
8608427	-	-	-	4.27	0.1681	24.0	68	6	
9599043	-	-	-	4.30	0.1693				
8608431	-	18	-	4.31	0.1697				
8608437	11/64	-	-	4.37	0.1720				
8608439	-	17	-	4.39	0.1728	24.0	68	6	
9599044	-	-	-	4.40	0.1732				

Packed: 1 pc.
Available V coating only.





List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

SPEED FEED P318-319	XPM	V	STUB	30°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8608445	-	-	-	4.45	0.1752	24.0	68	6	130°
9599045	-	16	-	4.50	0.1772				
8608457	-	15	-	4.57	0.1799				
9599046	-	-	-	4.60	0.1811				
8608462	-	14	-	4.62	0.1819				
8608466	-	-	-	4.66	0.1835				
9599047	-	13	-	4.70	0.1850				
8608476	3/16	-	-	4.76	0.1874				
8608479	-	-	-	4.79	0.1886				
9599048	-	12	-	4.80	0.1890				
8608485	-	11	-	4.85	0.1909				
9599049	-	-	-	4.90	0.1929				
8608491	-	-	-	4.91	0.1933				
8608498	-	9	-	4.98	0.1961				
9599050	-	-	-	5.00	0.1969				
8608505	-	8	-	5.05	0.1988				
9599051	-	-	-	5.10	0.2008				
8608511	-	7	-	5.11	0.2012				
8608515	-	-	-	5.15	0.2028				
8608516	13/64	-	-	5.16	0.2031				
8608518	-	6	-	5.18	0.2039				
9599052	-	-	-	5.20	0.2047				
8608522	-	5	-	5.22	0.2055				
8608526	-	-	-	5.26	0.2071				
9599053	-	-	-	5.30	0.2087				
8608531	-	4	-	5.31	0.2091				
9599054	-	-	-	5.40	0.2126				
8608541	-	-	-	5.41	0.2130				
8608546	-	-	-	5.46	0.2150				
9599055	-	-	-	5.50	0.2165				
8608556	7/32	-	-	5.56	0.2189				
9599056	-	-	-	5.60	0.2205				
8608561	-	2	-	5.61	0.2209				
9599057	-	-	-	5.70	0.2244				
8608579	-	1	-	5.79	0.2280				
9599058	-	-	-	5.80	0.2283				
9599059	-	-	-	5.90	0.2323				
8608595	15/64	-	-	5.95	0.2343				
9599060	-	-	-	6.00	0.2362				
9599061	-	-	-	6.10	0.2402				
9598615	-	-	-	6.15	0.2421				
9599062	-	-	-	6.20	0.2441				
9599063	-	-	-	6.30	0.2480				
8608635	1/4	-	E	6.35	0.2500				
9599064	-	-	-	6.40	0.2520				
9599065	-	-	-	6.50	0.2559				

Packed: 1 pc.
Available V coating only.

continued on next page

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1900	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

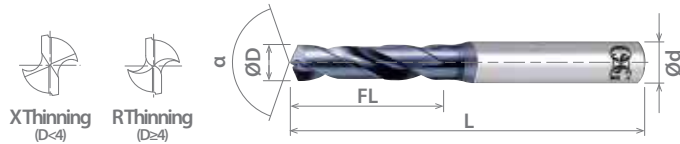
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List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials



SPEED FEED P318-319	XPM	V	STUB	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
9599066	-	-	-	6.60	0.2598	31.0	75	8	130°
9598665	-	-	-	6.65	0.2618				
9599067	-	-	-	6.70	0.2638				
8608675	17/64	-	-	6.75	0.2657	34.0	78		
9599068	-	-	-	6.80	0.2677				
9598686	-	-	-	6.86	0.2701				
9599069	-	-	I	6.90	0.2717				
9599070	-	-	-	7.00	0.2756				
9598704	-	-	-	7.04	0.2772				
9599071	-	-	-	7.10	0.2795				
8608714	9/32	-	K	7.14	0.2811				
9599072	-	-	-	7.20	0.2835				
9599073	-	-	-	7.30	0.2874				
9599074	-	-	-	7.40	0.2913				
9599075	-	-	-	7.50	0.2953				
8608754	19/64	-	-	7.54	0.2969	37.0	81		
9599076	-	-	-	7.60	0.2992				
9599077	-	-	-	7.70	0.3031				
9599078	-	-	-	7.80	0.3071				
9599079	-	-	-	7.90	0.3110				
8608794	5/16	-	-	7.94	0.3126				
9599080	-	-	-	8.00	0.3150				
9599081	-	-	-	8.10	0.3189				
9598815	-	-	-	8.15	0.3209				
9599082	-	-	P	8.20	0.3228				
9599083	-	-	-	8.30	0.3268				
8608833	21/64	-	-	8.33	0.3280	40.0	90		
9599084	-	-	-	8.40	0.3307				
9599085	-	-	-	8.50	0.3346				
9598856	-	-	-	8.56	0.3370				
9599086	-	-	-	8.60	0.3386				
9598868	-	-	-	8.68	0.3417				
9599087	-	-	-	8.70	0.3425				
8608873	11/32	-	-	8.73	0.3437				
9599088	-	-	-	8.80	0.3465				
9598886	-	-	-	8.86	0.3488				
9599089	-	-	-	8.90	0.3504				
9599090	-	-	-	9.00	0.3543				
9599091	-	-	-	9.10	0.3583				
8608913	23/64	-	-	9.13	0.3594	43.0	93		
9599092	-	-	-	9.20	0.3622				
9599093	-	-	-	9.30	0.3661				
9599094	-	-	-	9.40	0.3701				
9599095	-	-	-	9.50	0.3740				
8608952	3/8	-	-	9.52	0.3748				
9598955	-	-	-	9.55	0.3760				
9599096	-	-	-	9.60	0.3780				
9599097	-	-	-	9.70	0.3819				
9599098	-	-	W	9.80	0.3858				
9599099	-	-	-	9.90	0.3898				

Packed: 1 pc.
Available V coating only.



List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

SPEED FEED P318-319	XPM	V	STUB	30°
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EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8608992	25/64	-	-	9.92	0.3906	43.0	93	10	130°
9599100	-	-	-	10.00	0.3937				
9599101	-	-	-	10.10	0.3976				
9599102	-	-	-	10.20	0.4016				
9599103	-	-	-	10.30	0.4055				
8609032	13/32	-	-	10.32	0.4063				
9599104	-	-	-	10.40	0.4094				
9599144	-	-	-	10.44	0.4110				
9599105	-	-	-	10.50	0.4134				
9599106	-	-	-	10.60	0.4173				
9599107	-	-	-	10.70	0.4213				
8609072	27/64	-	-	10.72	0.4220	47.0	104	12	130°
9599108	-	-	-	10.80	0.4252				
9599186	-	-	-	10.86	0.4276				
9599109	-	-	-	10.90	0.4291				
9599110	-	-	-	11.00	0.4331				
9599111	-	-	-	11.10	0.4370				
8609111	7/16	-	-	11.11	0.4374				
9599112	-	-	-	11.20	0.4409				
9599113	-	-	-	11.30	0.4449				
9599114	-	-	-	11.40	0.4488				
9599115	-	-	-	11.50	0.4528				
8609151	29/64	-	-	11.51	0.4531	51.0	108	111	120°
9599116	-	-	-	11.60	0.4567				
9599117	-	-	-	11.70	0.4606				
9599118	-	-	-	11.80	0.4646				
9599119	-	-	-	11.90	0.4685				
8609191	15/32	-	-	11.91	0.4689				
9599120	-	-	-	12.00	0.4724				
9599121	-	-	-	12.10	0.4764				
9599122	-	-	-	12.20	0.4803				
9599123	31/64	-	-	12.30	0.4843				
9599124	-	-	-	12.40	0.4882				
9599245	-	-	-	12.45	0.4902				
9599125	-	-	-	12.50	0.4921				
9599126	-	-	-	12.60	0.4961				
9599268	-	-	-	12.68	0.4992				
9599127	1/2	-	-	12.70	0.5000				
9599128	-	-	-	12.80	0.5039				
9599129	-	-	-	12.90	0.5079				
9599130	-	-	-	13.00	0.5118				
9599308	-	-	-	13.08	0.5150				
8609349	17/32	-	-	13.49	0.5311	54.0	114	16	120°
8599135	-	-	-	13.50	0.5315				
8599136	-	-	-	13.60	0.5354				
8608954	-	-	-	13.79	0.5429				

Packed: 1 pc.
Available V coating only.

continued on next page 

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1900	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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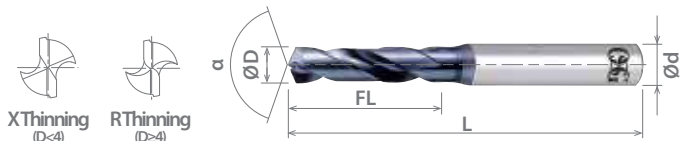




List 1900 (Continued)

VPH-GDS, Ideal for Difficult to Machine Materials

SPEED FEED P318-319	XPM	V	STUB	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
9599387	-	-	-	13.87	0.5461	54.0	114	16	
8599140	-	-	-	14.00	0.5512				
8599142	-	-	-	14.20	0.5591				
8609429	9/16	-	-	14.29	0.5626				
8599145	-	-	-	14.50	0.5709				
8599146	-	-	-	14.60	0.5748				
8608956	-	-	-	14.61	0.5752				
9599468	-	-	-	14.68	0.5780				
8599150	-	-	-	15.00	0.5906				
8599155	-	-	-	15.50	0.6102				
8599157	-	-	-	15.70	0.6181				
8609588	5/8	-	-	15.88	0.6252				
8599160	-	-	-	16.00	0.6299				
8599165	-	-	-	16.50	0.6496				
8609667	21/32	-	-	16.67	0.6563				
8608958	-	-	-	16.76	0.6598				
9599684	-	-	-	16.84	0.6630				
8599170	-	-	-	17.00	0.6693				
8599175	-	-	-	17.50	0.6890				
8608960	-	-	-	17.63	0.6941				
8608962	-	-	-	17.68	0.6961				
8599177	-	-	-	17.70	0.6969				
8599180	-	-	-	18.00	0.7087				
8599185	-	-	-	18.50	0.7283				
8608964	-	-	-	18.64	0.7339				
8599190	-	-	-	19.00	0.7480				
8609905	3/4	-	-	19.05	0.7500				
8599195	-	-	-	19.50	0.7677				
8608966	-	-	-	19.66	0.7740				
8608968	-	-	-	19.74	0.7772				
9599976	-	-	-	19.76	0.7780				
8599200	-	-	-	20.00	0.7874				

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1900	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

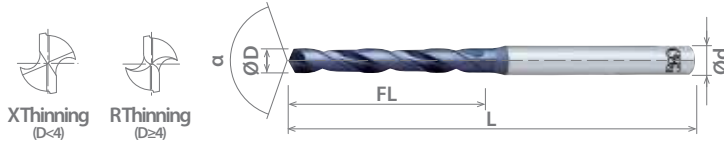
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List 1950

VPH-GDR, Ideal for Difficult to Machine Materials



SPEED FEED P318-319	XPM	V	JOBBERS	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.99≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤17.46	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8612199	-	47	-	1.99	0.0785	24	56	3	130°
8612206	-	46	-	2.06	0.0810				
8612208	-	45	-	2.08	0.0820				
8612218	-	44	-	2.18	0.0860				
8612226	-	43	-	2.26	0.0890				
8612237	-	42	-	2.37	0.0935				
8612238	3/32	-	-	2.38	0.0938				
8612244	-	41	-	2.44	0.0960				
8612249	-	40	-	2.49	0.0980				
8612253	-	39	-	2.53	0.0995				
8612258	-	38	-	2.58	0.1015				
8612264	-	37	-	2.64	0.1040				
8612271	-	36	-	2.71	0.1065				
8612278	7/64	-	-	2.78	0.1094				
8612279	-	35	-	2.79	0.1100				
8612282	-	34	-	2.82	0.1110				
8612287	-	33	-	2.87	0.1130				
8612295	-	32	-	2.95	0.1160				
8612305	-	31	-	3.05	0.1200				
8612317	1/8	-	-	3.17	0.1248				
8612326	-	30	-	3.26	0.1285				
8612345	-	29	-	3.45	0.1360				
8612357	9/64	-	-	3.57	0.1406				
8612366	-	27	-	3.66	0.1440				
8612373	-	26	-	3.73	0.1470				
8612380	-	25	-	3.80	0.1495				
8612386	-	24	-	3.86	0.1520				
8612391	-	23	-	3.91	0.1540				
8612397	5/32	-	-	3.97	0.1562				
8612399	-	22	-	3.99	0.1570				
8612404	-	21	-	4.04	0.1590				
8612409	-	20	-	4.09	0.1610				
8612422	-	19	-	4.22	0.1660				
8612430	-	-	-	4.30	0.1693				
8612437	11/64	-	-	4.37	0.1719				
8612439	-	17	-	4.39	0.1730				
8612450	-	16	-	4.50	0.1770				
8612457	-	15	-	4.57	0.1800				
8612462	-	14	-	4.62	0.1820				
8612470	-	13	-	4.70	0.1850				

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1950	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

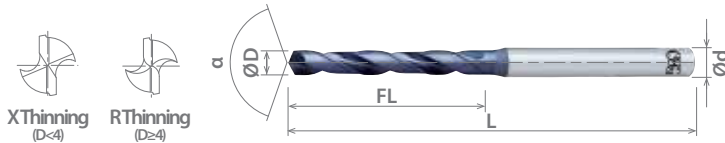
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List 1950 (Continued)

VPH-GDR, Ideal for Difficult to Machine Materials



SPEED FEED P318-319	XPM	V	JOBBERS	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.99≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤17.46	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8612476	3/16	-	-	4.76	0.1875	52	96	6	130°
8612480	-	12	-	4.80	0.1890				
8612485	-	11	-	4.85	0.1910				
8612491	-	-	-	4.91	0.1933				
8612498	-	9	-	4.98	0.1960				
8612505	-	8	-	5.05	0.1990				
8612511	-	7	-	5.11	0.2010				
8612516	13/64	-	-	5.16	0.2031				
8612518	-	6	-	5.18	0.2040				
8612522	-	5	-	5.22	0.2055				
8612531	-	4	-	5.31	0.2090				
8612541	-	3	-	5.41	0.2130				
8612556	7/32	-	-	5.56	0.2188				
8612561	-	2	-	5.61	0.2210				
8612579	-	1	-	5.79	0.2280				
8612594	-	-	A	5.94	0.2340				
8612595	15/64	-	-	5.95	0.2344				
8612604	-	-	-	6.04	0.2378				
8612615	-	-	C	6.15	0.2420				
8612625	-	-	D	6.25	0.2460				
8612635	1/4	-	E	6.35	0.2500				
8612653	-	-	F	6.53	0.2570				
8612663	-	-	G	6.63	0.2610				
8612675	17/64	-	-	6.75	0.2656				
8612690	-	-	I	6.90	0.2717				
8612703	-	-	J	7.03	0.2768				
8612714	9/32	-	-	7.14	0.2812				
8612737	-	-	L	7.37	0.2900				
8612749	-	-	M	7.49	0.2950				
8612754	19/64	-	-	7.54	0.2969				
8612767	-	-	N	7.67	0.3020				
8612794	5/16	-	-	7.94	0.3125				
8612803	-	-	O	8.03	0.3160				
8612820	-	-	P	8.20	0.3230				
8612833	21/64	-	-	8.33	0.3281				
8612843	-	-	Q	8.43	0.3320				
8612861	-	-	R	8.61	0.3390				
8612873	11/32	-	-	8.73	0.3438				
8612884	-	-	S	8.84	0.3480				
8612909	-	-	T	9.09	0.3580				
8612913	23/64	-	-	9.13	0.3594				
8612934	-	-	-	9.34	0.3677				
8612952	3/8	-	-	9.52	0.3748				
8612957	-	-	V	9.57	0.3768				
8612980	-	-	W	9.80	0.3860				
8612992	25/64	-	-	9.92	0.3906				
8613008	-	-	X	10.08	0.3970				
8613026	-	-	Y	10.26	0.4040				
8613032	13/32	-	-	10.32	0.4062				
8613049	-	-	Z	10.49	0.4130				

Packed: 1 pc.
Available V coating only.





List 1950 (Continued)

VPH-GDR, Ideal for Difficult to Machine Materials

SPEED FEED P318-319	XPM	V	JOBBERS	30°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8613072	27/64	-	-	10.72	0.4219	94	151	12	130°
8613111	7/16	-	-	11.11	0.4375				
8613151	29/64	-	-	11.51	0.4531				
8613191	15/32	-	-	11.91	0.4688	101	158		
8613230	31/64	-	-	12.30	0.4844				
8613270	1/2	-	-	12.70	0.5000	106	166		
8613349	17/32	-	-	13.49	0.5312	109	169	16	120°
8613429	9/16	-	-	14.29	0.5625	115	175		
8613588	5/8	-	-	15.88	0.6250		118	181	
8613667	21/32	-	-	16.67	0.6563	118		184	
8613746	11/16	-	-	17.46	0.6875				

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1950	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

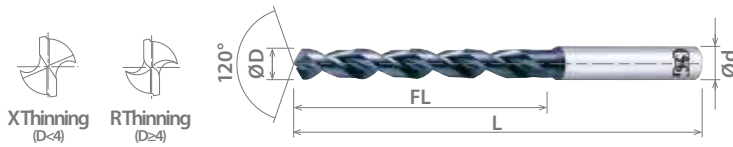
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List 2000

VP-GDR, Parabolic



XThinning (D<4)
RThinning (D≥4)

SPEED FEED P320	XPM	V	JOBBERS	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8593020	-	-	-	2.00	0.0787	24	56	3
8593021	-	-	-	2.10	0.0827			
8593022	-	-	-	2.20	0.0866	27	59	
8593023	-	-	-	2.30	0.0906			
8593024	-	-	-	2.40	0.0945	30	62	
8593025	-	-	-	2.50	0.0984			
8593026	-	-	-	2.60	0.1024	33	65	
8593027	-	-	-	2.70	0.1063			
8593028	-	-	-	2.80	0.1102	36	68	
8593029	-	-	-	2.90	0.1142			
8593030	-	-	-	3.00	0.1181	39	71	
8593031	-	-	-	3.10	0.1220			
8593032	-	-	-	3.20	0.1260	43	75	
8593033	-	-	-	3.30	0.1299			
8593034	-	-	-	3.40	0.1339	47	91	
8593035	-	-	-	3.50	0.1378			
8593036	-	-	-	3.60	0.1417	52	96	
8593037	-	-	-	3.70	0.1457			
8593038	-	25	-	3.80	0.1496	57	101	
8593039	-	-	-	3.90	0.1535			
8593040	-	-	-	4.00	0.1575	63	107	
8593041	-	-	-	4.10	0.1614			
8593042	-	-	-	4.20	0.1654	69	113	
8593043	-	-	-	4.30	0.1693			
8593044	-	-	-	4.40	0.1732	63	107	
8593045	-	16	-	4.50	0.1772			
8593046	-	-	-	4.60	0.1811	69	113	
8593047	-	13	-	4.70	0.1850			
8593048	-	12	-	4.80	0.1890	63	107	
8593049	-	-	-	4.90	0.1929			
8593050	-	-	-	5.00	0.1969	69	113	
8593051	-	-	-	5.10	0.2008			
8593052	-	-	-	5.20	0.2047	63	107	
8593053	-	-	-	5.30	0.2087			
8593054	-	-	-	5.40	0.2126	69	113	
8593055	-	-	-	5.50	0.2165			
8593056	-	-	-	5.60	0.2205	63	107	
8593057	-	-	-	5.70	0.2244			
8593058	-	-	-	5.80	0.2283	69	113	
8593059	-	-	-	5.90	0.2323			
8593060	-	-	-	6.00	0.2362	63	107	
8593061	-	-	-	6.10	0.2402			
8593062	-	-	-	6.20	0.2441	69	113	
8593063	-	-	-	6.30	0.2480			
8593064	-	-	-	6.40	0.2520	63	107	
8593065	-	-	-	6.50	0.2559			
8593066	-	-	-	6.60	0.2598	69	113	
8593067	-	-	-	6.70	0.2638			
8593068	-	-	-	6.80	0.2677	63	107	
8593069	-	-	I	6.90	0.2717			
8593070	-	-	-	7.00	0.2756	69	113	
8593071	-	-	-	7.10	0.2795			
8593072	-	-	-	7.20	0.2835			

Packed: 1 pc.
Available V coating only.



List 2000 (Continued)

VP-GDR, Parabolic

SPEED FEED P320	XPM	V	JOBBERS	40°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8593073	-	-	-	7.30	0.2874	69	113	8
8593074	-	-	-	7.40	0.2913			
8593075	-	-	-	7.50	0.2953			
8593076	-	-	-	7.60	0.2992			
8593077	-	-	-	7.70	0.3031			
8593078	-	-	-	7.80	0.3071			
8593079	-	-	-	7.90	0.3110			
8593080	-	-	-	8.00	0.3150			
8593081	-	-	-	8.10	0.3189			
8593082	-	-	P	8.20	0.3228			
8593083	-	-	-	8.30	0.3268	75	119	8
8593084	-	-	-	8.40	0.3307			
8593085	-	-	-	8.50	0.3346			
8593086	-	-	-	8.60	0.3386			
8593087	-	-	-	8.70	0.3425			
8593088	-	-	-	8.80	0.3465			
8593089	-	-	-	8.90	0.3504			
8593090	-	-	-	9.00	0.3543			
8593091	-	-	-	9.10	0.3583			
8593092	-	-	-	9.20	0.3622			
8593093	-	-	-	9.30	0.3661	81	131	10
8593094	-	-	-	9.40	0.3701			
8593095	-	-	-	9.50	0.3740			
8593096	-	-	-	9.60	0.3780			
8593097	-	-	-	9.70	0.3819			
8593098	-	-	W	9.80	0.3858			
8593099	-	-	-	9.90	0.3898			
8593100	-	-	-	10.00	0.3937			
8593101	-	-	-	10.10	0.3976			
8593102	-	-	-	10.20	0.4016			
8593103	-	-	-	10.30	0.4055	87	137	10
8593104	-	-	-	10.40	0.4094			
8593105	-	-	-	10.50	0.4134			
8593106	-	-	-	10.60	0.4173			
8593107	-	-	-	10.70	0.4213			
8593108	-	-	-	10.80	0.4252			
8593109	-	-	-	10.90	0.4291			
8593110	-	-	-	11.00	0.4331			
8593111	-	-	-	11.10	0.4370			
8593112	-	-	-	11.20	0.4409			
8593113	-	-	-	11.30	0.4449	94	151	12
8593114	-	-	-	11.40	0.4488			
8593115	-	-	-	11.50	0.4528			
8593116	-	-	-	11.60	0.4567			
8593117	-	-	-	11.70	0.4606			
8593118	-	-	-	11.80	0.4646			
8593119	-	-	-	11.90	0.4685			
8593120	-	-	-	12.00	0.4724			
8593121	-	-	-	12.10	0.4764			
8593121	-	-	-	12.10	0.4764			

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
2000	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

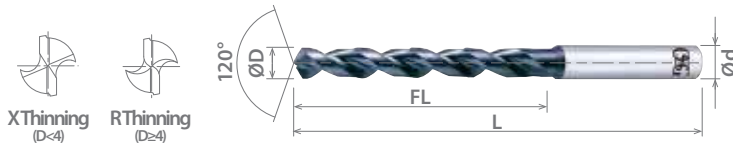
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List 2000 (Continued)

VP-GDR, Parabolic



SPEED FEED	XPM	V	JOBBERS	40°
P320				

Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d		
	Fractional Size	Wire Gage	Letter Size	mm	Inch					
8593122	-	-	-	12.20	0.4803	101	158	12		
8593123	31/64	-	-	12.30	0.4843					
8593124	-	-	-	12.40	0.4882					
8593125	-	-	-	12.50	0.4921					
8593126	-	-	-	12.60	0.4961					
8593127	1/2	-	-	12.70	0.5000					
8593128	-	-	-	12.80	0.5039					
8593129	-	-	-	12.90	0.5079					
8593130	-	-	-	13.00	0.5118					
8593135	-	-	-	13.50	0.5315					
8593140	-	-	-	14.00	0.5512	106	166	16		
8593145	-	-	-	14.50	0.5709	109	169			
8593150	-	-	-	15.00	0.5906	112	172			
8593155	-	-	-	15.50	0.6102	115	181		20	
8593160	-	-	-	16.00	0.6299					
8593165	-	-	-	16.50	0.6496					
8593170	-	-	-	17.00	0.6693					
8593175	-	-	-	17.50	0.6890					
8593180	-	-	-	18.00	0.7087					
8593185	-	-	-	18.50	0.7283					
8593190	-	-	-	19.00	0.7480					
8593195	-	-	-	19.50	0.7677					
8593200	-	-	-	20.00	0.7874			125		191
8593205	-	-	-	20.50	0.8071	128	204			
8593210	-	-	-	21.00	0.8268					
8593215	-	-	-	21.50	0.8465	132	208			
8593220	-	-	-	22.00	0.8661					
8593225	-	-	-	22.50	0.8858	136	212	32		
8593230	-	-	-	23.00	0.9055					
8593235	-	-	-	23.50	0.9252					
8593240	-	-	-	24.00	0.9449					
8593245	-	-	-	24.50	0.9646					
8593250	63/64	-	-	25.00	0.9843					
8593255	-	-	-	25.50	1.0039					
8593260	-	-	-	26.00	1.0236				145	225
8593265	-	-	-	26.50	1.0433					
8593270	-	-	-	27.00	1.0630				150	230
8593280	-	-	-	28.00	1.1024					
8593290	-	-	-	29.00	1.1417	155	235			
8593300	-	-	-	30.00	1.1811					
8593310	-	-	-	31.00	1.2205	160	240			
8593320	-	-	-	32.00	1.2598	165				

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
2000	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 1700

V-HO-GDR, Coolant-Through

SPEED FEED P321	HSS-Co	V	JOBBERS		30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
5.95<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤31.75	+0 / -0.039	+0 / -0.0015

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
17234408	15/64	-	-	5.95	0.2344	66	112	15/64
17236208	-	-	-	6.00	0.2362	69	115	6.00
17250008	1/4	-	E	6.35	0.2500			1/4
17257008	-	-	F	6.53	0.2570	73	119	6.53
17265608	17/64	-	-	6.75	0.2656			17/64
17272008	-	-	I	6.91	0.2720			6.91
17281208	9/32	-	-	7.14	0.2812	74	120	9/32
17296908	19/64	-	-	7.54	0.2969	77	123	19/64
17312508	5/16	-	-	7.94	0.3125	80	127	5/16
17315008	-	-	-	8.00	0.3150			8.00
17328108	21/64	-	-	8.33	0.3281	84	130	21/64
17343808	11/32	-	-	8.73	0.3438	87	133	11/32
17359408	23/64	-	-	9.13	0.3594	88	134	23/64
17375008	3/8	-	-	9.53	0.3750			3/8
17377008	-	-	V	9.58	0.3770	92	145	9.58
17390608	25/64	-	-	9.92	0.3906			25/64
17393708	-	-	-	10.00	0.3937	95	148	10.00
17406208	13/32	-	-	10.32	0.4062			98
17421908	27/64	-	-	10.72	0.4219	100	153	27/64
17437508	7/16	-	-	11.11	0.4375	103	156	7/16
17453108	29/64	-	-	11.51	0.4531	106	159	29/64
17468808	15/32	-	-	11.91	0.4688	109	162	15/32
17484408	31/64	-	-	12.30	0.4844	111	164	31/64
17500008	1/2	-	-	12.70	0.5000	114	167	1/2
17531208	17/32	-	-	13.49	0.5312	122	182	5/8
17562508	9/16	-	-	14.29	0.5625			
17578108	37/64	-	-	14.68	0.5781	131	192	3/4
17593808	19/32	-	-	15.08	0.5938			
17625008	5/8	-	-	15.88	0.6250	142	199	7/8
17656208	21/32	-	-	16.67	0.6563			
17687508	11/16	-	-	17.46	0.6875	149	210	1
17718808	23/32	-	-	18.26	0.7188			
17750008	3/4	-	-	19.05	0.7500	152	219	7/8
17781308	25/32	-	-	19.85	0.7813			
17812508	13/16	-	-	20.64	0.8125	155	223	1
17843808	27/32	-	-	21.43	0.8438			
17875008	7/8	-	-	22.23	0.8750	161	233	1
17906208	29/32	-	-	23.02	0.9062			
17937508	15/16	-	-	23.81	0.9375	165	242	1-1/4
17968808	31/32	-	-	24.61	0.9688			
18000008	1	-	-	25.40	1.0000			
18031208	1-1/32	-	-	26.19	1.0312			

Packed: 1 pc.
Available V coating only.

continued on next page

List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1700	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





V-HO GDR

Cobalt High Speed Steel

List 1700 (Continued)

V-HO-GDR, Coolant-Through

SPEED FEED P321	HSS-Co	V	JOBBERS		30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
5.95<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤31.75	+0 / -0.039	+0 / -0.0015

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
18062508	1-1/16	-	-	26.99	1.0625	168	246	1-1/4
18093808	1-3/32	-	-	27.78	1.0938	174	252	
18125008	1-1/8	-	-	28.58	1.1250	180	258	
18218808	1-7/32	-	-	30.96	1.2188	190	268	
18250008	1-1/4	-	-	31.75	1.2500	200	277	

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1700	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

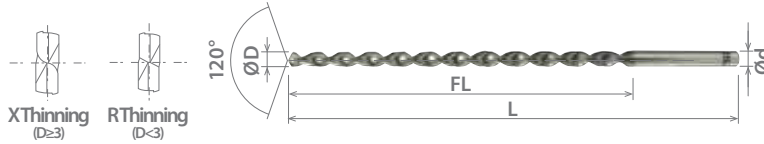
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List 1750

TDXL-10D

SPEED FEED P322	HSS-Co	WXL	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.6≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤17.86	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8622816	-	-	-	1.60	0.0630	26	75	1.6
8622818	-	-	-	1.80	0.0709			1.8
17542411	5/64	-	-	1.98	0.0780			5/64
8622820	-	-	-	2.00	0.0787	33		2.0
8622821	-	-	-	2.10	0.0827			2.1
8622822	-	-	-	2.20	0.0866			2.2
8622823	-	-	-	2.30	0.0906	40	2.3	
17543111	3/32	-	-	2.38	0.0937		3/32	
8622824	-	-	-	2.40	0.0945		2.4	
8622825	-	-	-	2.50	0.0984	45	2.5	
8622826	-	-	-	2.60	0.1024		2.6	
8622827	-	-	-	2.70	0.1063		2.7	
17543811	7/64	-	-	2.78	0.1094	50	7/64	
8622828	-	-	-	2.80	0.1102		2.8	
8622829	-	-	-	2.90	0.1142		2.9	
8622830	-	-	-	3.00	0.1181	55	3.0	
8622831	-	-	-	3.10	0.1220		3.1	
17544411	1/8	-	-	3.18	0.1252		1/8	
8622832	-	-	-	3.20	0.1260	60	3.2	
8622833	-	-	-	3.30	0.1299		3.3	
8622834	-	-	-	3.40	0.1339		3.4	
8622835	-	-	-	3.50	0.1378	65	3.5	
17544711	9/64	-	-	3.57	0.1406		9/64	
8622836	-	-	-	3.60	0.1417		3.6	
8622837	-	-	-	3.70	0.1457	70	3.7	
8622838	-	25	-	3.80	0.1496		3.8	
8622839	-	-	-	3.90	0.1535		3.9	
17545311	5/32	-	-	3.97	0.1563	75	5/32	
8622840	-	-	-	4.00	0.1575		4.0	
8622841	-	-	-	4.10	0.1614		4.1	
8622842	-	-	-	4.20	0.1654	80	4.2	
8622843	-	-	-	4.30	0.1693		4.3	
17545911	11/64	-	-	4.37	0.1720		11/64	
8622844	-	-	-	4.40	0.1732	85	4.4	
8622845	-	16	-	4.50	0.1772		4.5	
8622846	-	-	-	4.60	0.1811		4.6	
8622847	-	13	-	4.70	0.1850	90	4.7	
17546511	3/16	-	-	4.76	0.1874		3/16	
8622848	-	12	-	4.80	0.1890		4.8	
8622849	-	-	-	4.90	0.1929	95	4.9	
8622850	-	-	-	5.00	0.1969		5.0	
8622851	-	-	-	5.10	0.2008		5.1	

Packed: 1 pc.
Available WXL® coating only.

➔ continued on next page ➔ **EXD**

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1750	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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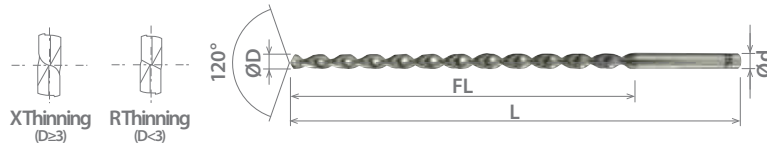




List 1750 (Continued)

SPEED FEED P322	HSS-Co	WXL	40°
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TDXL-10D



Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.6≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤17.86	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
17547211	13/64	-	-	5.16	0.2031	70	128	13/64
8622852	-	-	-	5.20	0.2047			5.2
8622853	-	-	-	5.30	0.2087			5.3
8622854	-	-	-	5.40	0.2126	78		5.4
8622855	-	-	-	5.50	0.2165			5.5
17547711	7/32	-	-	5.56	0.2189			7/32
8622856	-	-	-	5.60	0.2205	87		5.6
8622857	-	-	-	5.70	0.2244			5.7
8622858	-	-	-	5.80	0.2283			5.8
8622859	-	-	-	5.90	0.2323	90		5.9
17548111	15/64	-	-	5.95	0.2343			15/64
8622860	-	-	-	6.00	0.2362			6.0
8622861	-	-	-	6.10	0.2402	87	6.1	
8622862	-	-	-	6.20	0.2441		6.2	
8622863	-	-	-	6.30	0.2480		6.3	
17548511	1/4	-	E	6.35	0.2500	90	1/4	
8622864	-	-	-	6.40	0.2520		6.4	
8622865	-	-	-	6.50	0.2559		6.5	
8622866	-	-	-	6.60	0.2598	100	6.6	
8622867	-	-	-	6.70	0.2638		6.7	
17548811	17/64	-	-	6.75	0.2657		17/64	
8622868	-	-	-	6.80	0.2677	90	6.8	
8622869	-	-	I	6.90	0.2717		6.9	
8622870	-	-	-	7.00	0.2756		7.0	
8622871	-	-	-	7.10	0.2795	100	7.1	
17549111	9/32	-	-	7.14	0.2812		9/32	
8622872	-	-	-	7.20	0.2835		7.2	
8622873	-	-	-	7.30	0.2874	105	7.3	
8622874	-	-	-	7.40	0.2913		7.4	
8622875	-	-	-	7.50	0.2953		7.5	
17549411	19/64	-	-	7.54	0.2969	110	19/64	
8622876	-	-	-	7.60	0.2992		7.6	
8622877	-	-	-	7.70	0.3031		7.7	
8622878	-	-	-	7.80	0.3071	115	7.8	
8622879	-	-	-	7.90	0.3110		7.9	
17549611	5/16	-	-	7.94	0.3125		5/16	
8622880	-	-	-	8.00	0.3150	110	8.0	
8622881	-	-	-	8.10	0.3189		8.1	
8622882	-	-	P	8.20	0.3228		8.2	
8622883	-	-	-	8.30	0.3287	165	8.3	
17549911	21/64	-	-	8.33	0.3281		21/64	
8622884	-	-	-	8.40	0.3307		8.4	
8622885	-	-	-	8.50	0.3346	115	8.5	
8622886	-	-	-	8.60	0.3386		8.6	
8622887	-	-	-	8.70	0.3425		8.7	
17550211	11/32	-	-	8.73	0.3438	125	11/32	
8622888	-	-	-	8.80	0.3465		8.8	
8622889	-	-	-	8.90	0.3504		8.9	
8622890	-	-	-	9.00	0.3543	190	9.0	
8622891	-	-	-	9.10	0.3583		9.1	
17550511	23/64	-	-	9.13	0.3594		23/64	
8622892	-	-	-	9.20	0.3622	9.2		

Packed: 1 pc.
Available WXL® coating only.



List 1750 (Continued)

SPEED FEED P322	HSS-Co	WXL	40°
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TDXL-10D

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8622893	-	-	-	9.30	0.3661	125	190	9.3
8622894	-	-	-	9.40	0.3701			9.4
8622895	-	-	-	9.50	0.3740			9.5
17550711	3/8	-	-	9.53	0.3750	130	190	3/8
8622896	-	-	-	9.60	0.3780			9.6
8622897	-	-	-	9.70	0.3819			9.7
8622898	-	-	W	9.80	0.3858	140	205	9.8
8622899	-	-	-	9.90	0.3898			9.9
17551011	25/64	-	-	9.92	0.3906			25/64
8622900	-	-	-	10.00	0.3937	140	205	10.0
8622901	-	-	-	10.10	0.3976			10.1
8622902	-	-	-	10.20	0.4016			10.2
8622903	-	-	-	10.30	0.4055	145	215	10.3
17551311	13/32	-	-	10.32	0.4062			13/32
8622904	-	-	-	10.40	0.4094			10.4
8622905	-	-	-	10.50	0.4134	145	215	10.5
8622906	-	-	-	10.60	0.4173			10.6
8622907	-	-	-	10.70	0.4213			10.7
17551511	27/64	-	-	10.72	0.4219	155	215	27/64
8622908	-	-	-	10.80	0.4252			10.8
8622909	-	-	-	10.90	0.4291			10.9
8622910	-	-	-	11.00	0.4331	155	215	11.0
8622911	-	-	-	11.10	0.4370			11.1
17551611	7/16	-	-	11.11	0.4375			7/16
8622912	-	-	-	11.20	0.4409	160	220	11.2
8622913	-	-	-	11.30	0.4449			11.3
8622914	-	-	-	11.40	0.4488			11.4
8622915	-	-	-	11.50	0.4528	175	225	11.5
17551711	29/64	-	-	11.51	0.4531			29/64
8622916	-	-	-	11.60	0.4567			11.6
8622917	-	-	-	11.70	0.4606	186	236	11.7
8622918	-	-	-	11.80	0.4646			11.8
8622919	-	-	-	11.90	0.4685			11.9
17551811	15/32	-	-	11.91	0.4688	233	283	15/32
8622920	-	-	-	12.00	0.4724			12.0
17552011	1/2	-	-	12.70	0.5000			1/2
17525111	17/32	-	-	13.49	0.5313	175	225	17/32
17525311	9/16	-	-	14.29	0.5625	186	236	9/16
17525511	45/64	-	-	17.86	0.7031	233	283	45/64

Packed: 1 pc.
Available WXL® coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1750	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

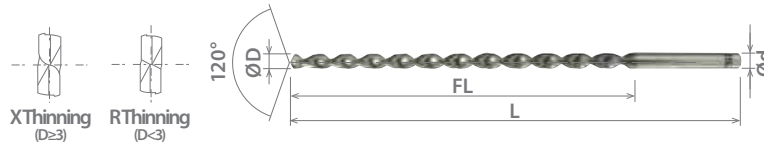
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List 1760

TDXL-15D



SPEED FEED	HSS-Co	WXL	40°
P322			

Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.6≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤17.86	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8623016	-	-	-	1.60	0.0630	30	70	1.6
8623018	-	-	-	1.80	0.0709	34	75	1.8
17502411	5/64	-	-	1.98	0.0780	36	80	5/64
8623020	-	-	-	2.00	0.0787			2.0
8623021	-	-	-	2.10	0.0827	2.1		
8623022	-	-	-	2.20	0.0866	2.2		
8623023	-	-	-	2.30	0.0906	42	85	2.3
17503111	3/32	-	-	2.38	0.0937	44		3/32
8623024	-	-	-	2.40	0.0945	46	100	2.4
8623025	-	-	-	2.50	0.0984			2.5
8623026	-	-	-	2.60	0.1024	48		2.6
8623027	-	-	-	2.70	0.1063	50		2.7
17503811	7/64	-	-	2.78	0.1094		7/64	
8623028	-	-	-	2.80	0.1102	54	105	2.8
8623029	-	-	-	2.90	0.1142			2.9
8623030	-	-	-	3.00	0.1181	56	110	3.0
8623031	-	-	-	3.10	0.1220			3.1
17504411	1/8	-	-	3.18	0.1250	58		1/8
8623032	-	-	-	3.20	0.1260	60		115
8623033	-	-	-	3.30	0.1299		3.3	
8623034	-	-	-	3.40	0.1339	62	120	3.4
8623035	-	-	-	3.50	0.1378	64		3.5
17504711	9/64	-	-	3.57	0.1406		9/64	
8623036	-	-	-	3.60	0.1417	66	140	3.6
8623037	-	-	-	3.70	0.1457			68
8623038	-	25	-	3.80	0.1496	70		3.8
8623039	-	-	-	3.90	0.1535			3.9
17505311	5/32	-	-	3.97	0.1562	72	150	5/32
8623040	-	-	-	4.00	0.1575			4.0
8623041	-	-	-	4.10	0.1614	74	135	4.1
8623042	-	-	-	4.20	0.1654	76		4.2
8623043	-	-	-	4.30	0.1693	78	140	4.3
17505911	11/64	-	-	4.37	0.1719			11/64
8623044	-	-	-	4.40	0.1732	80		4.4
8623045	-	16	-	4.50	0.1772	82		4.5
8623046	-	-	-	4.60	0.1811	84	145	4.6
8623047	-	13	-	4.70	0.1850	86		4.7
17506511	3/16	-	-	4.76	0.1875		3/16	
8623048	-	12	-	4.80	0.1890	88	150	4.8
8623049	-	-	-	4.90	0.1929			4.9
8623050	-	-	-	5.00	0.1969	90		5.0
8623051	-	-	-	5.10	0.2008	92		5.1
17507211	13/64	-	-	5.16	0.2031		13/64	
8623052	-	-	-	5.20	0.2047	94	155	5.2
8623053	-	-	-	5.30	0.2087	96		5.3
8623054	-	-	-	5.40	0.2126	98		5.4
8623055	-	-	-	5.50	0.2165	100		5.5
17507711	7/32	-	-	5.56	0.2188		7/32	
8623056	-	-	-	5.60	0.2205	102	160	5.6
8623057	-	-	-	5.70	0.2244	104		5.7
8623058	-	-	-	5.80	0.2283	106	165	5.8
17508111	-	-	-	5.95	0.2344	108		15/64

Packed: 1 pc.
Available WXL® coating only.



List 1760 (Continued)

TDXL-15D

SPEED FEED P322	HSS-Co	WXL	40°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8623060	-	-	-	6.00	0.2362	108	170	6.0
8623062	-	-	-	6.20	0.2441	112		6.2
8623063	-	-	-	6.30	0.2480	114	175	6.3
17508511	1/4	-	E	6.35	0.2500			118
8623065	-	-	-	6.50	0.2559	120	200	6.5
8623066	-	-	-	6.60	0.2598			124
17508811	17/64	-	-	6.75	0.2656	126	205	17/64
8623068	-	-	-	6.80	0.2677			130
8623069	-	-	I	6.90	0.2717	136	215	6.9
8623070	-	-	-	7.00	0.2756			144
8623071	-	-	-	7.10	0.2795	148	220	7.1
17509111	9/32	-	-	7.14	0.2812			150
8623075	-	-	-	7.50	0.2953	154	225	7.5
17509411	19/64	-	-	7.54	0.2969			156
17509611	5/16	-	-	7.94	0.3125	160	230	5/16
8623080	-	-	-	8.00	0.3150			162
8623081	-	-	-	8.10	0.3189	165	235	8.1
8623082	-	-	P	8.20	0.3228			168
17509911	21/64	-	-	8.33	0.3281	172	240	21/64
8623085	-	-	-	8.50	0.3346			176
8623086	-	-	-	8.60	0.3386	178	245	8.6
17510211	11/32	-	-	8.73	0.3438			180
8623088	-	-	-	8.80	0.3465	185	260	8.8
8623090	-	-	-	9.00	0.3504			190
17510511	23/64	-	-	9.13	0.3594	195	275	23/64
8623093	-	-	-	9.30	0.3661			200
8623095	-	-	-	9.50	0.3740	208	290	9.5
17510711	3/8	-	-	9.53	0.3750			210
8623097	-	-	-	9.70	0.3819	214	295	9.7
8623098	-	-	W	9.80	0.3858			215
17511011	25/64	-	-	9.92	0.3906	216	300	25/64
8623100	-	-	-	10.00	0.3937			230
17511311	13/32	-	-	10.32	0.4062	243	293	13/32
8623105	-	-	-	10.50	0.4134			257
17511511	27/64	-	-	10.72	0.4219	322	372	27/64
8623110	-	-	-	11.00	0.4331			180
17511611	7/16	-	-	11.11	0.4375	185	260	7/16
8623115	-	-	-	11.50	0.4528			190
17511711	29/64	-	-	11.51	0.4531	195	275	29/64
8623118	-	-	-	11.80	0.4646			200
17511811	15/32	-	-	11.91	0.4688	208	290	15/32
8623120	-	-	-	12.00	0.4724			210
17512011	1/2	-	-	12.70	0.5000	214	295	1/2
17525711	17/32	-	-	13.49	0.5313			215
17525911	9/16	-	-	14.29	0.5625	216	300	9/16
17526111	45/64	-	-	17.86	0.7031			230

Packed: 1 pc.
Available WXL® coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1760	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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List 1770

TDXL-20D



SPEED FEED	HSS-Co	WXL	40°
P322			

Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.6≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤14.29	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8623216	-	-	-	1.60	0.0630	38	85	1.6
8623218	-	-	-	1.80	0.0709	42		1.8
17515311	5/64	-	-	1.98	0.0780	46	5/64	
8623220	-	-	-	2.00	0.0787	50	2.0	
8623221	-	-	-	2.10	0.0827		2.1	
8623222	-	-	-	2.20	0.0866	52	2.2	
8623223	-	-	-	2.30	0.0906	54	2.3	
17516011	3/32	-	-	2.38	0.0937	56	3/32	
8623224	-	-	-	2.40	0.0945		2.4	
8623225	-	-	-	2.50	0.0984	58	2.5	
8623226	-	-	-	2.60	0.1024	60	2.6	
8623227	-	-	-	2.70	0.1063	64	2.7	
17516711	7/64	-	-	2.78	0.1094	66	7/64	
8623228	-	-	-	2.80	0.1102		2.8	
8623229	-	-	-	2.90	0.1142	68	2.9	
8623230	-	-	-	3.00	0.1181		3.0	
8623231	-	-	-	3.10	0.1220	72	3.1	
17517311	1/8	-	-	3.18	0.1250	74	1/8	
8623232	-	-	-	3.20	0.1260		3.2	
8623233	-	-	-	3.30	0.1299	76	3.3	
8623234	-	-	-	3.40	0.1339	80	3.4	
8623235	-	-	-	3.50	0.1378	82	3.5	
17517611	9/64	-	-	3.57	0.1406		9/64	
8623237	-	-	-	3.70	0.1457	86	3.7	
8623238	-	25	-	3.80	0.1496		3.8	
17518211	5/32	-	-	3.97	0.1562	92	5/32	
8623240	-	-	-	4.00	0.1575		4.0	
8623241	-	-	-	4.10	0.1614	96	4.1	
8623242	-	-	-	4.20	0.1654		4.2	
8623243	-	-	-	4.30	0.1693	100	4.3	
17518811	11/64	-	-	4.37	0.1719		11/64	
8623245	-	16	-	4.50	0.1772	104	4.5	
8623246	-	-	-	4.60	0.1811		4.6	
17519411	3/16	-	-	4.76	0.1875	110	3/16	
8623248	-	12	-	4.80	0.1890		4.8	
8623250	-	-	-	5.00	0.1969	116	5.0	
8623251	-	-	-	5.10	0.2008	118	5.1	
17520111	13/64	-	-	5.16	0.2031		13/64	
8623252	-	-	-	5.20	0.2047	120	5.2	
8623255	-	-	-	5.50	0.2165		5.5	
17520611	7/32	-	-	5.56	0.2188	128	7/32	
8623257	-	-	-	5.70	0.2244		5.7	
8623258	-	-	-	5.80	0.2283	134	5.8	
17521011	15/64	-	-	5.95	0.2344		15/64	
8623260	-	-	-	6.00	0.2362	138	6.0	
17521411	1/4	-	E	6.35	0.2500		1/4	
8623265	-	-	-	6.50	0.2559	150	6.5	
17521711	17/64	-	-	6.75	0.2656		17/64	
8623270	-	-	-	7.00	0.2756	162	7.0	
17522011	9/32	-	-	7.14	0.2812	164	9/32	
8623275	-	-	-	7.50	0.2953		7.5	
17522311	19/64	-	-	7.54	0.2969	174	19/64	

Packed: 1 pc.
Available WXL® coating only.



List 1770 (Continued)

SPEED FEED P322	HSS-Co	WXL	40°
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TDXL-20D

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
17522511	5/16	-	-	7.94	0.3125	184	255	5/16
8623280	-	-	-	8.00	0.3150			8.0
8623281	-	-	-	8.10	0.3189	188		8.1
8623282	-	-	P	8.20	0.3228	190	260	8.2
17522811	21/64	-	-	8.33	0.3281	192		21/64
8623285	-	-	-	8.50	0.3346	196	265	8.5
17523111	11/32	-	-	8.73	0.3438	200	270	11/32
8623290	-	-	-	9.00	0.3543	208	275	9.0
17523411	23/64	-	-	9.13	0.3594	210		23/64
17523611	3/8	-	-	9.53	0.3750	220	290	3/8
17523911	25/64	-	-	9.92	0.3906	230	300	25/64
8623300	-	-	-	10.00	0.3937			10.0
17524211	13/32	-	-	10.32	0.4062	238		13/32
17524411	27/64	-	-	10.72	0.4219	246	340	27/64
8623310	-	-	-	11.00	0.4331	254	350	11.0
17524511	7/16	-	-	11.11	0.4375	255		7/16
17524611	29/64	-	-	11.51	0.4531	265	360	29/64
17524711	15/32	-	-	11.91	0.4688	274		15/32
8623320	-	-	-	12.00	0.4724	276		12.0
17524911	1/2	-	-	12.70	0.5000	292	378	1/2
17526311	17/32	-	-	13.49	0.5313	310		17/32
17526511	9/16	-	-	14.29	0.5625	328		9/16

Packed: 1 pc.
Available WXL® coating only.



Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	H			
	Carbon Steels			Alloy Steels 4140 4340		Stainless Steels				Aluminum				Hardened Steels			
	Low 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1770	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

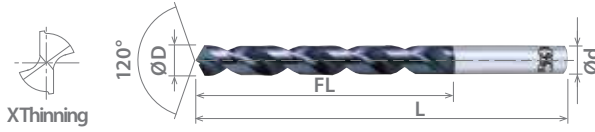
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List 1800

V-SDR



SPEED FEED	HSSE	V	JOBBERS	35°
P323				

Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 13	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8594020	-	-	-	2.00	0.0787	24	49	2.0
8594021	-	-	-	2.10	0.0827			2.1
8594022	-	-	-	2.20	0.0866	27	53	2.2
8594023	-	-	-	2.30	0.0906			2.3
8594024	-	-	-	2.40	0.0945	30	57	2.4
8594025	-	-	-	2.50	0.0984			2.5
8594026	-	-	-	2.60	0.1024	33	61	2.6
8594027	-	-	-	2.70	0.1063			2.7
8594028	-	-	-	2.80	0.1102	36	65	2.8
8594029	-	-	-	2.90	0.1142			2.9
8594030	-	-	-	3.00	0.1181	39	70	3.0
8594031	-	-	-	3.10	0.1220			3.1
8594032	-	-	-	3.20	0.1260	43	75	3.2
8594033	-	-	-	3.30	0.1299			3.3
8594034	-	-	-	3.40	0.1339	47	80	3.4
8594035	-	-	-	3.50	0.1378			3.5
8594036	-	-	-	3.60	0.1417	52	86	3.6
8594037	-	-	-	3.70	0.1457			3.7
8594038	-	25	-	3.80	0.1496	57	93	3.8
8594039	-	-	-	3.90	0.1535			3.9
8594040	-	-	-	4.00	0.1575	63	101	4.0
8594041	-	-	-	4.10	0.1614			4.1
8594042	-	-	-	4.20	0.1654	69	109	4.2
8594043	-	-	-	4.30	0.1693			4.3
8594044	-	-	-	4.40	0.1732	71	111	4.4
8594045	-	16	-	4.50	0.1772			4.5
8594046	-	-	-	4.60	0.1811	77	119	4.6
8594047	-	13	-	4.70	0.1850			4.7
8594048	-	12	-	4.80	0.1890	83	127	4.8
8594049	-	-	-	4.90	0.1929			4.9
8594050	-	-	-	5.00	0.1969	89	135	5.0
8594051	-	-	-	5.10	0.2008			5.1
8594052	-	-	-	5.20	0.2047	95	143	5.2
8594053	-	-	-	5.30	0.2087			5.3
8594054	-	-	-	5.40	0.2126	101	151	5.4
8594055	-	-	-	5.50	0.2165			5.5
8594056	-	-	-	5.60	0.2205	107	159	5.6
8594057	-	-	-	5.70	0.2244			5.7
8594058	-	-	-	5.80	0.2283	113	167	5.8
8594059	-	-	-	5.90	0.2323			5.9
8594060	-	-	-	6.00	0.2362	119	175	6.0
8594061	-	-	-	6.10	0.2402			6.1
8594062	-	-	-	6.20	0.2441	125	183	6.2
8594063	-	-	-	6.30	0.2480			6.3
8594064	-	-	-	6.40	0.2520	131	191	6.4
8594065	-	-	-	6.50	0.2559			6.5
8594066	-	-	-	6.60	0.2598	137	199	6.6
8594067	-	-	-	6.70	0.2638			6.7
8594068	-	-	-	6.80	0.2677	143	207	6.8
8594069	-	-	-	6.90	0.2717			6.9
8594070	-	-	-	7.00	0.2756	149	215	7.0
8594071	-	-	-	7.10	0.2795			7.1

Packed: 1 pc.
Available V coating only.



List 1800 (Continued)

V-SDR

SPEED FEED P323	HSSE	V	JOBBERS	35°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8594072	-	-	-	7.20	0.2835	69	109	7.2
8594073	-	-	-	7.30	0.2874			7.3
8594074	-	-	-	7.40	0.2913			7.4
8594075	-	-	-	7.50	0.2953			7.5
8594076	-	-	-	7.60	0.2992			7.6
8594077	-	-	-	7.70	0.3031	75	117	7.7
8594078	-	-	-	7.80	0.3071			7.8
8594079	-	-	-	7.90	0.3110			7.9
8594080	-	-	-	8.00	0.3150			8.0
8594081	-	-	-	8.10	0.3189			8.1
8594082	-	-	P	8.20	0.3228			8.2
8594083	-	-	-	8.30	0.3268			8.3
8594084	-	-	-	8.40	0.3307			8.4
8594085	-	-	-	8.50	0.3346			8.5
8594086	-	-	-	8.60	0.3386			8.6
8594087	-	-	-	8.70	0.3425	8.7		
8594088	-	-	-	8.80	0.3465	8.8		
8594089	-	-	-	8.90	0.3504	8.9		
8594090	-	-	-	9.00	0.3543	9.0		
8594091	-	-	-	9.10	0.3583	9.1		
8594092	-	-	-	9.20	0.3622	9.2		
8594093	-	-	-	9.30	0.3661	9.3		
8594094	-	-	-	9.40	0.3701	9.4		
8594095	-	-	-	9.50	0.3740	9.5		
8594096	-	-	-	9.60	0.3780	9.6		
8594097	-	-	-	9.70	0.3819	9.7		
8594098	-	-	-	9.80	0.3858	9.8		
8594099	-	-	W	9.90	0.3898	9.9		
8594100	-	-	-	10.00	0.3937	10.0		
8594101	-	-	-	10.10	0.3976	10.1		
8594102	-	-	-	10.20	0.4016	10.2		
8594103	-	-	-	10.30	0.4055	10.3		
8594104	-	-	-	10.40	0.4094	10.4		
8594105	-	-	-	10.50	0.4134	10.5		
8594106	-	-	-	10.60	0.4173	10.6		
8594107	-	-	-	10.70	0.4213	10.7		
8594108	-	-	-	10.80	0.4252	10.8		
8594109	-	-	-	10.90	0.4291	10.9		
8594110	-	-	-	11.00	0.4331	11.0		
8594111	-	-	-	11.10	0.4370	11.1		
8594112	-	-	-	11.20	0.4409	11.2		
8594113	-	-	-	11.30	0.4449	11.3		
8594114	-	-	-	11.40	0.4488	11.4		
8594115	-	-	-	11.50	0.4528	11.5		
8594116	-	-	-	11.60	0.4567	11.6		
8594117	-	-	-	11.70	0.4606	11.7		
8594118	-	-	-	11.80	0.4646	11.8		
8594119	-	-	-	11.90	0.4685	11.9		
						101	151	11.9

Packed: 1 pc.
Available V coating only.

continued on next page **EXD**

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1800	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

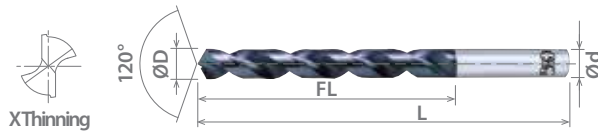
good best





List 1800 (Continued)

V-SDR



SPEED FEED	HSSE	V	JOBBERS	35°
P323				

Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 13	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
8594120	-	-	-	12.00	0.4724	101	151	12.0
8594121	-	-	-	12.10	0.4764			12.1
8594122	-	-	-	12.20	0.4803			12.2
8594123	31/64	-	-	12.30	0.4843			12.3
8594124	-	-	-	12.40	0.4882			12.4
8594125	-	-	-	12.50	0.4921			12.5
8594126	-	-	-	12.60	0.4961			12.6
8594127	1/2	-	-	12.70	0.5000			12.7
8594128	-	-	-	12.80	0.5039			12.8
8594129	-	-	-	12.90	0.5079			12.9
8594130	-	-	-	13.00	0.5118			13.0

Packed: 1 pc.
Available V coating only.



Work Material

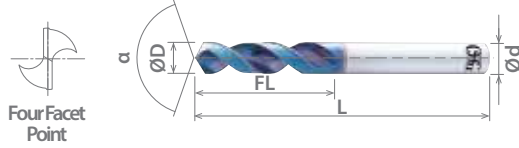
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1800	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

good best



List 1150

NEXUS-GDS, Designed for a Wide Range of Materials



SPEED FEED P324-325	HSSE	WD1	STUB	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8650100	-	-	-	1.00	0.0394	6	38	3	140°
11507615	-	-	-	1.25	0.0492	8	40		
11509115	-	54	-	1.40	0.0550	9	41		
8650150	-	-	-	1.50	0.0591	10	42		
11511115	-	-	-	1.60	0.0630				
11511615	-	-	-	1.65	0.0650	11	43		
11512915	-	50	-	1.78	0.0700				
8650180	-	-	-	1.80	0.0709				
8650181	-	-	-	1.81	0.0713				
8650183	-	-	-	1.83	0.0720	12	44		
11513615	-	49	-	1.85	0.0730				
11514915	5/64	-	-	1.98	0.0781	13	45		
8650200	-	-	-	2.00	0.0787				
11515915	-	45	-	2.08	0.0820				
8650211	-	-	-	2.11	0.0831				
8650213	-	-	-	2.13	0.0839				
11516915	-	44	-	2.18	0.0860				
11517715	-	43	-	2.26	0.0890				
8650228	-	-	-	2.28	0.0898				
8650230	-	-	-	2.30	0.0906				
11518815	-	42	-	2.37	0.0935			14	46
8650238	3/32	-	-	2.38	0.0937				
8650240	-	-	-	2.40	0.0945				
8650250	-	-	-	2.50	0.0984				
11520415	-	39	-	2.53	0.0995	16	48		
11520915	-	38	-	2.58	0.1015				
8650260	-	-	-	2.60	0.1024				
11521515	-	37	-	2.64	0.1040				
11522215	-	36	-	2.71	0.1065				
8650276	-	-	-	2.76	0.1087				
8650278	7/64	-	-	2.78	0.1094				
8650280	-	-	-	2.80	0.1102				
11523815	-	33	-	2.87	0.1130				
11524115	-	-	-	2.90	0.1142			18	50
8650300	-	-	-	3.00	0.1181				
11526115	-	-	-	3.10	0.1220				
11526915	1/8	-	-	3.18	0.1250				
8650320	-	-	-	3.20	0.1260				
8650325	-	-	-	3.25	0.1280				
8650330	-	-	-	3.30	0.1299				
8650340	-	-	-	3.40	0.1339	20	52		
11529615	-	29	-	3.45	0.1360				

Packed: 1 pc.
Available WD1 coating only.

continued on next page  **EXD**

List No.	Work Material																		
	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
1150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

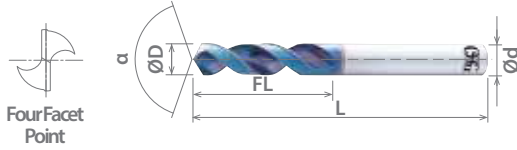
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List 1150 (Continued)

NEXUS-GDS, Designed for a Wide Range of Materials



SPEED FEED P324-325	HSSE	WD1	STUB	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8650350	-	-	-	3.50	0.1378	20	52	4	130°
11530815	9/64	-	-	3.57	0.1406				
8650365	-	-	-	3.65	0.1437				
8650367	-	-	-	3.67	0.1445				
11533115	-	25	-	3.80	0.1495	22	54	6	120°
8650390	-	-	-	3.90	0.1535				
11534815	5/32	-	-	3.97	0.1562				
8650400	-	-	-	4.00	0.1575				
11535515	-	21	-	4.04	0.1590	24	68	8	120°
8650410	-	-	-	4.10	0.1614				
8650420	-	-	-	4.20	0.1654				
8650430	-	-	-	4.30	0.1693				
11538815	11/64	-	-	4.37	0.1719	26	70	10	120°
8650450	-	16	-	4.50	0.1772				
8650459	-	-	-	4.59	0.1807				
11541315	-	14	-	4.62	0.1820				
8650463	-	-	-	4.63	0.1823	28	72	12	120°
11542715	3/16	-	-	4.76	0.1875				
8650500	-	-	-	5.00	0.1969				
11545615	-	8	-	5.05	0.1990				
8650510	-	-	-	5.10	0.2008	31	75	14	120°
11546215	-	7	-	5.11	0.2010				
11546715	13/64	-	-	5.16	0.2031				
8650520	-	-	-	5.20	0.2047				
11549215	-	3	-	5.41	0.2130	34	78	16	120°
8650548	-	-	-	5.48	0.2157				
8650550	-	-	-	5.50	0.2165				
11550715	7/32	-	-	5.56	0.2188				
11551115	-	-	-	5.60	0.2205	37	81	18	120°
11553015	-	1	-	5.79	0.2280				
11554615	15/64	-	-	5.95	0.2344				
8650600	-	-	-	6.00	0.2362				
11555815	1/4	-	E	6.35	0.2500	40	90	20	120°
11556115	-	-	-	6.50	0.2559				
11556215	-	-	-	6.52	0.2567				
8650680	-	-	-	6.80	0.2677				
8650690	-	-	I	6.90	0.2717	40	90	22	120°
8650700	-	-	-	7.00	0.2756				
11557815	-	-	-	7.30	0.2874				
8650734	-	-	-	7.34	0.2890				
8650738	-	-	-	7.38	0.2906	40	90	24	120°
11558315	-	-	-	7.45	0.2933				
11559315	5/16	-	-	7.94	0.3125				
8650800	-	-	-	8.00	0.3150				
8650810	-	-	-	8.10	0.3188	40	90	26	120°
11559915	-	-	P	8.20	0.3230				
11560415	-	-	-	8.43	0.3319				
8650850	-	-	-	8.50	0.3346				
8650860	-	-	-	8.60	0.3386	40	90	28	120°
8650880	-	-	-	8.80	0.3465				
11561315	-	-	-	8.83	0.3476				
8650900	-	-	-	9.00	0.3543				

Packed: 1 pc.
Available WD1 coating only.



List 1150 (Continued)

SPEED FEED P324-325	HSSE	WD1	STUB	40°
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NEXUS-GDS, Designed for a Wide Range of Materials

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
11561815	-	-	-	9.05	0.3563	40	90	10	120°
8650918	-	-	-	9.18	0.3614				
8650920	-	-	-	9.20	0.3622				
8650924	-	-	-	9.24	0.3638				
8650934	-	-	-	9.34	0.3677				
8650936	-	-	-	9.36	0.3685				
11563215	3/8	-	-	9.53	0.3750				
11564115	25/64	-	-	9.92	0.3906				
8651000	-	-	-	10.00	0.3937				
11564715	-	-	-	10.20	0.4016				
8651030	-	-	-	10.30	0.4055	43	100		
11565015	13/32	-	-	10.32	0.4062				
8651040	-	-	-	10.40	0.4094				
8651050	-	-	-	10.50	0.4134				
11565915	27/64	-	-	10.71	0.4219				
8651100	-	-	-	11.00	0.4331	47	104		
11566815	7/16	-	-	11.11	0.4375				
11567715	29/64	-	-	11.51	0.4531				
11568415	-	-	-	11.85	0.4665				
8651200	-	-	-	12.00	0.4724				
11568815	-	-	-	12.10	0.4764	51	108		
11569415	1/2	-	-	12.70	0.5000				

Packed: 1 pc.
Available WD1 coating only.



Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
1150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

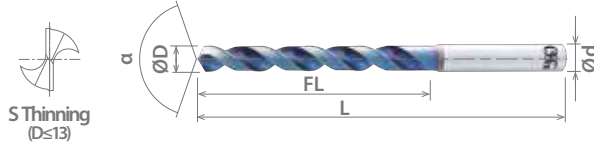
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List 1650

NEXUS-GDR, Designed for a Wide Range of Materials



SPEED FEED P324-325	HSSE	WD1	JOBBERS	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8655200	-	-	-	2.00	0.0787	24	56	3	130°
16502715	-	43	-	2.26	0.0890	27	59		
8655230	-	-	-	2.30	0.0906				
16503915	3/32	-	-	2.38	0.0938	30	62		
8655250	-	-	-	2.50	0.0984				
16505915	-	38	-	2.58	0.1015				
8655260	-	-	-	2.60	0.1024	33	65		
8655280	-	-	-	2.80	0.1102				
16508815	-	33	-	2.87	0.1130				
8655300	-	-	-	3.00	0.1181	36	68		
16511915	1/8	-	-	3.18	0.1250				
8655330	-	-	-	3.30	0.1299				
8655340	-	-	-	3.40	0.1339	39	71		
16514615	-	29	-	3.45	0.1360				
8655350	-	-	-	3.50	0.1378				
16515815	9/64	-	-	3.57	0.1406	43	75		
16518115	-	25	-	3.80	0.1495				
16519815	5/32	-	-	3.97	0.1562				
8655400	-	-	-	4.00	0.1575	47	91		
16520515	-	21	-	4.04	0.1590				
8655420	-	-	-	4.20	0.1654				
8655430	-	-	-	4.30	0.1693	52	96		
8655450	-	16	-	4.50	0.1772				
16527715	3/16	-	-	4.76	0.1875				
8655500	-	-	-	5.00	0.1969	57	101		
8655510	-	-	-	5.10	0.2008				
16531215	-	7	-	5.11	0.2010				
16531715	13/64	-	-	5.16	0.2031	63	107		
8655520	-	-	-	5.20	0.2047				
16534215	-	3	-	5.41	0.2130				
8655550	-	-	-	5.50	0.2165	69	113		
16535715	7/32	-	-	5.56	0.2188				
8655600	-	-	-	6.00	0.2362				
16540815	1/4	-	E	6.35	0.2500	75	119		
8655680	-	-	-	6.80	0.2677				
8655690	-	-	I	6.90	0.2717				
8655700	-	-	-	7.00	0.2756	81	131		
16544015	5/16	-	-	7.94	0.3125				
8655800	-	-	-	8.00	0.3150				
8655850	-	-	-	8.50	0.3346	87	144		
8655860	-	-	-	8.60	0.3386				
8655880	-	-	-	8.80	0.3465				
8655900	-	-	-	9.00	0.3543	87	137		
16547315	3/8	-	-	9.53	0.3750				
8656000	-	-	-	10.00	0.3937				
8656030	-	-	-	10.30	0.4055	87	144		
8656040	-	-	-	10.40	0.4094				

Packed: 1 pc.
Available WD1 coating only.



List 1650 (Continued)

SPEED FEED P324-325	HSSE	WD1	JOBBERS	40°
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NEXUS-GDR, Designed for a Wide Range of Materials

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
	Fractional Size	Wire Gage	Letter Size	mm	Inch				
8656050	-	-	-	10.50	0.4134	87	144	12	120°
8656100	-	-	-	11.00	0.4331	94	151		
16550615	7/16	-	-	11.11	0.4375				
8656200	-	-	-	12.00	0.4724	101	158		
16553115	1/2	-	-	12.70	0.5000				

Packed: 1 pc.
Available WD1 coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1650	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

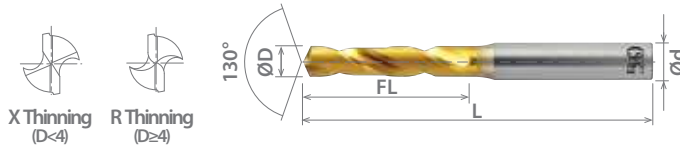
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List 1000

EX-GDS, Ideal for General Applications



SPEED FEED	HSS-Co	TiN	STUB	25°
P326				

Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.99 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
10078505	-	47	-	1.99	0.0785	17	33	1/8
10081005	-	46	-	2.06	0.0810	19	50	
10082005	-	45	-	2.08	0.0820			
10086005	-	44	-	2.18	0.0860			
10089005	-	43	-	2.26	0.0890			
10093505	-	42	-	2.37	0.0935			
10093805	3/32	-	-	2.38	0.0938			
10096005	-	41	-	2.44	0.0960			
10098005	-	40	-	2.49	0.0980			
10099505	-	39	-	2.53	0.0995			
10101505	-	38	-	2.58	0.1015			20
10104005	-	37	-	2.64	0.1040			
10106505	-	36	-	2.71	0.1065			
10109405	7/64	-	-	2.78	0.1094			
10110005	-	35	-	2.79	0.1100			
10111005	-	34	-	2.82	0.1110			
10113005	-	33	-	2.87	0.1130			
10116005	-	32	-	2.95	0.1160			
10120005	-	31	-	3.05	0.1200			
10125005	1/8	-	-	3.18	0.1250			
10128505	-	30	-	3.26	0.1285	22	58	
10136005	-	29	-	3.45	0.1360			
10140505	-	28	-	3.57	0.1405			
10140605	9/64	-	-	3.57	0.1406			
10144005	-	27	-	3.66	0.1440			
10147005	-	26	-	3.73	0.1470			
10149505	-	25	-	3.80	0.1495			
10152005	-	24	-	3.86	0.1520			
10154005	-	23	-	3.91	0.1540			
10156205	5/32	-	-	3.97	0.1562			
10157005	-	22	-	3.99	0.1570	23	60	
10159005	-	21	-	4.04	0.1590			
10161005	-	20	-	4.09	0.1610			
10166005	-	19	-	4.22	0.1660			
10169505	-	18	-	4.31	0.1695			
10171905	11/64	-	-	4.37	0.1719			
10173005	-	17	-	4.39	0.1730			
10177005	-	16	-	4.50	0.1770			
10180005	-	15	-	4.57	0.1800			
10182005	-	14	-	4.62	0.1820			
10185005	-	13	-	4.70	0.1850	25	61	
10187505	3/16	-	-	4.76	0.1875			
10189005	-	12	-	4.80	0.1890			
10191005	-	11	-	4.85	0.1910			
10193505	-	10	-	4.92	0.1935			
10196005	-	9	-	4.98	0.1960			
10199005	-	8	-	5.05	0.1990			
10199005	-	8	-	5.05	0.1990			

Packed: 1 pc.
Available TiN coating only.





List 1000 (Continued)

EX-GDS, Ideal for General Applications

SPEED FEED P326	HSS-Co	TiN	STUB	25°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
10201005	-	7	-	5.11	0.2010	30	76	1/4
10203105	13/64	-	-	5.16	0.2031			
10204005	-	6	-	5.18	0.2040			
10205505	-	5	-	5.22	0.2055			
10209005	-	4	-	5.31	0.2090			
10213005	-	3	-	5.41	0.2130			
10218805	7/32	-	-	5.56	0.2188			
10221005	-	2	-	5.61	0.2210			
10228005	-	1	-	5.79	0.2280			
10234005	-	-	A	5.94	0.2340			
10234405	15/64	-	-	5.95	0.2344			
10238005	-	-	B	6.05	0.2380			
10242005	-	-	C	6.15	0.2420			
10246005	-	-	D	6.25	0.2460			
10250005	1/4	-	E	6.35	0.2500			
10257005	-	-	F	6.53	0.2570			
10261005	-	-	G	6.63	0.2610			
10265605	17/64	-	-	6.75	0.2656			
10272005	-	-	I	6.91	0.2720			
10277005	-	-	J	7.04	0.2770			
10281205	9/32	-	-	7.14	0.2812			
10290005	-	-	L	7.37	0.2900			
10295005	-	-	M	7.49	0.2950			
10296905	19/64	-	-	7.54	0.2969			
10302005	-	-	N	7.67	0.3020			
10312505	5/16	-	-	7.94	0.3125			
10316005	-	-	O	8.03	0.3160			
10323005	-	-	P	8.20	0.3230			
10328105	21/64	-	-	8.33	0.3281			
10332005	-	-	Q	8.43	0.3320			
10339005	-	-	R	8.61	0.3390			
10343805	11/32	-	-	8.73	0.3438			
10348005	-	-	S	8.84	0.3480			
10358005	-	-	T	9.09	0.3580			
10359405	23/64	-	-	9.13	0.3594			
10368005	-	-	U	9.35	0.3680			
10375005	3/8	-	-	9.53	0.3750			
10377005	-	-	V	9.58	0.3770			
10386005	-	-	W	9.80	0.3860			
10390605	25/64	-	-	9.92	0.3906			
10397005	-	-	X	10.08	0.3970			
10404005	-	-	Y	10.26	0.4040			
10406205	13/32	-	-	10.32	0.4062			

Packed: 1 pc.
Available TiN coating only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

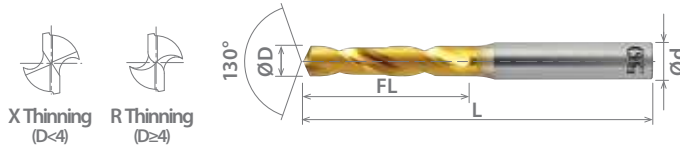
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List 1000 (Continued)

EX-GDS, Ideal for General Applications



SPEED FEED	HSS-Co	TiN	STUB	25°
P326				

Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.99 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 12.7	+0 / -0.027	+0 / -0.0011

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
10413005	-	-	Z	10.49	0.4130	50	103	1/2
10421905	27/64	-	-	10.72	0.4219			
10437505	7/16	-	-	11.11	0.4375	52	105	
10453105	29/64	-	-	11.51	0.4531			
10468805	15/32	-	-	11.91	0.4688	53	107	
10484405	31/64	-	-	12.30	0.4844	55	108	
10500005	1/2	-	-	12.70	0.5000	57	110	

Packed: 1 pc.
Available TiN coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

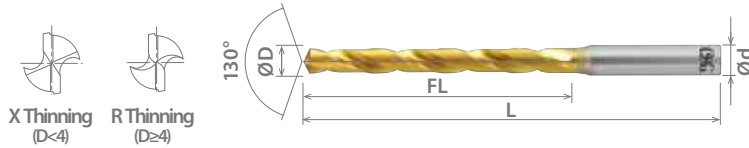
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List 1500

EX-GDR, Ideal for General Applications



SPEED FEED P326	HSS-Co	TiN	JOBBERS	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.99≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤19.05	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
15078505	-	47	-	1.99	0.0785	25	57	1/8
15081005	-	46	-	2.06	0.0810	28	60	
15082005	-	45	-	2.08	0.0820			
15086005	-	44	-	2.18	0.0860	31	63	
15089005	-	43	-	2.26	0.0890			
15093505	-	42	-	2.37	0.0935	34	66	
15093805	3/32	-	-	2.38	0.0938			
15096005	-	41	-	2.44	0.0960	36	71	
15098005	-	40	-	2.49	0.0980			
15099505	-	39	-	2.53	0.0995	3/16		
15101505	-	38	-	2.58	0.1015		38	74
15104005	-	37	-	2.64	0.1040			
15106505	-	36	-	2.71	0.1065		41	77
15109405	7/64	-	-	2.78	0.1094			
15110005	-	35	-	2.79	0.1100		44	80
15111005	-	34	-	2.82	0.1110			
15113005	-	33	-	2.87	0.1130		47	84
15116005	-	32	-	2.95	0.1160			
15120005	-	31	-	3.05	0.1200		50	87
15125005	1/8	-	-	3.18	0.1250			
15128505	-	30	-	3.26	0.1285	53	90	
15136005	-	29	-	3.45	0.1360			
15140505	-	28	-	3.57	0.1405	55	92	
15140605	9/64	-	-	3.57	0.1406			
15144005	-	27	-	3.66	0.1440			
15147005	-	26	-	3.73	0.1470			
15149505	-	25	-	3.80	0.1495			
15152005	-	24	-	3.86	0.1520			
15154005	-	23	-	3.91	0.1540			
15156205	5/32	-	-	3.97	0.1562			
15157005	-	22	-	3.99	0.1570			
15159005	-	21	-	4.04	0.1590			
15161005	-	20	-	4.09	0.1610			
15166005	-	19	-	4.22	0.1660			
15169505	-	18	-	4.31	0.1695			
15171905	11/64	-	-	4.37	0.1719			
15173005	-	17	-	4.39	0.1730			
15177005	-	16	-	4.50	0.1770			

Packed: 1 pc.
Available TiN coating only.

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List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>				

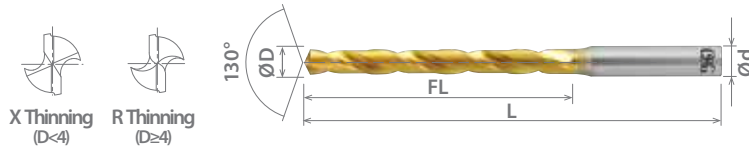
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List 1500 (Continued)

EX-GDR, Ideal for General Applications



SPEED FEED P326	HSS-Co	TiN	JOBBERS	30°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
1.99≤D≤3	+0/-0.014	+0/-0.0006
3<D≤6	+0/-0.018	+0/-0.0007
6<D≤10	+0/-0.022	+0/-0.0009
10<D≤18	+0/-0.027	+0/-0.0011
18<D≤19.05	+0/-0.033	+0/-0.0013

EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
15180005	-	15	-	4.57	0.1800	55	92	3/16
15182005	-	14	-	4.62	0.1820	58	95	
15185005	-	13	-	4.70	0.1850		61	104
15187505	3/16	-	-	4.76	0.1875	63		109
15189005	-	12	-	4.80	0.1890		66	
15191005	-	11	-	4.85	0.1910	69		115
15193505	-	10	-	4.92	0.1935		73	
15196005	-	9	-	4.98	0.1960	77		123
15199005	-	8	-	5.05	0.1990		80	
15201005	-	7	-	5.11	0.2010	84		130
15203105	-	-	-	5.16	0.2031		87	
15204005	-	6	-	5.18	0.2040	88		134
15205505	-	5	-	5.22	0.2055		92	
15209005	-	4	-	5.31	0.2090	92		138
15213005	-	3	-	5.41	0.2130		92	
15218805	7/32	-	-	5.56	0.2188	92		138
15221005	-	2	-	5.61	0.2210		92	
15228005	-	1	-	5.79	0.2280	92		138
15234005	-	-	A	5.94	0.2340		92	
15234405	15/64	-	-	5.95	0.2344	92		138
15238005	-	-	B	6.05	0.2380		92	
15242005	-	-	C	6.15	0.2420	92		138
15246005	-	-	D	6.25	0.2460		92	
15250005	1/4	-	E	6.35	0.2500	92		138
15257005	-	-	F	6.53	0.2570		92	
15261005	-	-	G	6.63	0.2610	92		138
15265605	17/64	-	-	6.75	0.2656		92	
15272005	-	-	I	6.91	0.2720	92		138
15277005	-	-	J	7.04	0.2770		92	
15281205	9/32	-	-	7.14	0.2812	92		138
15290005	-	-	L	7.37	0.2900		92	
15295005	-	-	M	7.49	0.2950	92		138
15296905	19/64	-	-	7.54	0.2969		92	
15302005	-	-	N	7.67	0.3020	92		138
15312505	5/16	-	-	7.94	0.3125		92	
15316005	-	-	O	8.03	0.3160	92		138
15323005	-	-	P	8.20	0.3230		92	
15328105	21/64	-	-	8.33	0.3281	92		138
15332005	-	-	Q	8.43	0.3320		92	
15339005	-	-	R	8.61	0.3390	92		138
15343805	11/32	-	-	8.73	0.3438		92	
15348005	-	-	S	8.84	0.3480	92		138
15358005	-	-	T	9.09	0.3580		92	
15359405	23/64	-	-	9.13	0.3594	92		138
15368005	-	-	U	9.35	0.3680		92	
15375005	3/8	-	-	9.53	0.3750	92		138
15377005	-	-	V	9.58	0.3770		145	

Packed: 1 pc.
Available TiN coating only.





List 1500 (Continued)

EX-GDR, Ideal for General Applications

SPEED FEED P326	HSS-Co	TiN	JOBBERS	30°
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EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
15386005	-	-	W	9.80	0.3860	95	148	1/2
15390605	25/64	-	-	9.92	0.3906			
15397005	-	-	X	10.08	0.3970			
15404005	-	-	Y	10.26	0.4040			
15406205	13/32	-	-	10.32	0.4062			
15413005	-	-	Z	10.49	0.4130			
15421905	27/64	-	-	10.72	0.4219			
15437505	7/16	-	-	11.11	0.4375			
15453105	29/64	-	-	11.51	0.4531			
15468805	15/32	-	-	11.91	0.4688			
15484405	31/64	-	-	12.30	0.4844			
15500005	1/2	-	-	12.70	0.5000			
15531205	17/32	-	-	13.49	0.5312			
15562505	9/16	-	-	14.29	0.5625			
15578105	37/64	-	-	14.68	0.5781			
15593805	19/32	-	-	15.08	0.5938			
15625005	5/8	-	-	15.88	0.6250			
15656205	21/32	-	-	16.67	0.6563			
15687505	11/16	-	-	17.46	0.6875			
15718805	23/32	-	-	18.26	0.7188			
15750005	3/4	-	-	19.05	0.7500			
						122	182	5/8
						131	199	3/4
						142	210	1/8
						149	216	

Packed: 1 pc.
Available TiN coating only.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>				

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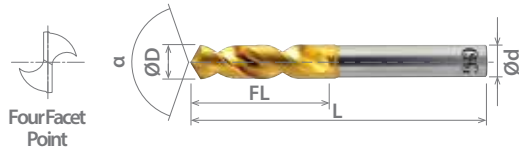




List 1100

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED	HSSE	TiN	TiAlN	STUB	40°
P327					



Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 30	+0 / -0.033	+0 / -0.0013
30 < D ≤ 32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
61505	6150511	-	-	-	0.50	0.0197	3	38	3	150°
8595051	859505111	-	76	-	0.51	0.0201				
8595052	-	-	-	-	0.52	0.0205				
8595053	-	-	75	-	0.53	0.0209				
8595054	-	-	-	-	0.54	0.0213				
8595055	-	-	-	-	0.55	0.0217				
8595056	-	-	-	-	0.56	0.0220				
8595057	859505711	-	74	-	0.57	0.0224				
8595058	-	-	-	-	0.58	0.0228				
8595059	-	-	-	-	0.59	0.0232				
61506	6150611	-	-	-	0.60	0.0236				
8595061	-	-	73	-	0.61	0.0240				
8595062	-	-	-	-	0.62	0.0244				
8595063	-	-	-	-	0.63	0.0248				
8595064	859506411	-	72	-	0.64	0.0252				
8595065	859506511	-	-	-	0.65	0.0256				
8595066	-	-	71	-	0.66	0.0260				
8595067	-	-	-	-	0.67	0.0264				
8595068	-	-	-	-	0.68	0.0268				
8595069	-	-	-	-	0.69	0.0272				
61507	6150711	-	-	-	0.70	0.0276				
8595071	859507111	-	70	-	0.71	0.0280				
8595072	-	-	-	-	0.72	0.0283				
8595073	-	-	-	-	0.73	0.0287				
8595074	-	-	69	-	0.74	0.0291				
8595075	-	-	-	-	0.75	0.0295				
8595076	-	-	-	-	0.76	0.0299				
8595077	-	-	-	-	0.77	0.0303				
8595078	-	-	-	-	0.78	0.0307				
8595079	859507911	1/32	68	-	0.79	0.0311				
61508	-	-	-	-	0.80	0.0315				
8595081	859508111	-	67	-	0.81	0.0319				
8595082	-	-	-	-	0.82	0.0323				
8595083	-	-	-	-	0.83	0.0327				
8595084	859508411	-	66	-	0.84	0.0331				
8595085	-	-	-	-	0.85	0.0335				
8595086	-	-	-	-	0.86	0.0339				
8595087	-	-	-	-	0.87	0.0343				
8595088	-	-	-	-	0.88	0.0346				
8595089	-	-	65	-	0.89	0.0350				
61509	-	-	-	-	0.90	0.0354				
8595091	859509111	-	64	-	0.91	0.0358				
8595092	-	-	-	-	0.92	0.0362				
8595093	-	-	-	-	0.93	0.0366				
8595094	-	-	63	-	0.94	0.0370				
8595095	-	-	-	-	0.95	0.0374				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595096	-	-	-	-	0.96	0.0378	6	38	3	150°
8595097	-	-	62	-	0.97	0.0382				
8595098	-	-	-	-	0.98	0.0386				
8595099	-	-	61	-	0.99	0.0390				
61510	6151011	-	-	-	1.00	0.0394				
8595101	-	-	-	-	1.01	0.0398				
8595102	859510211	-	60	-	1.02	0.0402				
8595103	859510311	-	-	-	1.03	0.0406				
8595104	-	-	59	-	1.04	0.0409				
8595105	-	-	-	-	1.05	0.0413				
8595106	-	-	-	-	1.06	0.0417				
8595107	-	-	58	-	1.07	0.0421				
8595108	-	-	-	-	1.08	0.0425				
8595109	859510911	-	57	-	1.09	0.0429				
61511	6151111	-	-	-	1.10	0.0433				
8595111	-	-	-	-	1.11	0.0437				
8595112	-	-	-	-	1.12	0.0441				
8595113	-	-	-	-	1.13	0.0445				
8595114	859511411	-	-	-	1.14	0.0449				
8595115	-	-	-	-	1.15	0.0453				
8595116	-	-	-	-	1.16	0.0457				
8595117	-	-	-	-	1.17	0.0461				
8595118	859511811	-	56	-	1.18	0.0465				
8595119	859511911	3/64	-	-	1.19	0.0469				
61512	6151211	-	-	-	1.20	0.0472				
8595121	-	-	-	-	1.21	0.0476				
8595122	859512211	-	-	-	1.22	0.0480				
8595123	-	-	-	-	1.23	0.0484				
8595124	-	-	-	-	1.24	0.0488				
8595125	859512511	-	-	-	1.25	0.0492				
8595126	-	-	-	-	1.26	0.0496				
8595127	859512711	-	-	-	1.27	0.0500				
8595128	-	-	-	-	1.28	0.0504				
8595129	-	-	-	-	1.29	0.0508				
61513	-	-	-	-	1.30	0.0512				
8595131	-	-	-	-	1.31	0.0516				
8595132	859513211	-	55	-	1.32	0.0520				
8595133	-	-	-	-	1.33	0.0524				
8595134	-	-	-	-	1.34	0.0528				
8595135	859513511	-	-	-	1.35	0.0531				
8595136	-	-	-	-	1.36	0.0535				
8595137	-	-	-	-	1.37	0.0539				
8595138	-	-	-	-	1.38	0.0543				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High				300	400		17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

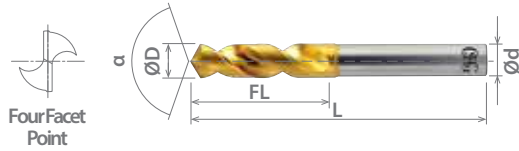
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List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel



SPEED FEED	HSSE	TiN	TiAlN	STUB	40°
	P327				

Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595139	-	-	-	-	1.39	0.0547	9	41	3	140°
61514	6151411	-	54	-	1.40	0.0551				
8595141	859514111	-	-	-	1.41	0.0555				
8595142	-	-	-	-	1.42	0.0559				
8595143	-	-	-	-	1.43	0.0563				
8595144	859514411	-	-	-	1.44	0.0567				
8595145	859514511	-	-	-	1.45	0.0571				
8595146	-	-	-	-	1.46	0.0575				
8595147	-	-	-	-	1.47	0.0579				
8595148	-	-	-	-	1.48	0.0583				
8595149	-	-	-	-	1.49	0.0587				
61515	6151511	-	-	-	1.50	0.0591				
8595151	859515111	-	53	-	1.51	0.0594				
8595152	859515211	-	-	-	1.52	0.0598				
8595153	-	-	-	-	1.53	0.0602				
8595154	-	-	-	-	1.54	0.0606				
8595155	859515511	-	-	-	1.55	0.0610				
8595156	859515611	-	-	-	1.56	0.0614				
8595157	859515711	-	-	-	1.57	0.0618				
8595158	859515811	-	-	-	1.58	0.0622				
8595159	859515911	1/16	-	-	1.59	0.0626				
61516	6151611	-	-	-	1.60	0.0630				
8595161	859516111	-	52	-	1.61	0.0634				
8595162	859516211	-	-	-	1.62	0.0638				
8595163	-	-	-	-	1.63	0.0642				
8595164	-	-	-	-	1.64	0.0646				
8595165	859516511	-	-	-	1.65	0.0650				
8595166	-	-	-	-	1.66	0.0654				
8595167	-	-	-	-	1.67	0.0657				
8595168	-	-	-	-	1.68	0.0661				
8595169	-	-	-	-	1.69	0.0665				
61517	6151711	-	51	-	1.70	0.0669				
8595171	859517111	-	-	-	1.71	0.0673				
8595172	859517211	-	-	-	1.72	0.0677				
8595173	-	-	-	-	1.73	0.0681				
8595174	859517411	-	-	-	1.74	0.0685				
8595175	859517511	-	-	-	1.75	0.0689				
8595176	859517611	-	-	-	1.76	0.0693				
8595177	859517711	-	-	-	1.77	0.0697				
8595178	859517811	-	50	-	1.78	0.0701				
8595179	-	-	-	-	1.79	0.0705				
61518	6151811	-	-	-	1.80	0.0709				
8595181	-	-	-	-	1.81	0.0713				
8595182	-	-	-	-	1.82	0.0717				
8595183	-	-	-	-	1.83	0.0720				
8595184	-	-	-	-	1.84	0.0724				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595185	859518511	-	49	-	1.85	0.0728	11	43	3	140°
8595186	-	-	-	-	1.86	0.0732				
8595187	-	-	-	-	1.87	0.0736				
8595188	-	-	-	-	1.88	0.0740				
8595189	-	-	-	-	1.89	0.0744				
61519	6151911	-	-	-	1.90	0.0748				
8595191	859519111	-	-	-	1.91	0.0752				
8595192	-	-	-	-	1.92	0.0756				
8595193	-	-	48	-	1.93	0.0760				
8595194	-	-	-	-	1.94	0.0764				
8595195	859519511	-	-	-	1.95	0.0768				
8595196	-	-	-	-	1.96	0.0772				
8595197	859519711	-	-	-	1.97	0.0776				
8595198	859519811	5/64	-	-	1.98	0.0780				
8595199	859519911	-	47	-	1.99	0.0783				
61520	6152011	-	-	-	2.00	0.0787				
8595201	-	-	-	-	2.01	0.0791				
8595202	-	-	-	-	2.02	0.0795				
8595203	-	-	-	-	2.03	0.0799				
8595204	-	-	-	-	2.04	0.0803				
8595205	859520511	-	-	-	2.05	0.0807				
8595206	-	-	46	-	2.06	0.0811				
8595207	-	-	-	-	2.07	0.0815				
8595208	859520811	-	45	-	2.08	0.0819				
8595209	-	-	-	-	2.09	0.0823				
61521	-	-	-	-	2.10	0.0827				
8595211	-	-	-	-	2.11	0.0831				
8595212	-	-	-	-	2.12	0.0835				
8595213	-	-	-	-	2.13	0.0839				
8595214	-	-	-	-	2.14	0.0843				
8595215	859521511	-	-	-	2.15	0.0846				
8595216	-	-	-	-	2.16	0.0850				
8595217	-	-	-	-	2.17	0.0854				
8595218	-	-	44	-	2.18	0.0858				
8595219	859521911	-	-	-	2.19	0.0862				
61522	6152211	-	-	-	2.20	0.0866				
8595221	-	-	-	-	2.21	0.0870				
8595222	-	-	-	-	2.22	0.0874				
8595223	-	-	-	-	2.23	0.0878				
8595224	-	-	-	-	2.24	0.0882				
8595225	859522511	-	-	-	2.25	0.0886				
8595226	859522611	-	43	-	2.26	0.0890				
8595227	-	-	-	-	2.27	0.0894				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best

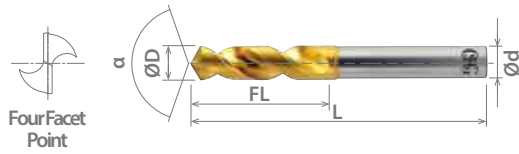




List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595228	-	-	-	-	2.28	0.0898	13	45	3	130°
8595229	-	-	-	-	2.29	0.0902				
61523	6152311	-	-	-	2.30	0.0906				
8595231	-	-	-	-	2.31	0.0909				
8595232	-	-	-	-	2.32	0.0913				
8595233	-	-	-	-	2.33	0.0917				
8595234	-	-	-	-	2.34	0.0921				
8595235	-	-	-	-	2.35	0.0925				
8595236	-	-	-	-	2.36	0.0929				
8595237	859523711	-	42	-	2.37	0.0933				
8595238	859523811	3/32	-	-	2.38	0.0937				
8595239	859523911	-	-	-	2.39	0.0941				
61524	6152411	-	-	-	2.40	0.0945				
8595241	859524111	-	-	-	2.41	0.0949				
8595242	859524211	-	-	-	2.42	0.0953				
8595243	-	-	-	-	2.43	0.0957				
8595244	859524411	-	41	-	2.44	0.0961				
8595245	859524511	-	-	-	2.45	0.0965				
8595246	859524611	-	-	-	2.46	0.0969				
8595247	-	-	-	-	2.47	0.0972				
8595248	-	-	-	-	2.48	0.0976				
8595249	859524911	-	40	-	2.49	0.0980				
61525	6152511	-	-	-	2.50	0.0984				
8595251	-	-	-	-	2.51	0.0988				
8595252	859525211	-	-	-	2.52	0.0992				
8595253	859525311	-	39	-	2.53	0.0996				
8595254	-	-	-	-	2.54	0.1000				
8595255	859525511	-	-	-	2.55	0.1004				
8595256	-	-	-	-	2.56	0.1008				
8595257	-	-	-	-	2.57	0.1012				
8595258	859525811	-	38	-	2.58	0.1016				
8595259	-	-	-	-	2.59	0.1020				
61526	6152611	-	-	-	2.60	0.1024				
8595261	-	-	-	-	2.61	0.1028				
8595262	-	-	-	-	2.62	0.1031				
8595263	-	-	-	-	2.63	0.1035				
8595264	859526411	-	37	-	2.64	0.1039				
8595265	859526511	-	-	-	2.65	0.1043				
8595266	859526611	-	-	-	2.66	0.1047				
8595267	-	-	-	-	2.67	0.1051				
8595268	-	-	-	-	2.68	0.1055				
8595269	-	-	-	-	2.69	0.1059				
61527	6152711	-	-	-	2.70	0.1063				
8595271	859527111	-	36	-	2.71	0.1067				
8595272	-	-	-	-	2.72	0.1071				
8595273	-	-	-	-	2.73	0.1075				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.



List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED	HSSE	TiN	TiAlN	STUB	40°
P327					

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595274	-	-	-	-	2.74	0.1079	16	48	3	130°
8595275	-	-	-	-	2.75	0.1083				
8595276	-	-	-	-	2.76	0.1087				
8595277	-	-	-	-	2.77	0.1091				
8595278	859527811	7/64	-	-	2.78	0.1094				
8595279	859527911	-	35	-	2.79	0.1098				
61528	6152811	-	-	-	2.80	0.1102				
8595281	-	-	-	-	2.81	0.1106				
8595282	859528211	-	34	-	2.82	0.1110				
8595283	859528311	-	-	-	2.83	0.1114				
8595284	-	-	-	-	2.84	0.1118				
8595285	859528511	-	-	-	2.85	0.1122				
8595286	859528611	-	-	-	2.86	0.1126				
8595287	-	-	33	-	2.87	0.1130				
8595288	-	-	-	-	2.88	0.1134				
8595289	-	-	-	-	2.89	0.1138				
61529	6152911	-	-	-	2.90	0.1142				
8595291	-	-	-	-	2.91	0.1146				
8595292	-	-	-	-	2.92	0.1150				
8595293	-	-	-	-	2.93	0.1154				
8595294	-	-	-	-	2.94	0.1157				
8595295	859529511	-	32	-	2.95	0.1161				
8595296	-	-	-	-	2.96	0.1165				
8595297	-	-	-	-	2.97	0.1169				
8595298	-	-	-	-	2.98	0.1173				
8595299	-	-	-	-	2.99	0.1177				
61530	6153011	-	-	-	3.00	0.1181				
8595301	-	-	-	-	3.01	0.1185				
8595302	-	-	-	-	3.02	0.1189				
8595303	-	-	-	-	3.03	0.1193				
8595304	-	-	-	-	3.04	0.1197				
8595305	859530511	-	31	-	3.05	0.1201				
8595306	-	-	-	-	3.06	0.1205				
8595307	-	-	-	-	3.07	0.1209				
8595308	-	-	-	-	3.08	0.1213				
8595309	-	-	-	-	3.09	0.1217				
61531	6153111	-	-	-	3.10	0.1220				
8595311	-	-	-	-	3.11	0.1224				
8595312	-	-	-	-	3.12	0.1228				
8595313	-	-	-	-	3.13	0.1232				
8595314	-	-	-	-	3.14	0.1236				
8595315	859531511	-	-	-	3.15	0.1240				
8595316	-	-	-	-	3.16	0.1244				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

➔ continued on next page ➔ **EXD**

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1100	☉	○				☉	☉	○		☉	☉							

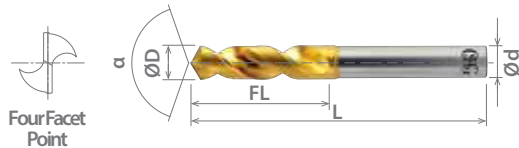
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List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel



SPEED FEED	HSSE	TiN	TiAlN	STUB	40°
P327					

Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595317	-	-	-	-	3.17	0.1248	18	50	4	130°
8595318	859531811	1/8	-	-	3.18	0.1252				
8595319	-	-	-	-	3.19	0.1256				
61532	6153211	-	-	-	3.20	0.1260				
8595321	-	-	-	-	3.21	0.1264				
8595322	859532211	-	-	-	3.22	0.1268				
8595323	-	-	-	-	3.23	0.1272				
8595324	-	-	-	-	3.24	0.1276				
8595325	859532511	-	-	-	3.25	0.1280				
8595326	859532611	-	30	-	3.26	0.1283				
8595327	859532711	-	-	-	3.27	0.1287				
8595328	-	-	-	-	3.28	0.1291				
8595329	859532911	-	-	-	3.29	0.1295				
61533	6153311	-	-	-	3.30	0.1299				
8595331	-	-	-	-	3.31	0.1303				
8595332	-	-	-	-	3.32	0.1307				
8595333	-	-	-	-	3.33	0.1311				
8595334	-	-	-	-	3.34	0.1315				
8595335	859533511	-	-	-	3.35	0.1319				
8595336	-	-	-	-	3.36	0.1323				
8595337	-	-	-	-	3.37	0.1327				
8595338	-	-	-	-	3.38	0.1331				
8595339	-	-	-	-	3.39	0.1335				
61534	6153411	-	-	-	3.40	0.1339				
8595341	-	-	-	-	3.41	0.1343				
8595342	-	-	-	-	3.42	0.1346				
8595343	-	-	-	-	3.43	0.1350				
8595344	-	-	-	-	3.44	0.1354				
8595345	859534511	-	29	-	3.45	0.1358				
8595346	859534611	-	-	-	3.46	0.1362				
8595347	859534711	-	-	-	3.47	0.1366				
8595348	-	-	-	-	3.48	0.1370				
8595349	-	-	-	-	3.49	0.1374				
61535	6153511	-	-	-	3.50	0.1378				
8595351	-	-	-	-	3.51	0.1382				
8595352	-	-	-	-	3.52	0.1386				
8595353	-	-	-	-	3.53	0.1390				
8595354	-	-	-	-	3.54	0.1394				
8595355	-	-	-	-	3.55	0.1398				
8595356	-	-	-	-	3.56	0.1402				
8595357	859535711	9/64	-	-	3.57	0.1406				
8595358	-	-	-	-	3.58	0.1409				
8595359	-	-	-	-	3.59	0.1413				
61536	-	-	-	-	3.60	0.1417				
8595361	-	-	-	-	3.61	0.1421				
8595362	-	-	-	-	3.62	0.1425				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595363	-	-	-	-	3.63	0.1429	20	52	4	130°
8595364	-	-	-	-	3.64	0.1433				
8595365	-	-	-	-	3.65	0.1437				
8595366	859536611	-	27	-	3.66	0.1441				
8595367	-	-	-	-	3.67	0.1445				
8595368	-	-	-	-	3.68	0.1449				
8595369	-	-	-	-	3.69	0.1453				
61537	6153711	-	-	-	3.70	0.1457				
8595371	-	-	-	-	3.71	0.1461				
8595372	-	-	-	-	3.72	0.1465				
8595373	859537311	-	26	-	3.73	0.1469				
8595374	-	-	-	-	3.74	0.1472				
8595375	859537511	-	-	-	3.75	0.1476				
8595376	-	-	-	-	3.76	0.1480				
8595377	-	-	-	-	3.77	0.1484				
8595378	-	-	-	-	3.78	0.1488				
8595379	-	-	-	-	3.79	0.1492				
61538	6153811	-	25	-	3.80	0.1496				
8595381	-	-	-	-	3.81	0.1500				
8595382	-	-	-	-	3.82	0.1504				
8595383	-	-	-	-	3.83	0.1508				
8595384	-	-	-	-	3.84	0.1512				
8595385	859538511	-	-	-	3.85	0.1516				
8595386	859538611	-	24	-	3.86	0.1520				
8595387	-	-	-	-	3.87	0.1524				
8595388	-	-	-	-	3.88	0.1528				
8595389	-	-	-	-	3.89	0.1531				
61539	-	-	-	-	3.90	0.1535				
8595391	859539111	-	23	-	3.91	0.1539				
8595392	-	-	-	-	3.92	0.1543				
8595393	-	-	-	-	3.93	0.1547				
8595394	-	-	-	-	3.94	0.1551				
8595395	859539511	-	-	-	3.95	0.1555				
8595396	-	-	-	-	3.96	0.1559				
8595397	859539711	5/32	-	-	3.97	0.1563				
8595398	-	-	-	-	3.98	0.1567				
8595399	859539911	-	22	-	3.99	0.1571				
61540	6154011	-	-	-	4.00	0.1575				
8595401	-	-	-	-	4.01	0.1579				
8595402	-	-	-	-	4.02	0.1583				
8595403	-	-	-	-	4.03	0.1587				
8595404	859540411	-	21	-	4.04	0.1591				
8595405	-	-	-	-	4.05	0.1594				
							22	54		
								66	6	120°

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			4140 4340	300	400		17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best

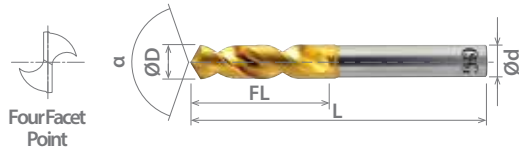




List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED	HSSE	TiN	TiAlN	STUB	40°
P327					



Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 30	+0 / -0.033	+0 / -0.0013
30 < D ≤ 32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595406	-	-	-	-	4.06	0.1598	22	66	6	120°
8595407	-	-	-	-	4.07	0.1602				
8595408	-	-	-	-	4.08	0.1606				
8595409	859540911	-	20	-	4.09	0.1610				
61541	6154111	-	-	-	4.10	0.1614				
8595411	-	-	-	-	4.11	0.1618				
8595412	-	-	-	-	4.12	0.1622				
8595413	-	-	-	-	4.13	0.1626				
8595414	-	-	-	-	4.14	0.1630				
8595415	859541511	-	-	-	4.15	0.1634				
8595416	-	-	-	-	4.16	0.1638				
8595417	859541711	-	-	-	4.17	0.1642				
8595418	-	-	-	-	4.18	0.1646				
8595419	-	-	-	-	4.19	0.1650				
61542	6154211	-	-	-	4.20	0.1654				
8595421	-	-	-	-	4.21	0.1657				
8595422	859542211	-	19	-	4.22	0.1661				
8595423	-	-	-	-	4.23	0.1665				
8595424	-	-	-	-	4.24	0.1669				
8595425	-	-	-	-	4.25	0.1673				
8595426	-	-	-	-	4.26	0.1677				
8595427	-	-	-	-	4.27	0.1681				
8595428	-	-	-	-	4.28	0.1685				
8595429	-	-	-	-	4.29	0.1689				
61543	6154311	-	-	-	4.30	0.1693				
8595431	-	-	18	-	4.31	0.1697				
8595432	-	-	-	-	4.32	0.1701				
8595433	859543311	-	-	-	4.33	0.1705				
8595434	-	-	-	-	4.34	0.1709				
8595435	-	-	-	-	4.35	0.1713				
8595436	-	-	-	-	4.36	0.1717				
8595437	859543711	11/64	-	-	4.37	0.1720				
8595438	-	-	-	-	4.38	0.1724				
8595439	-	-	17	-	4.39	0.1728				
61544	6154411	-	-	-	4.40	0.1732				
8595441	859544111	-	-	-	4.41	0.1736				
8595442	-	-	-	-	4.42	0.1740				
8595443	-	-	-	-	4.43	0.1744				
8595444	-	-	-	-	4.44	0.1748				
8595445	859544511	-	-	-	4.45	0.1752				
8595446	-	-	-	-	4.46	0.1756				
8595447	-	-	-	-	4.47	0.1760				
8595448	-	-	-	-	4.48	0.1764				
8595449	-	-	-	-	4.49	0.1768				
61545	6154511	-	16	-	4.50	0.1772				
8595451	-	-	-	-	4.51	0.1776				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595452	-	-	-	-	4.52	0.1780	24	68	6	120°
8595453	-	-	-	-	4.53	0.1783				
8595454	-	-	-	-	4.54	0.1787				
8595455	-	-	-	-	4.55	0.1791				
8595456	-	-	-	-	4.56	0.1795				
8595457	859545711	-	15	-	4.57	0.1799				
8595458	-	-	-	-	4.58	0.1803				
8595459	-	-	-	-	4.59	0.1807				
61546	6154611	-	-	-	4.60	0.1811				
8595461	-	-	-	-	4.61	0.1815				
8595462	859546211	-	14	-	4.62	0.1819				
8595463	-	-	-	-	4.63	0.1823				
8595464	-	-	-	-	4.64	0.1827				
8595465	-	-	-	-	4.65	0.1831				
8595466	-	-	-	-	4.66	0.1835				
8595467	-	-	-	-	4.67	0.1839				
8595468	-	-	-	-	4.68	0.1843				
8595469	-	-	-	-	4.69	0.1846				
61547	6154711	-	13	-	4.70	0.1850				
8595471	-	-	-	-	4.71	0.1854				
8595472	-	-	-	-	4.72	0.1858				
8595473	-	-	-	-	4.73	0.1862				
8595474	-	-	-	-	4.74	0.1866				
8595475	859547511	-	-	-	4.75	0.1870				
8595476	859547611	3/16	-	-	4.76	0.1874				
8595477	-	-	-	-	4.77	0.1878				
8595478	-	-	-	-	4.78	0.1882				
8595479	-	-	-	-	4.79	0.1886				
61548	6154811	-	12	-	4.80	0.1890				
8595481	-	-	-	-	4.81	0.1894				
8595482	-	-	-	-	4.82	0.1898				
8595483	-	-	-	-	4.83	0.1902				
8595484	-	-	-	-	4.84	0.1906				
8595485	-	-	-	-	4.85	0.1909				
8595486	859548611	-	11	-	4.86	0.1913				
8595487	859548711	-	-	-	4.87	0.1917				
8595488	859548811	-	-	-	4.88	0.1921				
8595489	-	-	-	-	4.89	0.1925				
61549	6154911	-	-	-	4.90	0.1929				
8595491	-	-	-	-	4.91	0.1933				
8595492	-	-	10	-	4.92	0.1937				
8595493	-	-	-	-	4.93	0.1941				
8595494	-	-	-	-	4.94	0.1945				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			4140 4340	300	400		17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best

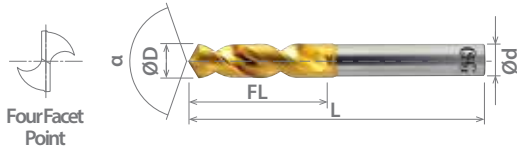




List 1100 (Continued)

SPEED FEED	HSSE	TiN	TiAlN	STUB	40°
P327					

EX-SUS-GDS, Ideal for Stainless Steel



Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 30	+0 / -0.033	+0 / -0.0013
30 < D ≤ 32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595495	-	-	-	-	4.95	0.1949	26	70	6	120°
8595496	859549611	-	-	-	4.96	0.1953				
8595497	-	-	-	-	4.97	0.1957				
8595498	859549811	-	9	-	4.98	0.1961				
8595499	-	-	-	-	4.99	0.1965				
61550	6155011	-	-	-	5.00	0.1969				
8595501	-	-	-	-	5.01	0.1972				
8595502	-	-	-	-	5.02	0.1976				
8595503	-	-	-	-	5.03	0.1980				
8595504	-	-	-	-	5.04	0.1984				
8595505	859550511	-	8	-	5.05	0.1988				
8595506	-	-	-	-	5.06	0.1992				
8595507	-	-	-	-	5.07	0.1996				
8595508	-	-	-	-	5.08	0.2000				
8595509	-	-	-	-	5.09	0.2004				
61551	6155111	-	-	-	5.10	0.2008				
8595511	859551111	-	7	-	5.11	0.2012				
8595512	-	-	-	-	5.12	0.2016				
8595513	-	-	-	-	5.13	0.2020				
8595514	-	-	-	-	5.14	0.2024				
8595515	-	-	-	-	5.15	0.2028				
8595516	859551611	13/64	-	-	5.16	0.2031				
8595517	-	-	-	-	5.17	0.2035				
8595518	859551811	-	6	-	5.18	0.2039				
8595519	-	-	-	-	5.19	0.2043				
61552	6155211	-	-	-	5.20	0.2047				
8595521	-	-	-	-	5.21	0.2051				
8595522	859552211	-	5	-	5.22	0.2055				
8595523	-	-	-	-	5.23	0.2059				
8595524	-	-	-	-	5.24	0.2063				
8595525	-	-	-	-	5.25	0.2067				
8595526	-	-	-	-	5.26	0.2071				
8595527	-	-	-	-	5.27	0.2075				
8595528	-	-	-	-	5.28	0.2079				
8595529	-	-	-	-	5.29	0.2083				
61553	6155311	-	-	-	5.30	0.2087				
8595531	-	-	4	-	5.31	0.2091				
8595532	-	-	-	-	5.32	0.2094				
8595533	-	-	-	-	5.33	0.2098				
8595534	-	-	-	-	5.34	0.2102				
8595535	-	-	-	-	5.35	0.2106				
8595536	-	-	-	-	5.36	0.2110				
8595537	-	-	-	-	5.37	0.2114				
8595538	-	-	-	-	5.38	0.2118				
8595539	-	-	-	-	5.39	0.2122				
61554	-	-	-	-	5.40	0.2126				
8595541	-	-	3	-	5.41	0.2130				
						28	72			

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595542	-	-	-	-	5.42	0.2134	28	72	6	120°
8595543	-	-	-	-	5.43	0.2138				
8595544	-	-	-	-	5.44	0.2142				
8595545	859554511	-	-	-	5.45	0.2146				
8595546	-	-	-	-	5.46	0.2150				
8595547	-	-	-	-	5.47	0.2154				
8595548	859554811	-	-	-	5.48	0.2157				
8595549	-	-	-	-	5.49	0.2161				
61555	6155511	-	-	-	5.50	0.2165				
8595551	-	-	-	-	5.51	0.2169				
8595552	-	-	-	-	5.52	0.2173				
8595553	-	-	-	-	5.53	0.2177				
8595554	-	-	-	-	5.54	0.2181				
8595555	-	-	-	-	5.55	0.2185				
8595556	859555611	7/32	-	-	5.56	0.2189				
8595557	-	-	-	-	5.57	0.2193				
8595558	-	-	-	-	5.58	0.2197				
8595559	-	-	-	-	5.59	0.2201				
61556	6155611	-	-	-	5.60	0.2205				
8595561	-	-	2	-	5.61	0.2209				
8595562	-	-	-	-	5.62	0.2213				
8595563	-	-	-	-	5.63	0.2217				
8595564	-	-	-	-	5.64	0.2220				
8595565	859556511	-	-	-	5.65	0.2224				
8595566	-	-	-	-	5.66	0.2228				
8595567	-	-	-	-	5.67	0.2232				
8595568	-	-	-	-	5.68	0.2236				
8595569	-	-	-	-	5.69	0.2240				
61557	-	-	-	-	5.70	0.2244				
8595571	-	-	-	-	5.71	0.2248				
8595572	859557211	-	-	-	5.72	0.2252				
8595573	-	-	-	-	5.73	0.2256				
8595574	-	-	-	-	5.74	0.2260				
8595575	859557511	-	-	-	5.75	0.2264				
8595576	-	-	-	-	5.76	0.2268				
8595577	-	-	-	-	5.77	0.2272				
8595578	859557811	-	-	-	5.78	0.2276				
8595579	859557911	-	1	-	5.79	0.2280				
61558	6155811	-	-	-	5.80	0.2283				
8595581	-	-	-	-	5.81	0.2287				
8595582	-	-	-	-	5.82	0.2291				
8595583	-	-	-	-	5.83	0.2295				
8595584	-	-	-	-	5.84	0.2299				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

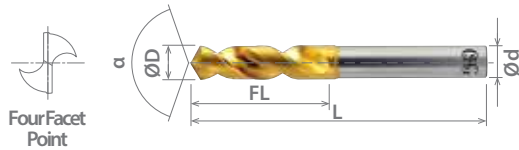
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List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel



SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°

Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595585	-	-	-	-	5.85	0.2303	28	72	6	120°
8595586	-	-	-	-	5.86	0.2307				
8595587	-	-	-	-	5.87	0.2311				
8595588	-	-	-	-	5.88	0.2315				
8595589	-	-	-	-	5.89	0.2319				
61559	6155911	-	-	-	5.90	0.2323				
8595591	-	-	-	-	5.91	0.2327				
8595592	-	-	-	-	5.92	0.2331				
8595593	-	-	-	-	5.93	0.2335				
8595594	-	-	-	A	5.94	0.2339				
8595595	859559511	15/64	-	-	5.95	0.2343				
8595596	-	-	-	-	5.96	0.2346				
8595597	859559711	-	-	-	5.97	0.2350				
8595598	-	-	-	-	5.98	0.2354				
8595599	-	-	-	-	5.99	0.2358				
61560	6156011	-	-	-	6.00	0.2362				
8595605	-	-	-	B	6.05	0.2382				
61561	6156111	-	-	-	6.10	0.2402				
8595615	-	-	-	C	6.15	0.2421				
61562	-	-	-	-	6.20	0.2441				
8595625	-	-	-	D	6.25	0.2461				
61563	6156311	-	-	-	6.30	0.2480				
8595635	859563511	1/4	-	E	6.35	0.2500				
61564	6156411	-	-	-	6.40	0.2520				
8595645	-	-	-	-	6.45	0.2539				
61565	6156511	-	-	-	6.50	0.2559				
8595655	859565511	-	-	-	6.55	0.2579				
61566	6156611	-	-	-	6.60	0.2598				
8595665	-	-	-	-	6.65	0.2618				
61567	6156711	-	-	-	6.70	0.2638				
8595675	859567511	17/64	-	-	6.75	0.2657				
61568	6156811	-	-	-	6.80	0.2677				
8595685	859568511	-	-	-	6.85	0.2697				
61569	6156911	-	-	I	6.90	0.2717				
8595695	-	-	-	-	6.95	0.2736				
61570	6157011	-	-	-	7.00	0.2756				
8595705	-	-	-	-	7.05	0.2776				
61571	6157111	-	-	-	7.10	0.2795				
8595715	859571511	-	-	-	7.15	0.2815				
61572	6157211	-	-	-	7.20	0.2835				
8595725	-	-	-	-	7.25	0.2854				
61573	6157311	-	-	-	7.30	0.2874				
8595735	-	-	-	-	7.35	0.2894				
61574	6157411	-	-	-	7.40	0.2913				
8595745	-	-	-	-	7.45	0.2933				
61575	6157511	-	-	-	7.50	0.2953				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.



List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED	HSSE	TiN	TiAlN	STUB	40°
P327					

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8595755	859575511	-	-	-	7.55	0.2972	37	81	8	120°
61576	-	-	-	-	7.60	0.2992				
8595765	859576511	-	-	-	7.65	0.3012				
61577	6157711	-	-	-	7.70	0.3031				
8595775	859577511	-	-	-	7.75	0.3051				
61578	-	-	-	-	7.80	0.3071				
8595785	-	-	-	-	7.85	0.3091				
61579	6157911	-	-	-	7.90	0.3110				
8595795	859579511	-	-	-	7.95	0.3130				
61580	6158011	-	-	-	8.00	0.3150				
8595805	-	-	-	-	8.05	0.3169				
61581	6158111	-	-	-	8.10	0.3189				
8595815	-	-	-	-	8.15	0.3209				
61582	6158211	-	-	P	8.20	0.3228				
8595825	-	-	-	-	8.25	0.3248				
61583	6158311	-	-	-	8.30	0.3268				
8595835	859583511	-	-	-	8.35	0.3287				
61584	-	-	-	-	8.40	0.3307				
8595845	-	-	-	-	8.45	0.3327				
61585	6158511	-	-	-	8.50	0.3346				
8595855	-	-	-	-	8.55	0.3366				
61586	6158611	-	-	-	8.60	0.3386				
8595865	-	-	-	-	8.65	0.3406				
61587	-	-	-	-	8.70	0.3425				
8595875	859587511	-	-	-	8.75	0.3445				
61588	6158811	-	-	-	8.80	0.3465				
8595885	-	-	-	-	8.85	0.3484				
61589	-	-	-	-	8.90	0.3504				
8595895	-	-	-	-	8.95	0.3524				
61590	6159011	-	-	-	9.00	0.3543				
8595905	-	-	-	-	9.05	0.3563				
61591	-	-	-	-	9.10	0.3583				
8595915	-	-	-	-	9.15	0.3602				
61592	-	-	-	-	9.20	0.3622				
8595925	-	-	-	-	9.25	0.3642				
61593	-	-	-	-	9.30	0.3661				
8595935	-	-	-	U	9.35	0.3681				
61594	-	-	-	-	9.40	0.3701				
8595945	-	-	-	-	9.45	0.3720				
61595	6159511	-	-	-	9.50	0.3740				
8595955	-	-	-	-	9.55	0.3760				
61596	6159611	-	-	-	9.60	0.3780				
8595965	859596511	-	-	-	9.65	0.3799				
							40	90		
							43	93		

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

➔ continued on next page ➔ **EXD**

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best

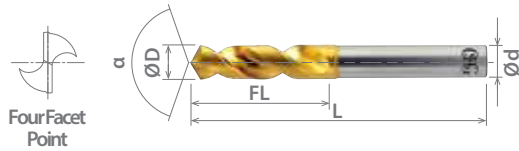




List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAIN	STUB	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 30	+0 / -0.033	+0 / -0.0013
30 < D ≤ 32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAIN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
61597	-	-	-	-	9.70	0.3819	43	93	10	120°
8595975	-	-	-	-	9.75	0.3839				
61598	6159811	-	-	W	9.80	0.3858				
8595985	-	-	-	-	9.85	0.3878				
61599	6159911	-	-	-	9.90	0.3898				
8595995	-	-	-	-	9.95	0.3917				
61600	6160011	-	-	-	10.00	0.3937				
8596005	-	-	-	-	10.05	0.3957				
61601	-	-	-	-	10.10	0.3976				
8596015	859601511	-	-	-	10.15	0.3996				
61602	6160211	-	-	-	10.20	0.4016				
8596025	-	-	-	-	10.25	0.4035				
61603	6160311	-	-	-	10.30	0.4055				
8596035	859603511	-	-	-	10.35	0.4075				
61604	-	-	-	-	10.40	0.4094				
8596045	-	-	-	-	10.45	0.4114				
61605	6160511	-	-	-	10.50	0.4134				
8596055	-	-	-	-	10.55	0.4154				
61606	-	-	-	-	10.60	0.4173				
8596065	-	-	-	-	10.65	0.4193				
61607	6160711	-	-	-	10.70	0.4213				
8596075	-	-	-	-	10.75	0.4232				
61608	-	-	-	-	10.80	0.4252				
8596085	-	-	-	-	10.85	0.4272				
61609	-	-	-	-	10.90	0.4291				
8596095	-	-	-	-	10.95	0.4311				
61610	6161011	-	-	-	11.00	0.4331				
8596105	-	-	-	-	11.05	0.4350				
61611	6161111	-	-	-	11.10	0.4370				
8596115	-	-	-	-	11.15	0.4390				
61612	-	-	-	-	11.20	0.4409				
8596125	-	-	-	-	11.25	0.4429				
61613	-	-	-	-	11.30	0.4449				
8596135	-	-	-	-	11.35	0.4469				
61614	-	-	-	-	11.40	0.4488				
8596145	-	-	-	-	11.45	0.4508				
61615	6161511	-	-	-	11.50	0.4528				
8596155	-	-	-	-	11.55	0.4547				
61616	-	-	-	-	11.60	0.4567				
8596165	-	-	-	-	11.65	0.4587				
61617	-	-	-	-	11.70	0.4606				
8596175	-	-	-	-	11.75	0.4626				
61618	-	-	-	-	11.80	0.4646				
8596185	-	-	-	-	11.85	0.4665				
61619	-	-	-	-	11.90	0.4685				
8596195	-	-	-	-	11.95	0.4705				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAIN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
61620	6162011	-	-	-	12.00	0.4724	51	108	12	120°
61621	-	-	-	-	12.10	0.4764				
61622	-	-	-	-	12.20	0.4803				
61623	6162311	31/64	-	-	12.30	0.4843				
61624	6162411	-	-	-	12.40	0.4882				
61625	6162511	-	-	-	12.50	0.4921				
61626	6162611	-	-	-	12.60	0.4961				
61627	6162711	1/2	-	-	12.70	0.5000				
61628	6162811	-	-	-	12.80	0.5039				
61629	6162911	-	-	-	12.90	0.5079				
61630	6163011	-	-	-	13.00	0.5118	54	114	16	
61631	6163111	33/64	-	-	13.10	0.5157				
61632	-	-	-	-	13.20	0.5197				
61633	-	-	-	-	13.30	0.5236				
61634	-	-	-	-	13.40	0.5276				
61635	6163511	-	-	-	13.50	0.5315				
61636	-	-	-	-	13.60	0.5354				
61637	-	-	-	-	13.70	0.5394				
61638	-	-	-	-	13.80	0.5433				
61639	-	-	-	-	13.90	0.5472				
61640	6164011	-	-	-	14.00	0.5512	56	116	20	
61641	6164111	-	-	-	14.10	0.5551				
61642	-	-	-	-	14.20	0.5591				
61643	6164311	-	-	-	14.30	0.5630				
61644	-	-	-	-	14.40	0.5669				
61645	6164511	-	-	-	14.50	0.5709				
61646	-	-	-	-	14.60	0.5748				
61647	-	-	-	-	14.70	0.5787				
61648	-	-	-	-	14.80	0.5827				
61649	-	-	-	-	14.90	0.5866				
61650	6165011	-	-	-	15.00	0.5906	58	118	20	
61651	-	-	-	-	15.10	0.5945				
61652	-	-	-	-	15.20	0.5984				
61653	6165311	-	-	-	15.30	0.6024				
61654	-	-	-	-	15.40	0.6063				
61655	-	-	-	-	15.50	0.6102				
61656	-	-	-	-	15.60	0.6142				
61657	-	-	-	-	15.70	0.6181				
61658	-	-	-	-	15.80	0.6220				
61659	6165911	-	-	-	15.90	0.6260				
61660	6166011	-	-	-	16.00	0.6299	60	126	20	
61661	6166111	-	-	-	16.10	0.6339				
61662	-	-	-	-	16.20	0.6378				

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 11 = TiAlN.

continued on next page

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

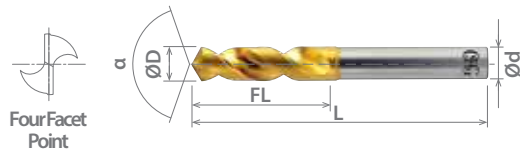
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List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel



SPEED FEED P327	HSSE	TiN	TiAlN	STUB	40°

Cutting Diameter Tolerance (h8)		
Size	mm	inch
0.5≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
61663	-	-	-	-	16.30	0.6417	60	126	20	120°
61664	-	-	-	-	16.40	0.6457				
61665	6166511	-	-	-	16.50	0.6496				
61666	-	-	-	-	16.60	0.6535				
61667	6166711	-	-	-	16.70	0.6575				
61668	-	-	-	-	16.80	0.6614				
61669	-	-	-	-	16.90	0.6654				
61670	-	-	-	-	17.00	0.6693				
61671	6167111	-	-	-	17.10	0.6732				
61672	6167211	-	-	-	17.20	0.6772				
61673	-	-	-	-	17.30	0.6811	60	128	20	120°
61674	-	-	-	-	17.40	0.6850				
61675	-	-	-	-	17.50	0.6890				
61676	-	-	-	-	17.60	0.6929				
61677	6167711	-	-	-	17.70	0.6969				
61678	-	-	-	-	17.80	0.7008				
61679	-	-	-	-	17.90	0.7047				
61680	6168011	-	-	-	18.00	0.7087				
61681	-	-	-	-	18.10	0.7126				
61682	-	-	-	-	18.20	0.7165				
61683	-	-	-	-	18.30	0.7205	64	130	20	120°
61684	-	-	-	-	18.40	0.7244				
61685	-	-	-	-	18.50	0.7283				
61686	-	-	-	-	18.60	0.7323				
61687	-	-	-	-	18.70	0.7362				
61688	-	-	-	-	18.80	0.7402				
61689	-	-	-	-	18.90	0.7441				
61690	-	-	-	-	19.00	0.7480				
61691	6169111	-	-	-	19.10	0.7520				
61692	-	-	-	-	19.20	0.7559				
61693	-	-	-	-	19.30	0.7598	66	132	20	120°
61694	-	-	-	-	19.40	0.7638				
61695	-	-	-	-	19.50	0.7677				
61696	-	-	-	-	19.60	0.7717				
61697	-	-	-	-	19.70	0.7756				
61698	-	-	-	-	19.80	0.7795				
61699	-	-	-	-	19.90	0.7835				
61700	-	-	-	-	20.00	0.7874				
61705	-	-	-	-	20.50	0.8071				
61710	6171011	-	-	-	21.00	0.8268				
61715	6171511	-	-	-	21.50	0.8465	70	146		
61720	-	-	-	-	22.00	0.8661				
61725	-	-	-	-	22.50	0.8858	72	148		
61730	6173011	-	-	-	23.00	0.9055				
61735	-	-	-	-	23.50	0.9252				
61740	-	-	-	-	24.00	0.9449	75	151		

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1100 (Continued)

EX-SUS-GDS, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAIN	STUB	40°
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TiN EDP Number	TiAIN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
61745	-	-	-	-	24.50	0.9646	75	151	25	120°
61750	-	63/64	-	-	25.00	0.9843				
61755	-	-	-	-	25.50	1.0039	78	158		
61760	-	-	-	-	26.00	1.0236				
61765	-	-	-	-	26.50	1.0433				
61770	-	-	-	-	27.00	1.0630				
61775	-	-	-	-	27.50	1.0827	81	161		
61780	-	-	-	-	28.00	1.1024				
61785	-	-	-	-	28.50	1.1220	84	164		
61790	-	-	-	-	29.00	1.1417				
61795	-	-	-	-	29.50	1.1614				
61800	-	-	-	-	30.00	1.1811				
61805	-	-	-	-	30.50	1.2008	87	167		
61810	-	-	-	-	31.00	1.2205				
61815	-	-	-	-	31.50	1.2402	90	170		
61820	-	-	-	-	32.00	1.2598				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAIN.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1100	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best

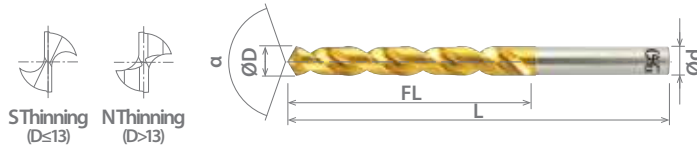




List 1600

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED	HSSE	TiN	TiAlN	JOBBERS	40°
P327					



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 30	+0 / -0.033	+0 / -0.0013
30 < D ≤ 32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
62520	6252011	-	-	-	2.00	0.0787	24	56	3	130°
8597201	-	-	-	-	2.01	0.0791				
8597202	-	-	-	-	2.02	0.0795				
8597203	-	-	-	-	2.03	0.0799				
8597204	859720411	-	-	-	2.04	0.0803				
8597205	-	-	-	-	2.05	0.0807				
8597206	-	-	46	-	2.06	0.0811				
8597207	-	-	-	-	2.07	0.0815				
8597208	859720811	-	45	-	2.08	0.0819				
8597209	-	-	-	-	2.09	0.0823				
62521	-	-	-	-	2.10	0.0827				
8597211	-	-	-	-	2.11	0.0831				
8597212	-	-	-	-	2.12	0.0835				
8597213	-	-	-	-	2.13	0.0839				
8597214	-	-	-	-	2.14	0.0843				
8597215	-	-	-	-	2.15	0.0846				
8597216	-	-	-	-	2.16	0.0850				
8597217	-	-	-	-	2.17	0.0854				
8597218	859721811	-	44	-	2.18	0.0858				
8597219	-	-	-	-	2.19	0.0862				
62522	6252211	-	-	-	2.20	0.0866				
8597221	-	-	-	-	2.21	0.0870				
8597222	-	-	-	-	2.22	0.0874				
8597223	-	-	-	-	2.23	0.0878				
8597224	-	-	-	-	2.24	0.0882				
8597225	-	-	-	-	2.25	0.0886				
8597226	859722611	-	43	-	2.26	0.0890				
8597227	-	-	-	-	2.27	0.0894				
8597228	859722811	-	-	-	2.28	0.0898				
8597229	-	-	-	-	2.29	0.0902				
62523	-	-	-	-	2.30	0.0906				
8597231	-	-	-	-	2.31	0.0909				
8597232	-	-	-	-	2.32	0.0913				
8597233	-	-	-	-	2.33	0.0917				
8597234	-	-	-	-	2.34	0.0921				
8597235	-	-	-	-	2.35	0.0925				
8597236	-	-	-	-	2.36	0.0929				
8597237	-	-	42	-	2.37	0.0933				
8597238	859723811	3/32	-	-	2.38	0.0937				
8597239	-	-	-	-	2.39	0.0941				
62524	6252411	-	-	-	2.40	0.0945				
8597241	-	-	-	-	2.41	0.0949				
8597242	-	-	-	-	2.42	0.0953				
8597243	-	-	-	-	2.43	0.0957				
8597244	-	-	41	-	2.44	0.0961				
8597245	-	-	-	-	2.45	0.0965				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



List 1600 (Continued)

SPEED FEED	HSSE	TIN	TiAIN	JOBBERS	40°
P327					

EX-SUS-GDR, Ideal for Stainless Steel

TiN EDP Number	TiAIN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597246	-	-	-	-	2.46	0.0969	30	62	3	130°
8597247	-	-	-	-	2.47	0.0972				
8597248	-	-	-	-	2.48	0.0976				
8597249	-	-	40	-	2.49	0.0980				
62525	6252511	-	-	-	2.50	0.0984				
8597251	-	-	-	-	2.51	0.0988				
8597252	-	-	-	-	2.52	0.0992				
8597253	-	-	39	-	2.53	0.0996				
8597254	-	-	-	-	2.54	0.1000				
8597255	859725511	-	-	-	2.55	0.1004				
8597256	-	-	-	-	2.56	0.1008				
8597257	-	-	-	-	2.57	0.1012				
8597258	859725811	-	38	-	2.58	0.1016				
8597259	-	-	-	-	2.59	0.1020				
62526	-	-	-	-	2.60	0.1024				
8597261	-	-	-	-	2.61	0.1028				
8597262	-	-	-	-	2.62	0.1031				
8597263	-	-	-	-	2.63	0.1035				
8597264	-	-	37	-	2.64	0.1039				
8597265	-	-	-	-	2.65	0.1043				
8597266	-	-	-	-	2.66	0.1047				
8597267	-	-	-	-	2.67	0.1051				
8597268	-	-	-	-	2.68	0.1055				
8597269	-	-	-	-	2.69	0.1059				
62527	-	-	-	-	2.70	0.1063				
8597271	-	-	36	-	2.71	0.1067				
8597272	-	-	-	-	2.72	0.1071				
8597273	-	-	-	-	2.73	0.1075				
8597274	-	-	-	-	2.74	0.1079				
8597275	-	-	-	-	2.75	0.1083				
8597276	-	-	-	-	2.76	0.1087				
8597277	-	-	-	-	2.77	0.1091				
8597278	859727811	7/64	-	-	2.78	0.1094				
8597279	859727911	-	35	-	2.79	0.1098				
62528	-	-	-	-	2.80	0.1102				
8597281	859728111	-	-	-	2.81	0.1106				
8597282	-	-	34	-	2.82	0.1110				
8597283	-	-	-	-	2.83	0.1114				
8597284	-	-	-	-	2.84	0.1118				
8597285	-	-	-	-	2.85	0.1122				
8597286	859728611	-	-	-	2.86	0.1126				
8597287	-	-	33	-	2.87	0.1130				
8597288	-	-	-	-	2.88	0.1134				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAIN.

▶ continued on next page ▶ **EXD**

Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S Nickel Alloy	Titanium	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum				Inconel	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting				6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
1600	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

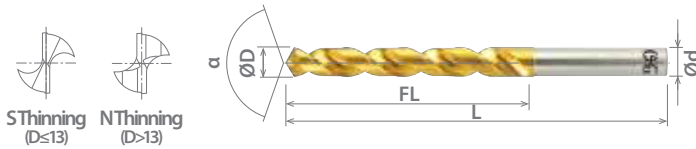
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List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel



SPEED FEED P327	HSSE	TiN	TiAlN	JOBBERS	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597289	-	-	-	-	2.89	0.1138	33	65	3	130°
62529	6252911	-	-	-	2.90	0.1142				
8597291	-	-	-	-	2.91	0.1146				
8597292	-	-	-	-	2.92	0.1150				
8597293	-	-	-	-	2.93	0.1154				
8597294	859729411	-	-	-	2.94	0.1157				
8597295	-	-	32	-	2.95	0.1161				
8597296	-	-	-	-	2.96	0.1165				
8597297	-	-	-	-	2.97	0.1169				
8597298	-	-	-	-	2.98	0.1173				
8597299	-	-	-	-	2.99	0.1177				
62530	6253011	-	-	-	3.00	0.1181				
8597301	-	-	-	-	3.01	0.1185				
8597302	-	-	-	-	3.02	0.1189				
8597303	-	-	-	-	3.03	0.1193				
8597304	859730411	-	-	-	3.04	0.1197				
8597305	859730511	-	31	-	3.05	0.1201				
8597306	-	-	-	-	3.06	0.1205				
8597307	-	-	-	-	3.07	0.1209				
8597308	-	-	-	-	3.08	0.1213				
8597309	-	-	-	-	3.09	0.1217				
62531	6253111	-	-	-	3.10	0.1220				
8597311	-	-	-	-	3.11	0.1224				
8597312	-	-	-	-	3.12	0.1228				
8597313	-	-	-	-	3.13	0.1232				
8597314	-	-	-	-	3.14	0.1236				
8597315	-	-	-	-	3.15	0.1240				
8597316	-	-	-	-	3.16	0.1244				
8597317	-	-	-	-	3.17	0.1248				
8597318	859731811	1/8	-	-	3.18	0.1252				
8597319	-	-	-	-	3.19	0.1256				
62532	6253211	-	-	-	3.20	0.1260				
8597321	-	-	-	-	3.21	0.1264				
8597322	-	-	-	-	3.22	0.1268				
8597323	-	-	-	-	3.23	0.1272				
8597324	-	-	-	-	3.24	0.1276				
8597325	-	-	-	-	3.25	0.1280				
8597326	-	-	30	-	3.26	0.1283				
8597327	-	-	-	-	3.27	0.1287				
8597328	-	-	-	-	3.28	0.1291				
8597329	-	-	-	-	3.29	0.1295				
62533	6253311	-	-	-	3.30	0.1299				
8597331	-	-	-	-	3.31	0.1303				
8597332	-	-	-	-	3.32	0.1307				
8597333	-	-	-	-	3.33	0.1311				
8597334	-	-	-	-	3.34	0.1315				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	JOBBER	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597335	-	-	-	-	3.35	0.1319	36	68	4	130°
8597336	-	-	-	-	3.36	0.1323				
8597337	-	-	-	-	3.37	0.1327				
8597338	-	-	-	-	3.38	0.1331				
8597339	-	-	-	-	3.39	0.1335				
62534	-	-	-	-	3.40	0.1339				
8597341	-	-	-	-	3.41	0.1343				
8597342	-	-	-	-	3.42	0.1346				
8597343	-	-	-	-	3.43	0.1350				
8597344	-	-	-	-	3.44	0.1354				
8597345	859734511	-	29	-	3.45	0.1358				
8597346	-	-	-	-	3.46	0.1362				
8597347	-	-	-	-	3.47	0.1366				
8597348	-	-	-	-	3.48	0.1370				
8597349	-	-	-	-	3.49	0.1374				
62535	6253511	-	-	-	3.50	0.1378				
8597351	-	-	-	-	3.51	0.1382				
8597352	-	-	-	-	3.52	0.1386				
8597353	-	-	-	-	3.53	0.1390				
8597354	-	-	-	-	3.54	0.1394				
8597355	-	-	-	-	3.55	0.1398				
8597356	-	-	-	-	3.56	0.1402				
8597357	859735711	9/64	-	-	3.57	0.1406				
8597358	859735811	-	-	-	3.58	0.1409				
8597359	-	-	-	-	3.59	0.1413				
62536	-	-	-	-	3.60	0.1417				
8597361	-	-	-	-	3.61	0.1421				
8597362	-	-	-	-	3.62	0.1425				
8597363	-	-	-	-	3.63	0.1429				
8597364	-	-	-	-	3.64	0.1433				
8597365	-	-	-	-	3.65	0.1437				
8597366	-	-	27	-	3.66	0.1441				
8597367	-	-	-	-	3.67	0.1445				
8597368	-	-	-	-	3.68	0.1449				
8597369	-	-	-	-	3.69	0.1453				
62537	6253711	-	-	-	3.70	0.1457				
8597371	-	-	-	-	3.71	0.1461				
8597372	-	-	-	-	3.72	0.1465				
8597373	-	-	26	-	3.73	0.1469				
8597374	-	-	-	-	3.74	0.1472				
8597375	-	-	-	-	3.75	0.1476				
8597376	-	-	-	-	3.76	0.1480				
8597377	-	-	-	-	3.77	0.1484				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page **EXD**

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
1600	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best

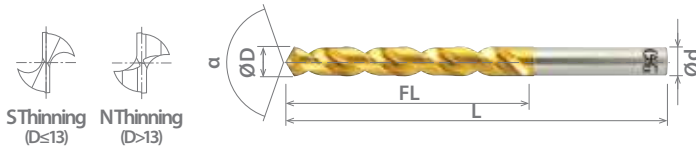




List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	JOBBERS	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597378	-	-	-	-	3.78	0.1488	43	75	4	130°
8597379	-	-	-	-	3.79	0.1492				
62538	6253811	-	25	-	3.80	0.1496				
8597381	-	-	-	-	3.81	0.1500				
8597382	859738211	-	-	-	3.82	0.1504				
8597383	859738311	-	-	-	3.83	0.1508				
8597384	859738411	-	-	-	3.84	0.1512				
8597385	-	-	-	-	3.85	0.1516				
8597386	-	-	24	-	3.86	0.1520				
8597387	-	-	-	-	3.87	0.1524				
8597388	-	-	-	-	3.88	0.1528				
8597389	-	-	-	-	3.89	0.1531				
62539	-	-	-	-	3.90	0.1535				
8597391	-	-	23	-	3.91	0.1539				
8597392	-	-	-	-	3.92	0.1543				
8597393	-	-	-	-	3.93	0.1547				
8597394	-	-	-	-	3.94	0.1551				
8597395	-	-	-	-	3.95	0.1555				
8597396	-	-	-	-	3.96	0.1559				
8597397	859739711	5/32	-	-	3.97	0.1563				
8597398	-	-	-	-	3.98	0.1567				
8597399	859739911	-	22	-	3.99	0.1571				
62540	6254011	-	-	-	4.00	0.1575				
8597401	-	-	-	-	4.01	0.1579				
8597402	-	-	-	-	4.02	0.1583				
8597403	-	-	-	-	4.03	0.1587				
8597404	859740411	-	21	-	4.04	0.1591				
8597405	-	-	-	-	4.05	0.1594				
8597406	-	-	-	-	4.06	0.1598				
8597407	-	-	-	-	4.07	0.1602				
8597408	-	-	-	-	4.08	0.1606				
8597409	859740911	-	20	-	4.09	0.1610				
62541	-	-	-	-	4.10	0.1614				
8597411	-	-	-	-	4.11	0.1618				
8597412	-	-	-	-	4.12	0.1622				
8597413	-	-	-	-	4.13	0.1626				
8597414	-	-	-	-	4.14	0.1630				
8597415	-	-	-	-	4.15	0.1634				
8597416	-	-	-	-	4.16	0.1638				
8597417	-	-	-	-	4.17	0.1642				
8597418	-	-	-	-	4.18	0.1646				
8597419	-	-	-	-	4.19	0.1650				
62542	-	-	-	-	4.20	0.1654				
8597421	-	-	-	-	4.21	0.1657				
8597422	859742211	-	19	-	4.22	0.1661				
8597423	-	-	-	-	4.23	0.1665				
							87	6	120°	

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED	HSSE	TiN	TiAlN	JOBBERS	40°
P327					

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597424	-	-	-	-	4.24	0.1669	43	87		
8597425	-	-	-	-	4.25	0.1673				
8597426	-	-	-	-	4.26	0.1677				
8597427	-	-	-	-	4.27	0.1681				
8597428	-	-	-	-	4.28	0.1685				
8597429	-	-	-	-	4.29	0.1689				
62543	-	-	-	-	4.30	0.1693				
8597431	-	-	18	-	4.31	0.1697				
8597432	-	-	-	-	4.32	0.1701				
8597433	-	-	-	-	4.33	0.1705				
8597434	-	-	-	-	4.34	0.1709				
8597435	-	-	-	-	4.35	0.1713				
8597436	-	-	-	-	4.36	0.1717				
8597437	859743711	11/64	-	-	4.37	0.1720	47	91	6	120°
8597438	-	-	-	-	4.38	0.1724				
8597439	-	-	17	-	4.39	0.1728				
62544	-	-	-	-	4.40	0.1732				
8597441	-	-	-	-	4.41	0.1736				
8597442	-	-	-	-	4.42	0.1740				
8597443	-	-	-	-	4.43	0.1744				
8597444	-	-	-	-	4.44	0.1748				
8597445	-	-	-	-	4.45	0.1752				
8597446	-	-	-	-	4.46	0.1756				
8597447	-	-	-	-	4.47	0.1760				
8597448	-	-	-	-	4.48	0.1764				
8597449	-	-	-	-	4.49	0.1768				
62545	6254511	-	16	-	4.50	0.1772				
8597451	-	-	-	-	4.51	0.1776				
8597452	-	-	-	-	4.52	0.1780				
8597453	-	-	-	-	4.53	0.1783				
8597454	-	-	-	-	4.54	0.1787				
8597455	-	-	-	-	4.55	0.1791				
8597456	-	-	-	-	4.56	0.1795				
8597457	859745711	-	15	-	4.57	0.1799				
8597458	-	-	-	-	4.58	0.1803				
8597459	-	-	-	-	4.59	0.1807				
62546	-	-	-	-	4.60	0.1811				
8597461	-	-	-	-	4.61	0.1815				
8597462	-	-	14	-	4.62	0.1819				
8597463	-	-	-	-	4.63	0.1823				
8597464	-	-	-	-	4.64	0.1827				
8597465	-	-	-	-	4.65	0.1831				
8597466	-	-	-	-	4.66	0.1835				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

➔ continued on next page ➔ **EXD**

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1600	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best

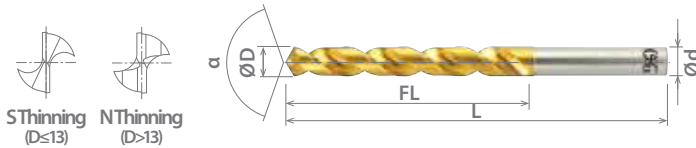




List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	JOBBERS	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597467	-	-	-	-	4.67	0.1839	47	91		
8597468	-	-	-	-	4.68	0.1843				
8597469	-	-	-	-	4.69	0.1846				
62547	-	-	13	-	4.70	0.1850				
8597471	-	-	-	-	4.71	0.1854				
8597472	-	-	-	-	4.72	0.1858				
8597473	-	-	-	-	4.73	0.1862				
8597474	-	-	-	-	4.74	0.1866				
8597475	859747511	-	-	-	4.75	0.1870				
8597476	859747611	3/16	-	-	4.76	0.1874				
8597477	-	-	-	-	4.77	0.1878				
8597478	-	-	-	-	4.78	0.1882				
8597479	-	-	-	-	4.79	0.1886				
62548	6254811	-	12	-	4.80	0.1890				
8597481	-	-	-	-	4.81	0.1894				
8597482	-	-	-	-	4.82	0.1898				
8597483	-	-	-	-	4.83	0.1902				
8597484	-	-	-	-	4.84	0.1906				
8597485	859748511	-	-	-	4.85	0.1909				
8597486	-	-	11	-	4.86	0.1913				
8597487	-	-	-	-	4.87	0.1917				
8597488	-	-	-	-	4.88	0.1921				
8597489	-	-	-	-	4.89	0.1925				
62549	-	-	-	-	4.90	0.1929				
8597491	-	-	-	-	4.91	0.1933				
8597492	-	-	10	-	4.92	0.1937				
8597493	-	-	-	-	4.93	0.1941				
8597494	-	-	-	-	4.94	0.1945				
8597495	-	-	-	-	4.95	0.1949				
8597496	-	-	-	-	4.96	0.1953				
8597497	-	-	-	-	4.97	0.1957				
8597498	859749811	-	9	-	4.98	0.1961				
8597499	-	-	-	-	4.99	0.1965				
62550	-	-	-	-	5.00	0.1969				
8597501	-	-	-	-	5.01	0.1972				
8597502	859750211	-	-	-	5.02	0.1976				
8597503	-	-	-	-	5.03	0.1980				
8597504	-	-	-	-	5.04	0.1984				
8597505	-	-	8	-	5.05	0.1988				
8597506	-	-	-	-	5.06	0.1992				
8597507	-	-	-	-	5.07	0.1996				
8597508	-	-	-	-	5.08	0.2000				
8597509	-	-	-	-	5.09	0.2004				
62551	-	-	-	-	5.10	0.2008				
8597511	859751111	-	7	-	5.11	0.2012				
8597512	-	-	-	-	5.12	0.2016				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.



List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED	HSSE	TiN	TiAIN	JOBBERS	40°
P327					

TiN EDP Number	TiAIN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597513	-	-	-	-	5.13	0.2020	52	96	6	120°
8597514	-	-	-	-	5.14	0.2024				
8597515	-	-	-	-	5.15	0.2028				
8597516	859751611	13/64	-	-	5.16	0.2031				
8597517	-	-	-	-	5.17	0.2035				
8597518	-	-	6	-	5.18	0.2039				
8597519	-	-	-	-	5.19	0.2043				
62552	6255211	-	-	-	5.20	0.2047				
8597521	-	-	-	-	5.21	0.2051				
8597522	-	-	5	-	5.22	0.2055				
8597523	-	-	-	-	5.23	0.2059				
8597524	-	-	-	-	5.24	0.2063				
8597525	-	-	-	-	5.25	0.2067				
8597526	-	-	-	-	5.26	0.2071				
8597527	-	-	-	-	5.27	0.2075				
8597528	-	-	-	-	5.28	0.2079				
8597529	-	-	-	-	5.29	0.2083				
62553	-	-	-	-	5.30	0.2087				
8597531	859753111	-	4	-	5.31	0.2091				
8597532	-	-	-	-	5.32	0.2094				
8597533	-	-	-	-	5.33	0.2098				
8597534	-	-	-	-	5.34	0.2102				
8597535	-	-	-	-	5.35	0.2106				
8597536	-	-	-	-	5.36	0.2110				
8597537	-	-	-	-	5.37	0.2114				
8597538	-	-	-	-	5.38	0.2118				
8597539	-	-	-	-	5.39	0.2122				
62554	-	-	-	-	5.40	0.2126				
8597541	-	-	3	-	5.41	0.2130				
8597542	-	-	-	-	5.42	0.2134				
8597543	-	-	-	-	5.43	0.2138				
8597544	-	-	-	-	5.44	0.2142				
8597545	-	-	-	-	5.45	0.2146				
8597546	-	-	-	-	5.46	0.2150				
8597547	859754711	-	-	-	5.47	0.2154				
8597548	-	-	-	-	5.48	0.2157				
8597549	-	-	-	-	5.49	0.2161				
62555	6255511	-	-	-	5.50	0.2165				
8597551	-	-	-	-	5.51	0.2169				
8597552	-	-	-	-	5.52	0.2173				
8597553	-	-	-	-	5.53	0.2177				
8597554	-	-	-	-	5.54	0.2181				
8597555	-	-	-	-	5.55	0.2185				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAIN.

➔ continued on next page ➔ **EXD**

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum	Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH					6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC
1600	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best

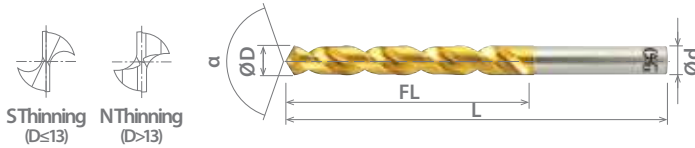




List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	JOBBERS	40°
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Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 30	+0 / -0.033	+0 / -0.0013
30 < D ≤ 32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597556	-	7/32	-	-	5.56	0.2189	57	101	6	120°
8597557	-	-	-	-	5.57	0.2193				
8597558	-	-	-	-	5.58	0.2197				
8597559	-	-	-	-	5.59	0.2201				
62556	-	-	-	-	5.60	0.2205				
8597561	859756111	-	2	-	5.61	0.2209				
8597562	-	-	-	-	5.62	0.2213				
8597563	-	-	-	-	5.63	0.2217				
8597564	-	-	-	-	5.64	0.2220				
8597565	-	-	-	-	5.65	0.2224				
8597566	-	-	-	-	5.66	0.2228				
8597567	-	-	-	-	5.67	0.2232				
8597568	-	-	-	-	5.68	0.2236				
8597569	-	-	-	-	5.69	0.2240				
62557	-	-	-	-	5.70	0.2244				
8597571	-	-	-	-	5.71	0.2248				
8597572	-	-	-	-	5.72	0.2252				
8597573	-	-	-	-	5.73	0.2256				
8597574	-	-	-	-	5.74	0.2260				
8597575	-	-	-	-	5.75	0.2264				
8597576	-	-	-	-	5.76	0.2268				
8597577	-	-	-	-	5.77	0.2272				
8597578	-	-	-	-	5.78	0.2276				
8597579	-	-	1	-	5.79	0.2280				
62558	-	-	-	-	5.80	0.2283				
8597581	-	-	-	-	5.81	0.2287				
8597582	-	-	-	-	5.82	0.2291				
8597583	-	-	-	-	5.83	0.2295				
8597584	-	-	-	-	5.84	0.2299				
8597585	-	-	-	-	5.85	0.2303				
8597586	-	-	-	-	5.86	0.2307				
8597587	-	-	-	-	5.87	0.2311				
8597588	-	-	-	-	5.88	0.2315				
8597589	-	-	-	-	5.89	0.2319				
62559	-	-	-	-	5.90	0.2323				
8597591	-	-	-	-	5.91	0.2327				
8597592	-	-	-	-	5.92	0.2331				
8597593	-	-	-	-	5.93	0.2335				
8597594	-	-	-	A	5.94	0.2339				
8597595	859759511	15/64	-	-	5.95	0.2343				
8597596	-	-	-	-	5.96	0.2346				
8597597	-	-	-	-	5.97	0.2350				
8597598	-	-	-	-	5.98	0.2354				
8597599	-	-	-	-	5.99	0.2358				
62560	-	-	-	-	6.00	0.2362				
8597605	-	-	-	B	6.05	0.2382				
						63	107	8		

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	JOBBERS	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
62561	6256111	-	-	-	6.10	0.2402	63	107	8	120°
8597615	-	-	-	C	6.15	0.2421				
62562	-	-	-	-	6.20	0.2441				
8597625	-	-	-	D	6.25	0.2461				
62563	-	-	-	-	6.30	0.2480				
8597635	859763511	1/4	-	E	6.35	0.2500				
62564	-	-	-	-	6.40	0.2520				
8597645	-	-	-	-	6.45	0.2539				
62565	6256511	-	-	-	6.50	0.2559				
8597655	-	-	-	-	6.55	0.2579				
62566	6256611	-	-	-	6.60	0.2598				
8597665	-	-	-	-	6.65	0.2618				
62567	-	-	-	-	6.70	0.2638				
8597675	859767511	17/64	-	-	6.75	0.2657				
62568	6256811	-	-	-	6.80	0.2677				
8597685	-	-	-	-	6.85	0.2697				
62569	-	-	-	I	6.90	0.2717				
8597695	-	-	-	-	6.95	0.2736				
62570	6257011	-	-	-	7.00	0.2756				
8597705	-	-	-	-	7.05	0.2776				
62571	-	-	-	-	7.10	0.2795				
8597715	-	-	-	-	7.15	0.2815				
62572	-	-	-	-	7.20	0.2835				
8597725	859772511	-	-	-	7.25	0.2854				
62573	-	-	-	-	7.30	0.2874				
8597735	-	-	-	-	7.35	0.2894				
62574	6257411	-	-	-	7.40	0.2913				
8597745	-	-	-	-	7.45	0.2933				
62575	-	-	-	-	7.50	0.2953				
8597755	-	-	-	-	7.55	0.2972				
62576	-	-	-	-	7.60	0.2992				
8597765	-	-	-	-	7.65	0.3012				
62577	6257711	-	-	-	7.70	0.3031				
8597775	-	-	-	-	7.75	0.3051				
62578	-	-	-	-	7.80	0.3071				
8597785	-	-	-	-	7.85	0.3091				
62579	6257911	-	-	-	7.90	0.3110				
8597795	-	-	-	-	7.95	0.3130				
62580	-	-	-	-	8.00	0.3150				
8597805	-	-	-	-	8.05	0.3169				
62581	-	-	-	-	8.10	0.3189				
8597815	-	-	-	-	8.15	0.3209				
62582	-	-	-	P	8.20	0.3228				

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 11 = TiAlN.

continued on next page

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1600	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

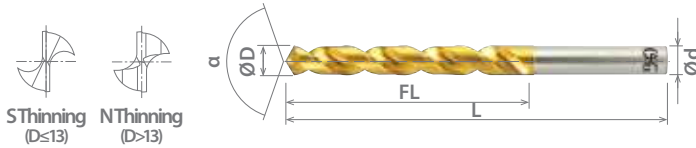
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List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel



SPEED FEED	HSSE	TiN	TiAlN	JOBBERS	40°
P327					

Cutting Diameter Tolerance (h8)		
Size	mm	inch
2 ≤ D ≤ 3	+0 / -0.014	+0 / -0.0006
3 < D ≤ 6	+0 / -0.018	+0 / -0.0007
6 < D ≤ 10	+0 / -0.022	+0 / -0.0009
10 < D ≤ 18	+0 / -0.027	+0 / -0.0011
18 < D ≤ 30	+0 / -0.033	+0 / -0.0013
30 < D ≤ 32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8597825	-	-	-	-	8.25	0.3248	75	125	10	120°
62583	-	-	-	-	8.30	0.3268				
8597835	-	-	-	-	8.35	0.3287				
62584	-	-	-	-	8.40	0.3307				
8597845	-	-	-	-	8.45	0.3327				
62585	6258511	-	-	-	8.50	0.3346				
8597855	-	-	-	-	8.55	0.3366				
62586	6258611	-	-	-	8.60	0.3386				
8597865	-	-	-	-	8.65	0.3406				
62587	-	-	-	-	8.70	0.3425				
8597875	-	-	-	-	8.75	0.3445				
62588	-	-	-	-	8.80	0.3465				
8597885	-	-	-	-	8.85	0.3484				
62589	-	-	-	-	8.90	0.3504				
8597895	-	-	-	-	8.95	0.3524				
62590	-	-	-	-	9.00	0.3543				
8597905	-	-	-	-	9.05	0.3563				
62591	6259111	-	-	-	9.10	0.3583				
8597915	-	-	-	-	9.15	0.3602				
62592	6259211	-	-	-	9.20	0.3622				
8597925	859792511	-	-	-	9.25	0.3642				
62593	-	-	-	-	9.30	0.3661				
8597935	859793511	-	-	U	9.35	0.3681				
62594	-	-	-	-	9.40	0.3701				
8597945	-	-	-	-	9.45	0.3720				
62595	6259511	-	-	-	9.50	0.3740				
8597955	-	-	-	-	9.55	0.3760				
62596	-	-	-	-	9.60	0.3780				
8597965	-	-	-	-	9.65	0.3799				
62597	-	-	-	-	9.70	0.3819				
8597975	-	-	-	-	9.75	0.3839				
62598	6259811	-	-	W	9.80	0.3858				
8597985	-	-	-	-	9.85	0.3878				
62599	-	-	-	-	9.90	0.3898				
8597995	-	-	-	-	9.95	0.3917				
62600	-	-	-	-	10.00	0.3937				
8598005	-	-	-	-	10.05	0.3957				
62601	-	-	-	-	10.10	0.3976				
8598015	-	-	-	-	10.15	0.3996				
62602	6260211	-	-	-	10.20	0.4016				
8598025	-	-	-	-	10.25	0.4035				
62603	-	-	-	-	10.30	0.4055				
8598035	-	-	-	-	10.35	0.4075				
62604	-	-	-	-	10.40	0.4094				
8598045	-	-	-	-	10.45	0.4114				
62605	-	-	-	-	10.50	0.4134				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.





List 1600 (Continued)

EX-SUS-GDR, Ideal for Stainless Steel

SPEED FEED P327	HSSE	TiN	TiAlN	JOBBERS	40°
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TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
8598055	-	-	-	-	10.55	0.4154	87	144	12	120°
62606	-	-	-	-	10.60	0.4173				
8598065	-	-	-	-	10.65	0.4193				
62607	6260711	-	-	-	10.70	0.4213				
8598075	-	-	-	-	10.75	0.4232				
62608	-	-	-	-	10.80	0.4252				
8598085	-	-	-	-	10.85	0.4272				
62609	6260911	-	-	-	10.90	0.4291				
8598095	-	-	-	-	10.95	0.4311				
62610	6261011	-	-	-	11.00	0.4331				
8598105	-	-	-	-	11.05	0.4350				
62611	6261111	-	-	-	11.10	0.4370				
8598115	-	-	-	-	11.15	0.4390				
62612	-	-	-	-	11.20	0.4409				
8598125	-	-	-	-	11.25	0.4429				
62613	-	-	-	-	11.30	0.4449				
8598135	-	-	-	-	11.35	0.4469				
62614	-	-	-	-	11.40	0.4488				
8598145	-	-	-	-	11.45	0.4508				
62615	-	-	-	-	11.50	0.4528				
8598155	-	-	-	-	11.55	0.4547				
62616	-	-	-	-	11.60	0.4567				
8598165	-	-	-	-	11.65	0.4587				
62617	-	-	-	-	11.70	0.4606				
8598175	-	-	-	-	11.75	0.4626				
62618	-	-	-	-	11.80	0.4646				
8598185	-	-	-	-	11.85	0.4665				
62619	-	-	-	-	11.90	0.4685				
8598195	-	-	-	-	11.95	0.4705				
62620	-	-	-	-	12.00	0.4724				
62621	-	-	-	-	12.10	0.4764				
62622	-	-	-	-	12.20	0.4803				
62623	6262311	31/64	-	-	12.30	0.4843				
62624	6262411	-	-	-	12.40	0.4882				
62625	-	-	-	-	12.50	0.4921				
62626	6262611	-	-	-	12.60	0.4961				
62627	6262711	1/2	-	-	12.70	0.5000				
62628	-	-	-	-	12.80	0.5039				
62629	-	-	-	-	12.90	0.5079				
62630	-	-	-	-	13.00	0.5118				
62635	-	-	-	-	13.50	0.5315				
62640	-	-	-	-	14.00	0.5512				
62641	-	-	-	-	14.10	0.5551				

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAlN.

continued on next page

Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			4140 4340	300	400		17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
1600	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best

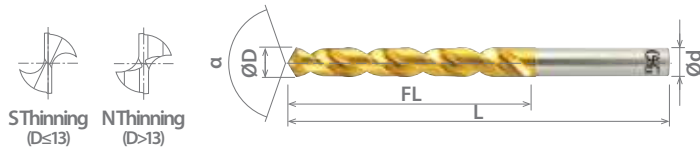




List 1600 (Continued)

SPEED FEED P327	HSSE	TiN	TiAlN	JOBBER	40°
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EX-SUS-GDR, Ideal for Stainless Steel



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	+0 / -0.014	+0 / -0.0006
3<D≤6	+0 / -0.018	+0 / -0.0007
6<D≤10	+0 / -0.022	+0 / -0.0009
10<D≤18	+0 / -0.027	+0 / -0.0011
18<D≤30	+0 / -0.033	+0 / -0.0013
30<D≤32	+0 / -0.039	+0 / -0.0015

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d	Point Angle α
		Fractional Size	Wire Gage	Letter Size	mm	Inch				
62645	-	-	-	-	14.50	0.5709	109	169	16	120°
62650	6265011	-	-	-	15.00	0.5906	112	172		
62655	-	-	-	-	15.50	0.6102				
62656	-	-	-	-	15.60	0.6142	115	181		
62660	-	-	-	-	16.00	0.6299				
62665	-	-	-	-	16.50	0.6496	118	184		
62670	-	-	-	-	17.00	0.6693				
62675	-	-	-	-	17.50	0.6890	122	188		
62676	-	-	-	-	17.60	0.6929				
62680	-	-	-	-	18.00	0.7087	125	191		
62685	-	-	-	-	18.50	0.7283				
62690	-	-	-	-	19.00	0.7480	128	204		
62695	-	-	-	-	19.50	0.7677				
62696	-	-	-	-	19.60	0.7717	132	208		
62700	-	-	-	-	20.00	0.7874				
62705	-	-	-	-	20.50	0.8071	136	212		
62710	-	-	-	-	21.00	0.8268				
62715	-	-	-	-	21.50	0.8465	140	216		
62720	-	-	-	-	22.00	0.8661				
62725	-	-	-	-	22.50	0.8858	145	225		
62730	6273011	-	-	-	23.00	0.9055				
62735	-	-	-	-	23.50	0.9252	150	230		
62740	-	-	-	-	24.00	0.9449				
62745	-	-	-	-	24.50	0.9646	155	235		
62750	-	63/64	-	-	25.00	0.9843				
62755	-	-	-	-	25.50	1.0039	160	240		
62760	-	-	-	-	26.00	1.0236				
62765	-	-	-	-	26.50	1.0433	165	245		
62770	-	-	-	-	27.00	1.0630				
62780	-	-	-	-	28.00	1.1024	165	245		
62790	-	-	-	-	29.00	1.1417				
62800	-	-	-	-	30.00	1.1811	165	245		
62810	-	-	-	-	31.00	1.2205				
62820	-	-	-	-	32.00	1.2598				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order: 11 = TiAlN.



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
1600	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best

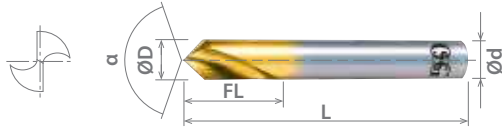




List 1200

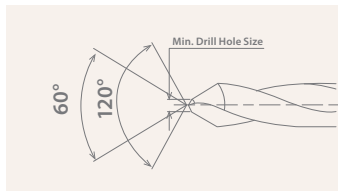
TiN-NC-LDS, 60°, 90° & 120° Spot Drills

SPEED FEED	HSS	BR	TiN	STUB	20°
P328					



EDP Number		Diameter					Min Drill Hole Size	Flute Length	Overall Length	Shank Diameter	Point Angle
Bright	TiN	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d	α
-	63703	-	-	-	-	-	1.5	-	-	-	60°
62903	63603	-	-	-	3	0.1181	1.1	11	48	3	90°
62923	63653	-	-	-	-	-	-	-	-	-	120°
-	63704	-	-	-	-	-	1.7	-	-	-	60°
62904	63604	-	-	-	4	0.1575	1.3	15	54	4	90°
62924	63654	-	-	-	-	-	-	-	-	-	120°
-	63706	-	-	-	-	-	1.9	-	-	-	60°
62906	63606	-	-	-	6	0.2362	1.5	20	72	6	90°
62926	63656	-	-	-	-	-	-	-	-	-	120°
-	63708	-	-	-	-	-	1.9	-	-	-	60°
62908	63608	-	-	-	8	0.3150	1.6	26	81	8	90°
62928	63658	-	-	-	-	-	-	-	-	-	120°
-	63710	-	-	-	-	-	2.1	-	-	-	60°
62910	63610	-	-	-	10	0.3937	-	30	93	10	90°
62930	63660	-	-	-	-	-	-	-	-	-	120°
-	63712	-	-	-	-	-	2.1	-	-	-	60°
62912	63612	-	-	-	12	0.4724	-	36	108	12	90°
62932	63662	-	-	-	-	-	-	-	-	-	120°
62916	63616	-	-	-	-	-	3	-	-	-	90°
62936	-	-	-	-	16	0.6299	-	41	118	16	120°
62918	63618	-	-	-	-	-	3	-	-	-	90°
62938	-	-	-	-	20	0.7874	-	53	132	20	120°
62920	63620	-	-	-	-	-	3	-	-	-	90°
62940	-	-	-	-	25	0.9843	-	60	151	25	120°

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order: 11 = TiAIN.



The EX-SPOT with point angle 60° has a 120° point angle within the minimum drill hole diameter in order to prevent the chisel edges from crashing.

Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
1200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

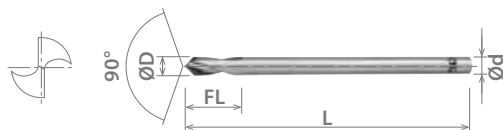




List 1250

SPEED FEED P328	HSS	BR	STUB	20°
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LS-NC-LDS, Long Shank, 90° Spot Drill



EDP Number	Diameter					Flute Length FL	Overall Length L	Shank Diameter d
	Fractional Size	Wire Gage	Letter Size	mm	Inch			
63503	-	-	-	3	0.1181	11	75	3
63504	-	-	-	4	0.1575	15	100	4
63506	-	-	-	6	0.2362	20	150	6
63508	-	-	-	8	0.3150	26		8
63510	-	-	-	10	0.3937	30	200	10
63512	-	-	-	12	0.4724	36		12
63516	-	-	-	16	0.6299	41	250	16
63518	-	-	-	20	0.7874	53		20
63520	-	-	-	25	0.9843	60		25

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order: 05 = TiN, 11 = TiAlN



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
1250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

good best



DRILLING

Technical





List 6600 - A Brand[®] ADO-TRS: 3D List 6610 - A Brand[®] ADO-TRS: 5D

General Drilling Operations

Work Material		Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 400SS, 17-4PH		Cast Iron		Ductile Cast Iron	
Drilling Speed		260-395 SFM		260-395 SFM		130-200 SFM		260-395 SFM		195-330 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch										
4	-	8,000	0.005 - 0.009	8,000	0.005 - 0.009	4,000	0.005 - 0.007	8,000	0.005 - 0.009	6,300	0.005 - 0.009
6	-	5,300	0.007 - 0.013	5,300	0.007 - 0.013	2,700	0.007 - 0.009	5,300	0.008 - 0.014	4,200	0.007 - 0.013
-	1/4	5,000	0.007 - 0.014	5,000	0.007 - 0.014	2,500	0.007 - 0.010	5,000	0.009 - 0.015	4,000	0.007 - 0.014
8	-	4,000	0.009 - 0.017	4,000	0.009 - 0.017	2,000	0.009 - 0.013	4,000	0.011 - 0.019	3,200	0.009 - 0.017
-	3/8	3,300	0.012 - 0.021	3,300	0.012 - 0.021	1,700	0.011 - 0.015	3,300	0.013 - 0.023	2,700	0.012 - 0.021
10	-	3,200	0.012 - 0.022	3,200	0.012 - 0.022	1,600	0.012 - 0.016	3,200	0.014 - 0.024	2,500	0.012 - 0.022
-	7/16	2,900	0.013 - 0.023	2,900	0.013 - 0.023	1,400	0.013 - 0.017	2,900	0.015 - 0.026	2,300	0.013 - 0.023
12	-	2,700	0.014 - 0.024	2,700	0.014 - 0.024	1,300	0.014 - 0.019	2,700	0.017 - 0.028	2,100	0.014 - 0.024
-	1/2	2,500	0.015 - 0.025	2,500	0.015 - 0.025	1,300	0.015 - 0.020	2,500	0.018 - 0.028	2,000	0.015 - 0.025
14	-	2,300	0.017 - 0.028	2,300	0.017 - 0.028	1,100	0.017 - 0.022	2,300	0.019 - 0.030	1,800	0.017 - 0.028
-	5/8	2,000	0.019 - 0.031	2,000	0.019 - 0.031	1,000	0.019 - 0.025	2,000	0.022 - 0.034	1,600	0.019 - 0.031
18	-	1,800	0.021 - 0.032	1,800	0.021 - 0.032	900	0.021 - 0.028	1,800	0.025 - 0.035	1,400	0.021 - 0.032
-	3/4	1,700	0.023 - 0.034	1,700	0.023 - 0.034	800	0.023 - 0.030	1,700	0.026 - 0.037	1,300	0.023 - 0.034
20	-	1,600	0.024 - 0.035	1,600	0.024 - 0.035	800	0.024 - 0.031	1,600	0.028 - 0.039	1,300	0.024 - 0.035

General Drilling Operations

Work Material		Cast Aluminum		Special Alloy Steels, Hardened Steels					
Hardness				26-30 HRC		30-34 HRC		34-43 HRC	
Drilling Speed		260-660 SFM		195-295 SFM		160-230 SFM		130-160 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch								
4	-	11,100	0.006 - 0.012	6,000	0.005 - 0.008	4,800	0.005 - 0.008	3,600	0.005 - 0.007
6	-	7,400	0.009 - 0.019	4,000	0.007 - 0.012	3,200	0.007 - 0.012	2,400	0.007 - 0.009
-	1/4	7,000	0.010 - 0.020	3,700	0.007 - 0.012	3,000	0.007 - 0.012	2,200	0.007 - 0.010
8	-	5,600	0.013 - 0.025	3,000	0.009 - 0.016	2,400	0.009 - 0.016	1,800	0.009 - 0.013
-	3/8	4,700	0.015 - 0.030	2,500	0.011 - 0.019	2,000	0.011 - 0.019	1,500	0.011 - 0.015
10	-	4,500	0.016 - 0.031	2,400	0.012 - 0.020	1,900	0.012 - 0.020	1,400	0.012 - 0.016
-	7/16	4,000	0.017 - 0.035	2,100	0.013 - 0.022	1,700	0.013 - 0.022	1,300	0.013 - 0.017
12	-	3,700	0.019 - 0.038	2,000	0.014 - 0.024	1,600	0.014 - 0.024	1,200	0.014 - 0.019
-	1/2	3,500	0.020 - 0.040	1,900	0.015 - 0.024	1,500	0.015 - 0.024	1,100	0.015 - 0.020
14	-	3,200	0.022 - 0.044	1,700	0.017 - 0.025	1,400	0.017 - 0.025	1,000	0.017 - 0.022
-	5/8	2,800	0.025 - 0.050	1,500	0.019 - 0.025	1,200	0.019 - 0.025	900	0.019 - 0.025
18	-	2,500	0.028 - 0.057	1,300	0.021 - 0.028	1,100	0.021 - 0.028	800	0.021 - 0.028
-	3/4	2,300	0.030 - 0.060	1,200	0.023 - 0.030	1,000	0.023 - 0.030	700	0.023 - 0.030
20	-	2,200	0.031 - 0.063	1,200	0.024 - 0.031	1,000	0.024 - 0.031	700	0.024 - 0.031





List 5720 - A Brand® ADFO: 3D

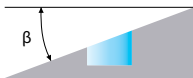
General Drilling Operations

Work Material		Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Ductile Cast Iron		Aluminum Alloy 5052,7075	
Hardness				28-35 HRC									
Drilling Speed		200-330 SFM		100-300 SFM		130-200 SFM		200-400 SFM		165-260 SFM		265-650 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
2	-	10,600	0.002 - 0.004	7,450	0.002 - 0.004	5,300	0.002 - 0.004	10,600	0.002 - 0.004	8,500	0.002 - 0.004	17,000	0.002 - 0.004
3	-	10,080	0.002 - 0.004	7,030	0.002 - 0.004	5,040	0.002 - 0.004	10,080	0.002 - 0.004	8,100	0.002 - 0.004	16,050	0.002 - 0.004
-	1/8	8,000	0.002 - 0.005	5,550	0.002 - 0.005	4,000	0.002 - 0.005	8,000	0.002 - 0.005	6,350	0.002 - 0.005	12,750	0.002 - 0.005
4	-	6,720	0.002 - 0.006	4,690	0.002 - 0.006	3,360	0.002 - 0.006	6,720	0.002 - 0.006	5,400	0.002 - 0.006	10,700	0.002 - 0.006
-	3/16	5,300	0.002 - 0.007	3,700	0.002 - 0.007	2,650	0.002 - 0.007	5,300	0.002 - 0.007	4,250	0.002 - 0.007	8,500	0.002 - 0.007
6	-	5,040	0.003 - 0.008	3,510	0.003 - 0.008	2,520	0.003 - 0.008	5,040	0.003 - 0.008	4,050	0.003 - 0.008	8,020	0.003 - 0.008
-	1/4	4,000	0.003 - 0.009	2,800	0.003 - 0.009	2,000	0.003 - 0.009	4,000	0.003 - 0.009	3,200	0.003 - 0.009	6,350	0.003 - 0.009
8	-	3,360	0.004 - 0.011	2,340	0.004 - 0.011	1,680	0.004 - 0.011	3,360	0.004 - 0.011	2,700	0.004 - 0.011	5,350	0.004 - 0.011
-	3/8	3,200	0.004 - 0.012	2,250	0.004 - 0.012	1,600	0.004 - 0.012	3,200	0.004 - 0.012	2,550	0.004 - 0.012	5,100	0.004 - 0.012
10	-	2,880	0.004 - 0.013	2,010	0.004 - 0.013	1,440	0.004 - 0.013	2,880	0.004 - 0.013	2,310	0.004 - 0.013	4,580	0.004 - 0.013
-	7/16	2,650	0.005 - 0.014	1,850	0.005 - 0.014	1,350	0.005 - 0.014	2,650	0.005 - 0.014	2,100	0.005 - 0.014	4,250	0.005 - 0.014
12	-	2,520	0.005 - 0.015	1,760	0.005 - 0.015	1,260	0.005 - 0.015	2,520	0.005 - 0.015	2,020	0.005 - 0.015	4,010	0.005 - 0.015
-	1/2	2,250	0.006 - 0.017	1,600	0.006 - 0.017	1,150	0.006 - 0.017	2,250	0.006 - 0.017	1,800	0.006 - 0.017	3,650	0.006 - 0.017
14	-	2,010	0.006 - 0.019	1,410	0.006 - 0.019	1,010	0.006 - 0.019	2,010	0.006 - 0.019	1,620	0.006 - 0.019	3,210	0.006 - 0.019
-	5/8	2,000	0.006 - 0.019	1,400	0.006 - 0.019	1,000	0.006 - 0.019	2,000	0.006 - 0.019	1,600	0.006 - 0.019	3,200	0.006 - 0.019
18	-	1,750	0.007 - 0.021	1,250	0.007 - 0.021	900	0.007 - 0.021	1,750	0.007 - 0.021	1,400	0.007 - 0.021	2,850	0.007 - 0.021
-	3/4	1,680	0.008 - 0.023	1,170	0.008 - 0.023	840	0.008 - 0.023	1,680	0.008 - 0.023	1,350	0.008 - 0.023	2,670	0.008 - 0.023
20	-	1,600	0.008 - 0.024	1,100	0.008 - 0.024	800	0.008 - 0.024	1,600	0.008 - 0.024	1,250	0.008 - 0.024	2,550	0.008 - 0.024

General Drilling Operations

Work Material		Cast Aluminum		Hardened Steel-Pre Hardened Steels		Plastic Mold Steels	
Hardness				Up to 50 HRC		Up to 40 HRC	
Drilling Speed		265-650 SFM		65-100 SFM		65-130 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR
2	-	17,000	0.002 - 0.004	2,650	0.001 - 0.004	3,200	0.002 - 0.004
3	-	16,050	0.002 - 0.004	2,500	0.001 - 0.004	3,050	0.002 - 0.004
-	1/8	12,750	0.002 - 0.005	2,000	0.002 - 0.005	2,400	0.002 - 0.005
4	-	10,700	0.002 - 0.006	1,670	0.002 - 0.006	2,040	0.002 - 0.006
-	3/16	8,500	0.002 - 0.007	1,350	0.002 - 0.007	1,600	0.002 - 0.007
6	-	8,020	0.003 - 0.008	1,250	0.003 - 0.008	1,530	0.003 - 0.008
-	1/4	6,350	0.003 - 0.009	1,000	0.003 - 0.009	1,200	0.003 - 0.009
8	-	5,350	0.004 - 0.011	840	0.004 - 0.011	1,020	0.004 - 0.011
-	3/8	5,100	0.004 - 0.012	800	0.004 - 0.012	950	0.004 - 0.012
10	-	4,580	0.004 - 0.013	720	0.004 - 0.013	880	0.004 - 0.013
-	7/16	4,250	0.005 - 0.014	650	0.005 - 0.014	800	0.005 - 0.014
12	-	4,010	0.005 - 0.015	630	0.005 - 0.015	770	0.005 - 0.015
-	1/2	3,650	0.006 - 0.017	550	0.006 - 0.017	700	0.006 - 0.017
14	-	3,210	0.006 - 0.019	500	0.006 - 0.019	610	0.006 - 0.019
-	5/8	3,200	0.006 - 0.019	500	0.006 - 0.019	600	0.006 - 0.019
18	-	2,850	0.007 - 0.021	450	0.007 - 0.021	550	0.007 - 0.021
-	3/4	2,670	0.008 - 0.023	420	0.008 - 0.023	510	0.008 - 0.023
20	-	2,550	0.008 - 0.024	400	0.008 - 0.024	500	0.008 - 0.024

Note:



- Water-soluble coolant may be applied as noted in the above table only under the premise that the work surface has been flattened by milling.
- Use a rigid and precise machine and holder.
- Please minimize overhang length as much as possible during machining.
- Adjust the rotational speed and feed in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.0008".
- Please select a cutting fluid that is most suitable for the work material with minimal smoke formation.
- In the case of dry machining, please use air blow to remove chips to prevent clogging.
 - Please do not machine stainless steel dry.
- When machining an inclined plane, adjust the rotational speed and feed in accordance with the angle of the incline (β).
 - When the machining incline angle (β) is less than 30°, please reduce the feed to 40-60%.
 - When the machining incline angle (β) is over 30°, please reduce the speed to 60-80%, the feed to 20-40%.
- Please use step drilling in pilot holes to improve cutting chip separation.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and feed as indicated above (in accordance with the machining precision requirement).
- Please always use the appropriate cutting fluid recommended by the cutting fluid manufacturer in the machining of magnesium alloys. Be cautious with the cutting chips as they are highly flammable and may pose a serious fire risk if not properly handled.





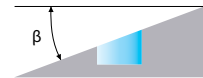
List 5700 - A Brand[®] ADF: 2D

General Drilling Operations

Work Material	Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Ductile Cast Iron		Aluminum Alloy 5052,7075		
Hardness			28-35 HRC										
Drilling Speed	200-330 SFM		100-300 SFM		65-140 SFM		200-400 SFM		165-260 SFM		265-650 SFM		
Drill Dia.	Speed		Feed		Speed		Feed		Speed		Feed		
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch												
2	-	12,700	0.0004-0.002	9,550	0.0004-0.002	6,310	0.0004 - 0.002	14,300	0.0004-0.002	10,350	0.0004-0.002	22,300	0.0004-0.002
3	-	8,500	0.001-0.004	6,350	0.001-0.004	4,250	0.001 - 0.004	9,550	0.001-0.004	6,900	0.001-0.004	14,850	0.001-0.004
-	1/8	8,000	0.001-0.004	6,020	0.001-0.004	3,970	0.001 - 0.004	9,020	0.001-0.004	6,570	0.001-0.004	14,060	0.001-0.004
4	-	6,350	0.001-0.005	4,750	0.001-0.005	3,200	0.001 - 0.005	7,150	0.001-0.005	5,150	0.001-0.005	11,150	0.001-0.005
-	3/16	5,300	0.001-0.006	4,020	0.001-0.006	2,650	0.001 - 0.006	6,010	0.001-0.006	4,380	0.001-0.006	9,370	0.001-0.006
6	-	4,250	0.001-0.007	3,200	0.001-0.007	2,100	0.001 - 0.007	4,750	0.001-0.007	3,450	0.001-0.007	7,450	0.001-0.007
-	1/4	4,000	0.001-0.008	3,010	0.001-0.008	1,990	0.001 - 0.008	4,510	0.001-0.008	3,290	0.001-0.008	7,030	0.001-0.008
8	-	3,200	0.002-0.009	2,400	0.002-0.009	1,600	0.002 - 0.009	3,600	0.002-0.009	2,600	0.002-0.009	5,550	0.001-0.009
-	3/8	2,650	0.002-0.011	2,010	0.002-0.011	1,320	0.002 - 0.011	3,010	0.002-0.011	2,190	0.002-0.011	4,690	0.002-0.011
10	-	2,550	0.002-0.012	1,900	0.002-0.012	1,260	0.002 - 0.012	2,850	0.002-0.012	2,050	0.002-0.012	4,450	0.002-0.012
-	7/16	2,300	0.002-0.012	1,720	0.002-0.012	1,140	0.002 - 0.012	2,580	0.002-0.012	1,880	0.002-0.012	4,020	0.002-0.013
12	-	2,100	0.002-0.012	1,600	0.002-0.012	1,050	0.002 - 0.012	2,400	0.002-0.012	1,700	0.002-0.012	3,700	0.002-0.014
-	1/2	2,000	0.002-0.013	1,510	0.002-0.013	990	0.002 - 0.013	2,250	0.002-0.013	1,650	0.002-0.013	3,520	0.002-0.016
14	-	1,800	0.003-0.014	1,350	0.003-0.014	910	0.003 - 0.014	2,050	0.003-0.014	1,500	0.003-0.014	3,200	0.003-0.017
-	5/8	1,600	0.003-0.015	1,210	0.003-0.014	790	0.003 - 0.015	1,800	0.003-0.014	1,310	0.003-0.014	2,820	0.003-0.019
18	-	1,400	0.004-0.015	1,050	0.004-0.015	700	0.004 - 0.015	1,600	0.004-0.015	1,150	0.004-0.015	2,500	0.004-0.021
-	3/4	1,350	0.004-0.016	1,000	0.004-0.015	660	0.004 - 0.016	1,500	0.004-0.016	1,100	0.004-0.016	2,350	0.004-0.023
20	-	1,250	0.004-0.016	950	0.004-0.016	635	0.004 - 0.016	1,450	0.004-0.016	1,050	0.004-0.016	2,250	0.004-0.024

General Drilling Operations

Work Material	Cast Aluminum		Hardened Steel-Pre Hardened Steel		Plastic Mold Steels		
Hardness			Up to 50 HRC		Up to 40 HRC		
Drilling Speed	265-650 SFM		65-100 SFM		65-130 SFM		
Drill Dia.	Speed		Feed		Speed		
	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch						
2	-	22,300	0.0004-0.002	4,000	0.0004-0.001	4,750	0.0004-0.002
3	-	14,850	0.001-0.004	2,650	0.001-0.002	3,200	0.001-0.002
-	1/8	14,060	0.001-0.004	2,500	0.001-0.002	3,050	0.001-0.002
4	-	11,150	0.001-0.005	2,000	0.001-0.002	2,400	0.001-0.003
-	3/16	9,370	0.001-0.006	1,670	0.001-0.003	2,040	0.001-0.004
6	-	7,450	0.001-0.007	1,350	0.001-0.004	1,600	0.001-0.005
-	1/4	7,030	0.001-0.008	1,250	0.001-0.004	1,530	0.001-0.005
8	-	5,550	0.001-0.009	1,000	0.002-0.005	1,200	0.002-0.006
-	3/8	4,690	0.002-0.011	840	0.002-0.005	1,020	0.002-0.007
10	-	4,450	0.002-0.012	800	0.002-0.006	950	0.002-0.008
-	7/16	4,020	0.002-0.013	720	0.002-0.006	880	0.002-0.009
12	-	3,700	0.002-0.014	650	0.002-0.007	800	0.002-0.009
-	1/2	3,520	0.002-0.016	630	0.002-0.007	770	0.002-0.010
14	-	3,200	0.003-0.017	550	0.003-0.008	700	0.003-0.011
-	5/8	2,820	0.003-0.019	500	0.003-0.009	610	0.003-0.013
18	-	2,500	0.004-0.021	450	0.004-0.011	550	0.004-0.014
-	3/4	2,350	0.004-0.023	420	0.004-0.012	510	0.004-0.015
20	-	2,250	0.004-0.024	400	0.004-0.012	500	0.004-0.016



Note:

- The speeds and feeds in the table above apply when drilling on a flat surface with water-soluble coolant.
- When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%.
- Use a rigid and precise machine and holder.
- Please minimize tool hang over as much as possible during machining.
- Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.01 mm.
- When machining an inclined plane, adjust the rotational speed and the feed rate in accordance with the angle of the incline (β).
 - When the machining incline angle(β) is less than 30°, please reduce the feed to 40-60%.
 - When the machining incline angle(β) is over 30°, please reduce the speed to 60-80% , the feed to 40-60%.
- Please use step drilling in pilot holes to improve cutting chip separation.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed rate as indicated above (in accordance with the machining precision requirement).



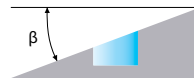
List 5705 - A Brand® ADFLS: 2D

General Drilling Operations

Work Material	Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Ductile Cast Iron		Aluminum Alloy 5052,7075		
Hardness			28-35 HRC										
Drilling Speed	200-330 SFM		100-300 SFM		65-140 SFM		200-400 SFM		165-260 SFM		265-650 SFM		
Drill Dia.	Speed		Feed		Speed		Feed		Speed		Feed		
	mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
2	-	12,700	0.0012 - 0.002	9,550	0.0012 - 0.002	6,310	0.0012 - 0.002	14,300	0.0016 - 0.002	10,350	0.0016 - 0.002	22,300	0.0004 - 0.002
3	-	8,500	0.002 - 0.003	6,350	0.002 - 0.003	4,250	0.002 - 0.003	9,550	0.002 - 0.004	6,900	0.002 - 0.004	14,850	0.001 - 0.004
-	1/8	8,000	0.002 - 0.003	6,020	0.002 - 0.003	3,970	0.002 - 0.003	9,020	0.002 - 0.004	6,570	0.002 - 0.004	14,060	0.001 - 0.004
4	-	6,350	0.002 - 0.004	4,750	0.002 - 0.004	3,200	0.002 - 0.004	7,150	0.003 - 0.005	5,150	0.003 - 0.005	11,150	0.001 - 0.005
-	3/16	5,300	0.002 - 0.004	4,020	0.002 - 0.004	2,650	0.002 - 0.004	6,010	0.003 - 0.005	4,380	0.003 - 0.005	9,370	0.001 - 0.005
6	-	4,250	0.004 - 0.006	3,200	0.004 - 0.006	2,100	0.004 - 0.006	4,750	0.005 - 0.007	3,450	0.005 - 0.007	7,450	0.001 - 0.007
-	1/4	4,000	0.004 - 0.006	3,010	0.004 - 0.006	1,990	0.004 - 0.006	4,510	0.005 - 0.007	3,290	0.005 - 0.007	7,030	0.001 - 0.007
8	-	3,200	0.005 - 0.008	2,400	0.005 - 0.008	1,600	0.005 - 0.008	3,600	0.006 - 0.009	2,600	0.006 - 0.009	5,550	0.002 - 0.009
-	3/8	2,650	0.005 - 0.008	2,010	0.005 - 0.008	1,320	0.005 - 0.008	3,010	0.006 - 0.009	2,190	0.006 - 0.009	4,690	0.002 - 0.009
10	-	2,550	0.006 - 0.010	1,900	0.006 - 0.010	1,260	0.006 - 0.010	2,850	0.008 - 0.012	2,050	0.008 - 0.012	4,450	0.002 - 0.012
-	7/16	2,300	0.006 - 0.010	1,720	0.006 - 0.010	1,140	0.006 - 0.010	2,580	0.008 - 0.012	1,880	0.008 - 0.012	4,020	0.002 - 0.012
12	-	2,100	0.007 - 0.012	1,600	0.007 - 0.012	1,050	0.007 - 0.012	2,400	0.009 - 0.014	1,700	0.009 - 0.014	3,700	0.002 - 0.014
-	1/2	2,000	0.007 - 0.012	1,510	0.007 - 0.012	990	0.007 - 0.012	2,250	0.009 - 0.014	1,650	0.009 - 0.014	3,520	0.002 - 0.014
14	-	1,800	0.008 - 0.014	900	0.008 - 0.014	910	0.008 - 0.014	2,050	0.011 - 0.017	1,500	0.011 - 0.017	3,200	0.003 - 0.017
-	5/8	1,600	0.009 - 0.016	800	0.009 - 0.016	790	0.009 - 0.016	1,800	0.013 - 0.019	1,300	0.013 - 0.019	2,800	0.003 - 0.019
-		1,600	0.009 - 0.016	800	0.009 - 0.016	790	0.009 - 0.016	1,800	0.013 - 0.019	1,300	0.013 - 0.019	2,800	0.003 - 0.019
18	-	1,400	0.011 - 0.018	700	0.011 - 0.018	700	0.011 - 0.018	1,600	0.014 - 0.021	1,150	0.014 - 0.021	2,500	0.004 - 0.021
-	3/4	1,350	0.012 - 0.020	660	0.012 - 0.020	660	0.012 - 0.020	1,500	0.016 - 0.024	1,100	0.016 - 0.024	2,350	0.004 - 0.024
20	-	1,250	0.012 - 0.020	650	0.012 - 0.020	635	0.012 - 0.020	1,450	0.016 - 0.024	1,050	0.016 - 0.024	2,250	0.004 - 0.024

General Drilling Operations

Work Material	Cast Aluminum		Hardened Steel-Pre Hardened Steel		Plastic Mold Steels		
Hardness			Up to 50 HRC		Up to 40 HRC		
Drilling Speed	265-650 SFM		65-100 SFM		65-130 SFM		
Drill Dia.	Speed		Feed		Speed		
	mm	Inch	RPM	IPR	RPM	IPR	
2	-	22,300	0.0004 - 0.002	4,000	0.0008 - 0.002	4,750	0.0012 - 0.002
3	-	14,850	0.001 - 0.004	2,650	0.001 - 0.002	3,200	0.0018 - 0.002
-	1/8	14,060	0.001 - 0.004	2,500	0.001 - 0.002	3,050	0.0018 - 0.002
4	-	11,150	0.001 - 0.005	2,000	0.002 - 0.003	2,400	0.002 - 0.003
-	3/16	9,370	0.001 - 0.005	1,670	0.002 - 0.003	2,040	0.002 - 0.003
6	-	7,450	0.001 - 0.007	1,350	0.002 - 0.005	1,600	0.004 - 0.005
-	1/4	7,030	0.001 - 0.007	1,250	0.002 - 0.005	1,530	0.004 - 0.005
8	-	5,550	0.002 - 0.009	1,000	0.003 - 0.006	1,200	0.005 - 0.006
-	3/8	4,690	0.002 - 0.009	840	0.003 - 0.006	1,020	0.005 - 0.006
10	-	4,450	0.002 - 0.012	800	0.004 - 0.008	950	0.006 - 0.008
-	7/16	4,020	0.002 - 0.012	720	0.004 - 0.008	880	0.006 - 0.008
12	-	3,700	0.002 - 0.014	650	0.005 - 0.009	800	0.007 - 0.009
-	1/2	3,520	0.002 - 0.014	630	0.005 - 0.009	770	0.007 - 0.009
14	-	3,200	0.003 - 0.017	550	0.006 - 0.011	700	0.008 - 0.011
-	5/8	2,800	0.003 - 0.019	500	0.006 - 0.013	600	0.009 - 0.013
16	-	2,800	0.003 - 0.019	500	0.006 - 0.013	600	0.009 - 0.013
18	-	2,500	0.004 - 0.021	450	0.007 - 0.014	550	0.011 - 0.014
-	3/4	2,350	0.004 - 0.024	420	0.008 - 0.016	510	0.012 - 0.016
20	-	2,250	0.004 - 0.024	400	0.008 - 0.016	500	0.012 - 0.016



Note:

- To process flat surfaces, prior center-drilling with a larger diameter is required.
- The speeds and feeds in the table above apply when drilling on a flat surface with water-soluble coolant.
- When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%. (Less than 5% oil)
- Use a rigid and precise machine and holder.
- Please minimize tool hang over as much as possible during machining.
- Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
- Please set up the drill so that the runout of the cutting edge is under 0.0004".
- When machining an inclined plane, adjust the rotational speed and the feed rate in accordance with the angle of the incline (β).
 - When the machining incline angle(β) is less than 30°, please reduce the feed to 40-60%.
 - When the machining incline angle(β) is over 30°, please reduce the speed to 60-80% , the feed to 40-60%.
- Please use step drilling in pilot holes to improve cutting chip separation for hard to break materials.
- If it is necessary to ensure the locating precision of the hole to be machined, adjust the rotational speed and the feed rate as indicated above (in accordance with the machining precision requirement).





List 6500 - A Brand[®] ADO: 3D

List 6510 - A Brand[®] ADO: 5D

List 6520 - A Brand[®] ADO: 8D

General Drilling Operations

Work Material	Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		High Heat Material						
	Ti-Alloy, Ti-6Al-4V		Fe-Base Material, A286		Ni-Base Material, Inconel								
Drilling Speed	260-395 SFM		260-395 SFM		130-230 SFM		100 - 180 SFM		80 - 130 SFM		65 - 110 SFM		
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch												
2	-	15,900	0.002-0.004	15,900	0.002-0.004	9,600	0.002-0.004	7,270	0.002-0.003	5,720	0.001-0.002	4,850	0.001-0.002
3	-	10,600	0.002-0.005	10,600	0.002-0.005	6,400	0.002-0.005	4,800	0.002-0.003	3,700	0.002-0.002	3,200	0.001-0.002
-	1/8	10,020	0.003-0.005	10,020	0.003-0.005	6,050	0.003-0.005	4,580	0.002-0.004	3,600	0.002-0.003	3,050	0.002-0.002
4	-	8,000	0.003-0.006	8,000	0.003-0.006	4,800	0.003-0.006	3,600	0.002-0.004	2,800	0.002-0.003	2,400	0.002-0.002
-	3/16	6,730	0.004-0.007	6,730	0.004-0.007	4,030	0.004-0.007	3,050	0.003-0.005	2,400	0.003-0.004	2,030	0.002-0.003
6	-	5,300	0.005-0.009	5,300	0.005-0.009	3,200	0.005-0.009	2,400	0.004-0.005	1,900	0.004-0.005	1,600	0.002-0.004
-	1/4	5,010	0.006-0.009	5,010	0.006-0.009	3,020	0.006-0.009	2,290	0.004-0.006	1,800	0.004-0.006	1,530	0.002-0.004
8	-	4,000	0.006-0.011	4,000	0.006-0.011	2,400	0.006-0.011	1,800	0.005-0.007	1,400	0.005-0.006	1,200	0.003-0.005
-	3/8	3,310	0.008-0.012	3,310	0.008-0.012	2,020	0.008-0.012	1,530	0.005-0.008	1,200	0.005-0.007	1,020	0.004-0.005
10	-	3,200	0.008-0.012	3,200	0.008-0.012	1,900	0.008-0.012	1,400	0.006-0.009	1,100	0.006-0.008	950	0.004-0.006
-	7/16	2,880	0.008-0.012	2,880	0.008-0.012	1,730	0.008-0.012	1,310	0.007-0.010	1,030	0.007-0.009	870	0.004-0.007
12	-	2,700	0.008-0.012	2,700	0.008-0.012	1,600	0.008-0.012	1,200	0.007-0.011	930	0.007-0.009	800	0.005-0.007
-	1/2	2,520	0.008-0.012	2,520	0.008-0.012	1,510	0.008-0.012	1,150	0.008-0.012	900	0.008-0.010	760	0.005-0.008
14	-	2,300	0.009-0.014	2,300	0.009-0.014	1,400	0.009-0.014	1,000	0.008-0.013	780	0.008-0.011	770	0.005-0.008
-	5/8	2,020	0.010-0.014	2,020	0.010-0.014	1,210	0.010-0.014	920	0.009-0.013	720	0.008-0.009	610	0.005-0.008
18	-	1,800	0.011-0.015	1,800	0.011-0.015	1,100	0.011-0.015	800	0.010-0.014	630	0.008-0.011	540	0.005-0.008
-	3/4	1,680	0.012-0.015	1,680	0.012-0.015	1,010	0.012-0.015	760	0.011-0.015	600	0.008-0.011	510	0.005-0.008
20	-	1,600	0.012-0.016	1,600	0.012-0.016	1,000	0.012-0.016	700	0.012-0.016	560	0.008-0.012	480	0.005-0.008

General Drilling Operations

Work Material	Cast Iron		Ductile Cast Iron		Special Alloy Steels, Hardened Steels								
	26-30 HRC		30-34 HRC		34-43 HRC		43-48 HRC						
Drilling Speed	260-395 SFM		195-330 SFM		195-295 SFM		130-200 SFM		130-160 SFM		82-115 HRC		
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch												
2	-	15,900	0.002-0.004	12,610	0.002-0.004	11,110	0.002-0.004	8,005	0.002-0.003	7,230	0.002-0.003	5,820	0.001-0.002
3	-	10,600	0.002-0.005	8,500	0.002-0.005	7,400	0.002-0.005	5,300	0.002-0.003	4,700	0.002-0.003	3,881	0.002-0.002
-	1/8	10,020	0.003-0.005	7,950	0.003-0.005	7,000	0.003-0.005	5,040	0.002-0.004	4,550	0.002-0.004	3,660	0.002-0.003
4	-	8,000	0.003-0.006	6,400	0.003-0.006	5,600	0.003-0.006	4,000	0.003-0.004	3,600	0.003-0.004	2,911	0.002-0.003
-	3/16	6,730	0.004-0.007	5,300	0.004-0.007	4,690	0.004-0.007	3,360	0.003-0.005	3,030	0.003-0.005	2,440	0.003-0.004
6	-	5,300	0.005-0.009	4,200	0.005-0.009	3,700	0.005-0.009	2,700	0.005-0.006	2,400	0.005-0.006	1,941	0.004-0.005
-	1/4	5,010	0.006-0.009	3,980	0.006-0.009	3,500	0.006-0.010	2,520	0.005-0.007	2,280	0.005-0.007	1,830	0.004-0.006
8	-	4,000	0.006-0.011	3,200	0.006-0.011	2,800	0.006-0.011	2,000	0.006-0.008	1,800	0.006-0.008	1,455	0.005-0.007
-	3/8	3,310	0.008-0.012	2,650	0.008-0.012	2,330	0.007-0.012	1,680	0.008-0.009	1,520	0.008-0.009	1,220	0.006-0.008
10	-	3,200	0.008-0.012	2,500	0.008-0.012	2,200	0.008-0.012	1,600	0.008-0.010	1,400	0.008-0.010	1,164	0.007-0.009
-	7/16	2,880	0.008-0.012	2,270	0.008-0.012	1,980	0.008-0.012	1,440	0.009-0.011	1,300	0.009-0.011	1,050	0.007-0.009
12	-	2,700	0.008-0.012	2,100	0.008-0.012	1,900	0.008-0.012	1,300	0.009-0.012	1,200	0.009-0.012	970	0.007-0.009
-	1/2	2,520	0.008-0.012	1,990	0.008-0.012	1,730	0.008-0.012	1,260	0.010-0.013	1,140	0.010-0.013	920	0.008-0.010
14	-	2,300	0.009-0.014	1,800	0.009-0.014	1,600	0.009-0.014	1,100	0.011-0.014	1,000	0.011-0.014	815	0.008-0.011
-	5/8	2,020	0.010-0.014	1,590	0.010-0.014	1,410	0.010-0.014	1,010	0.012-0.015	910	0.012-0.015	735	0.009-0.013
18	-	1,800	0.011-0.015	1,400	0.011-0.015	1,200	0.011-0.015	900	0.014-0.018	800	0.014-0.018	668	0.010-0.014
-	3/4	1,680	0.012-0.015	1,320	0.012-0.015	1,150	0.012-0.015	840	0.015-0.019	760	0.015-0.019	610	0.011-0.015
20	-	1,600	0.012-0.016	1,300	0.012-0.016	1,100	0.012-0.016	800	0.016-0.020	700	0.016-0.020	668	0.012-0.016

Note:

- The indicated speeds and feeds are for drilling with **water-soluble oil** or **MQL**.
- Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
- When using non-water-soluble oil or water-soluble oil (over 20 times dilution), reduce cutting speed by 30%.
- These conditions are for drilling depth under 8 times the drill diameter.
- 1D-2D step feeding may be required for drilling high hardened steels and mid-range (8D) work.





List 6530 - A Brand[®] ADO: 10D
List 6535 - A Brand[®] ADO: 15D
List 6540 - A Brand[®] ADO: 20D
List 6550 - A Brand[®] ADO: 30D

General Drilling Operations

Work Material	Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		High Heat Material						
	Ti-Alloy, Ti-6Al-4V		Fe-Base Material, A286		Ni-Base Material, Inconel		100 - 180 SFM		80 - 130 SFM		65 - 110 SFM		
Drilling Speed	260-395 SFM		260-395 SFM		130-230 SFM		100 - 180 SFM		80 - 130 SFM		65 - 110 SFM		
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch												
2	-	16,010	0.002-0.004	16,010	0.002-0.004	9,610	0.002-0.004	7,270	0.001-0.003	5,630	0.001-0.002	4,800	0.001-0.002
3	-	10,600	0.002-0.005	10,600	0.002-0.005	6,400	0.002-0.005	4,800	0.002-0.003	3,700	0.002-0.002	3,200	0.001-0.002
-	1/8	10,080	0.003-0.005	10,080	0.003-0.005	6,050	0.003-0.005	4,580	0.002-0.003	3,540	0.002-0.003	3,020	0.002-0.002
4	-	8,000	0.003-0.006	8,000	0.003-0.006	4,800	0.003-0.006	3,600	0.002-0.004	2,800	0.002-0.003	2,400	0.002-0.002
-	3/16	6,720	0.004-0.007	6,720	0.004-0.007	4,030	0.004-0.007	3,050	0.003-0.004	2,360	0.002-0.004	2,020	0.002-0.003
6	-	5,300	0.005-0.009	5,300	0.005-0.009	3,200	0.005-0.009	2,400	0.004-0.005	1,900	0.004-0.005	1,600	0.002-0.004
-	1/4	5,040	0.005-0.010	5,040	0.005-0.010	3,055	0.005-0.010	2,290	0.004-0.006	1,760	0.004-0.006	1,530	0.002-0.005
8	-	4,000	0.006-0.011	4,000	0.006-0.011	2,400	0.006-0.011	1,800	0.005-0.007	1,400	0.005-0.006	1,200	0.003-0.005
-	3/8	3,500	0.007-0.012	3,500	0.007-0.012	2,100	0.007-0.012	1,650	0.005-0.008	1,250	0.005-0.007	1,100	0.003-0.005
10	-	3,200	0.008-0.012	3,200	0.008-0.012	1,900	0.008-0.012	1,400	0.006-0.009	1,100	0.006-0.008	950	0.004-0.006
-	7/16	2,900	0.008-0.012	2,900	0.008-0.012	1,700	0.008-0.012	1,300	0.007-0.010	1,000	0.007-0.009	860	0.004-0.007
12	-	2,700	0.008-0.012	2,700	0.008-0.012	1,600	0.008-0.012	1,200	0.007-0.011	930	0.007-0.009	800	0.005-0.007
-	1/2	2,400	0.008-0.012	2,400	0.008-0.012	1,500	0.008-0.012	1,100	0.008-0.012	880	0.008-0.010	750	0.005-0.008
-	9/16	2,300	0.009-0.014	2,300	0.009-0.014	1,400	0.009-0.014	1,000	0.008-0.013	780	0.008-0.011	770	0.005-0.008

General Drilling Operations

Work Material	Cast Iron		Ductile Cast Iron		Special Alloy Steels, Hardened Steels											
	26-30 HRC		30-34 HRC		34-43 HRC		43-48 HRC		26-30 HRC		30-34 HRC		34-43 HRC		43-48 HRC	
Drilling Speed	260-395 SFM		195-330 SFM		195-295 SFM		130-200 SFM		130-160 SFM		82-115 HRC					
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
mm	Inch															
2	-	16,010	0.002-0.004	12,760	0.002-0.004	11,160	0.002-0.004	8,010	0.002-0.003	7,270	0.002-0.003	5,820	0.001-0.002			
3	-	10,600	0.002-0.005	8,500	0.002-0.005	7,400	0.002-0.005	5,300	0.002-0.003	4,700	0.002-0.003	3,880	0.002-0.002			
-	1/8	10,080	0.003-0.005	8,040	0.003-0.005	7,030	0.003-0.005	5,040	0.003-0.004	4,580	0.003-0.004	3,670	0.002-0.003			
4	-	8,000	0.003-0.006	6,400	0.003-0.006	5,600	0.003-0.006	4,000	0.003-0.004	3,600	0.003-0.004	2,910	0.002-0.003			
-	3/16	6,720	0.004-0.007	5,360	0.004-0.007	4,680	0.004-0.007	3,360	0.003-0.005	3,060	0.003-0.005	2,440	0.003-0.004			
6	-	5,300	0.005-0.009	4,200	0.005-0.009	3,700	0.005-0.009	2,700	0.005-0.006	2,400	0.005-0.006	1,940	0.004-0.005			
-	1/4	5,040	0.005-0.010	4,050	0.005-0.010	3,515	0.005-0.010	2,520	0.005-0.007	2,290	0.005-0.007	1,830	0.004-0.006			
8	-	4,000	0.006-0.011	3,200	0.006-0.011	2,800	0.006-0.011	2,000	0.006-0.008	1,800	0.006-0.008	1,450	0.005-0.007			
-	3/8	3,500	0.007-0.012	2,800	0.007-0.012	2,500	0.007-0.012	1,900	0.007-0.009	1,650	0.007-0.009	1,330	0.006-0.008			
10	-	3,200	0.008-0.012	2,500	0.008-0.012	2,200	0.008-0.012	1,600	0.008-0.010	1,400	0.008-0.010	1,160	0.007-0.009			
-	7/16	2,900	0.008-0.012	2,300	0.008-0.012	2,000	0.008-0.012	1,400	0.009-0.011	1,300	0.009-0.011	1,050	0.007-0.009			
12	-	2,700	0.008-0.012	2,100	0.008-0.012	1,900	0.008-0.012	1,300	0.009-0.012	1,200	0.009-0.012	970	0.007-0.009			
-	1/2	2,400	0.008-0.012	2,000	0.008-0.012	1,700	0.008-0.012	1,250	0.010-0.013	1,100	0.010-0.013	920	0.008-0.010			
-	9/16	2,300	0.009-0.014	1,800	0.009-0.014	1,600	0.009-0.014	1,100	0.011-0.014	1,000	0.011-0.014	815	0.008-0.011			

Note:

- The indicated speeds and feeds are for drilling with **water-soluble oil** or **MQL**. (We do not recommend mist drilling with stainless steels.)
- Water-soluble oil (20-30 times dilution) is recommended.
- When using non-water-soluble oil, set the cutting speed between 70-100% of the lowest limit.
- Make a pilot hole before using in accordance with recommended operation.
- A clogged oil hole can lead to breakage. Make sure that a filter is attached to the oil feeder.
- Peck drilling of 1D-2D is strongly recommended.

continued on next page

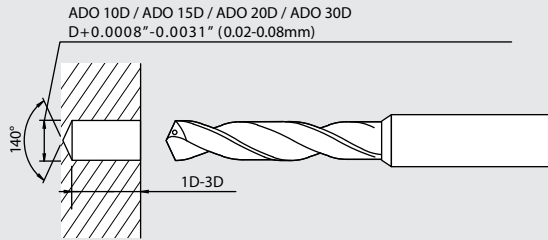




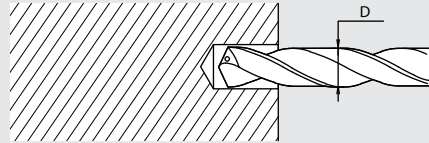
Deep Hole Operational Guidelines

1. Make a pilot hole.

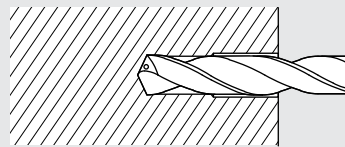
For a pilot hole, select 0.0008"-0.0031" (0.02-0.08mm) larger size drill than ADO 10D, ADO 15D, ADO 20D and ADO 30D. If the needed pilot drill size is not available, we recommend using the same diameter drill from ADO 3D.



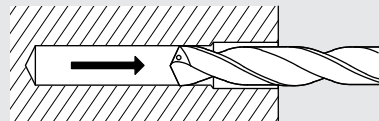
2. Insert the extra long drill into a pilot hole with zero or low revolution (below 500rpm).



3. Increase the revolution to the designated speed and start drilling.



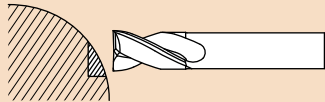
4. After drilling, move the drill away from the bottom of the hole, then reduce its speed while pulling it out of the hole.



Make sure to use an internal coolant supply when drilling.

Drilling a Curved Surface

When working on a curved surface, we recommend using A Brand[®] ADF flat drill.



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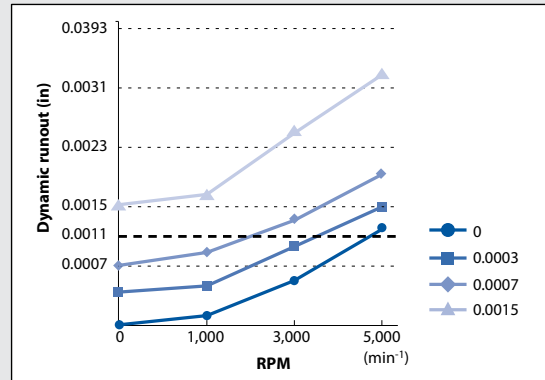




Stable Drilling with Long Drills

The runout of a gripped cutting tool increases with the speed, as shown in the graph on the right. To ensure a higher level of work stability, OSG recommends "making +0.0008"-0.0031" (+0.02-0.08mm) pilot holes" and "inserting long drills stopped or at low speeds."

The reason for this is made evident in the graph on the right. Increasing the speed increases the dynamic runout, posing a higher risk of the drill not fitting properly in the pilot hole. Therefore, this is effective not only for inhibiting static runout, but is also the recommended drilling method for long drills.



Static runout RPM (min ⁻¹)	0"	0.0003"	0.0007"	0.0015"
1,000	0.0001	0.0005	0.0009	0.0018
3,000	0.0005	0.0010	0.0014	0.0025
5,000	0.0012	0.0015	0.0019	0.0034

Tool: Ø6×30D





List 6300 - A Brand[®] AD: 2D List 6310 - A Brand[®] AD: 4D

General Drilling Operations

Work Material	Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		High Heat Material						
	210-315 SFM		210-315 SFM		100-185 SFM		80-145 SFM		Fe-Base Material, A286		Ni-Base Material, Inconel		
Drilling Speed	210-315 SFM		210-315 SFM		100-185 SFM		80-145 SFM		65-100 SFM		50-90 SFM		
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch												
2	-	8,680	0.002-0.004	8,680	0.002-0.004	5,360	0.002-0.004	4,190	0.002-0.003	3,210	0.001-0.002	2,710	0.001-0.002
3	-	8,480	0.002-0.005	8,480	0.002-0.005	5,120	0.002-0.005	3,840	0.002-0.003	2,960	0.002-0.002	2,560	0.001-0.002
-	1/8	7,700	0.002-0.005	8,100	0.002-0.005	4,830	0.003-0.005	3,640	0.002-0.003	2,810	0.002-0.003	2,440	0.001-0.002
4	-	6,400	0.003-0.006	6,400	0.003-0.006	3,840	0.003-0.006	2,880	0.002-0.004	2,240	0.002-0.003	1,920	0.002-0.002
-	3/16	5,200	0.003-0.006	5,400	0.003-0.006	3,220	0.004-0.007	2,430	0.003-0.005	1,870	0.002-0.004	1,630	0.002-0.003
6	-	4,240	0.005-0.009	4,240	0.005-0.009	2,560	0.005-0.009	1,920	0.004-0.005	1,520	0.004-0.005	1,280	0.002-0.004
-	1/4	3,900	0.005-0.009	4,050	0.005-0.009	2,420	0.005-0.010	1,820	0.004-0.006	1,410	0.004-0.005	1,220	0.002-0.004
8	-	3,200	0.006-0.011	3,200	0.006-0.011	1,920	0.006-0.011	1,440	0.005-0.007	1,120	0.005-0.006	960	0.003-0.005
-	3/8	2,700	0.007-0.012	2,700	0.007-0.012	1,610	0.008-0.012	1,220	0.005-0.008	940	0.006-0.008	820	0.004-0.006
10	-	2,560	0.008-0.012	2,560	0.008-0.012	1,520	0.008-0.012	1,120	0.006-0.009	880	0.006-0.008	760	0.004-0.006
-	7/16	2,250	0.008-0.012	2,310	0.008-0.012	1,390	0.008-0.012	1,040	0.007-0.010	810	0.007-0.009	690	0.004-0.007
12	-	2,160	0.008-0.012	2,160	0.008-0.012	1,280	0.008-0.012	960	0.007-0.011	745	0.007-0.009	640	0.005-0.007
-	1/2	2,020	0.008-0.012	2,020	0.008-0.012	1,230	0.008-0.012	910	0.008-0.011	705	0.008-0.009	610	0.005-0.008
14	-	1,840	0.009-0.014	1,840	0.009-0.014	1,120	0.009-0.014	800	0.008-0.013	624	0.008-0.011	615	0.005-0.008
-	5/8	1,620	0.010-0.014	1,620	0.010-0.014	1,020	0.009-0.014	740	0.009-0.013	560	0.008-0.011	490	0.005-0.008
18	-	1,440	0.011-0.015	1,440	0.011-0.015	880	0.011-0.015	640	0.010-0.014	505	0.008-0.011	435	0.005-0.008
-	3/4	1,350	0.012-0.016	1,350	0.012-0.016	830	0.011-0.015	610	0.011-0.015	470	0.008-0.012	410	0.005-0.008
20	-	1,280	0.012-0.016	1,280	0.012-0.016	800	0.012-0.016	560	0.012-0.016	450	0.008-0.012	385	0.005-0.008

General Drilling Operations

Work Material	Cast Iron		Ductile Cast Iron		Special Alloy Steels, Hardened Steels								
	210-315 SFM		156-265 SFM		155-235 SFM		100-160 SFM		100-130 SFM		65-95 SFM		
Drilling Speed	210-315 SFM		156-265 SFM		155-235 SFM		100-160 SFM		100-130 SFM		65-95 SFM		
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch												
2	-	8,900	0.002-0.004	7,350	0.002-0.004	6,420	0.002-0.004	4,480	0.002-0.003	3,890	0.002-0.003	3,270	0.001-0.002
3	-	8,480	0.002-0.005	6,800	0.002-0.005	5,920	0.002-0.005	4,240	0.002-0.003	3,760	0.002-0.003	3,100	0.002-0.002
-	1/8	7,700	0.002-0.005	6,420	0.003-0.005	5,560	0.002-0.005	4,030	0.002-0.003	3,640	0.002-0.003	2,940	0.002-0.003
4	-	6,400	0.003-0.006	5,120	0.003-0.006	4,480	0.003-0.006	3,200	0.003-0.004	2,880	0.003-0.004	2,330	0.002-0.003
-	3/16	5,200	0.003-0.006	4,280	0.004-0.007	3,730	0.003-0.006	2,690	0.003-0.005	2,420	0.003-0.005	1,960	0.003-0.004
6	-	4,240	0.005-0.009	3,360	0.005-0.009	2,960	0.005-0.009	2,160	0.005-0.006	1,920	0.005-0.006	1,550	0.004-0.005
-	1/4	3,900	0.005-0.009	3,210	0.006-0.009	2,780	0.005-0.009	2,020	0.005-0.007	1,820	0.005-0.007	1,470	0.004-0.006
8	-	3,200	0.006-0.011	2,560	0.006-0.011	2,240	0.006-0.011	1,600	0.006-0.008	1,440	0.006-0.008	1,165	0.005-0.007
-	3/8	2,700	0.007-0.012	2,140	0.008-0.012	1,860	0.007-0.012	1,340	0.008-0.009	1,210	0.008-0.009	980	0.006-0.008
10	-	2,560	0.008-0.012	2,000	0.008-0.012	1,760	0.008-0.012	1,280	0.008-0.010	1,120	0.008-0.010	930	0.007-0.009
-	7/16	2,250	0.008-0.012	1,840	0.008-0.012	1,600	0.008-0.012	1,150	0.009-0.011	1,040	0.009-0.011	830	0.007-0.009
12	-	2,160	0.008-0.012	1,680	0.008-0.012	1,520	0.008-0.012	1,040	0.009-0.012	960	0.009-0.012	775	0.007-0.009
-	1/2	2,020	0.008-0.012	1,610	0.008-0.012	1,400	0.008-0.012	1,010	0.010-0.012	910	0.010-0.012	740	0.008-0.010
14	-	1,840	0.009-0.014	1,440	0.009-0.014	1,280	0.009-0.014	880	0.011-0.014	800	0.011-0.014	650	0.008-0.011
-	5/8	1,620	0.010-0.014	1,290	0.010-0.014	1,130	0.010-0.014	810	0.012-0.015	730	0.012-0.015	590	0.009-0.012
18	-	1,440	0.011-0.015	1,120	0.011-0.015	960	0.011-0.015	720	0.014-0.018	640	0.014-0.018	520	0.010-0.014
-	3/4	1,350	0.012-0.016	1,070	0.012-0.016	940	0.012-0.016	680	0.015-0.019	610	0.015-0.019	490	0.011-0.015
20	-	1,280	0.012-0.016	1,040	0.012-0.016	880	0.012-0.016	640	0.016-0.020	560	0.016-0.020	460	0.012-0.016

Note:

- The indicated speeds and feeds are for drilling with **water-soluble oil**.
- Suitable cutting fluid is water-soluble high density oil (less than 20 times dilution).
- When using non-water-soluble oil or water-soluble oil (over 20 times dilution), reduce cutting speed by 30%.
- These conditions are for drilling depth under 3 times the drill diameter.
- For machines that cannot achieve the speeds indicated in the table please set rotation as high as possible. Tool life may be reduced.





List 5200 - A Brand® ADO-SUS: 3D
List 5210 - A Brand® ADO-SUS: 5D
List 5220 - A Brand® ADO-SUS: 8D

General Drilling Operations

Work Material		Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		300 Series Austenitic Stainless Steels				400 Series Ferritic Stainless Steels Martensitic Stainless Steels			
Hardness						≤15HRC		> 15 HRC		≤15HRC		> 15 HRC	
Drilling Speed		260-325 SFM		260-325 SFM		200-330 SFM		130-260 SFM		200-330 SFM		130-260 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch												
2	-	14,100	0.0013 - 0.003	14,100	0.0013 - 0.003	12,750	0.0013 - 0.003	9,600	0.0013 - 0.003	12,750	0.0013 - 0.003	9,600	0.0013 - 0.003
3	-	9,400	0.002 - 0.005	9,400	0.002 - 0.005	8,500	0.002 - 0.005	6,400	0.002 - 0.005	8,500	0.002 - 0.005	6,400	0.002 - 0.005
-	1/8	8,900	0.002 - 0.005	8,900	0.002 - 0.005	8,100	0.002 - 0.005	6,000	0.002 - 0.005	8,000	0.002 - 0.005	6,000	0.002 - 0.005
4	-	7,100	0.003 - 0.006	7,100	0.003 - 0.006	6,400	0.003 - 0.006	4,800	0.003 - 0.006	6,400	0.003 - 0.006	4,800	0.003 - 0.006
-	3/16	6,000	0.004 - 0.007	5,900	0.004 - 0.007	5,400	0.004 - 0.007	4,000	0.004 - 0.007	5,300	0.004 - 0.007	4,000	0.004 - 0.007
6	-	4,800	0.005 - 0.009	4,700	0.005 - 0.009	4,200	0.005 - 0.008	3,200	0.005 - 0.008	4,200	0.005 - 0.008	3,200	0.005 - 0.008
-	1/4	4,500	0.005 - 0.009	4,500	0.005 - 0.009	4,000	0.005 - 0.008	3,000	0.005 - 0.008	4,000	0.005 - 0.008	3,000	0.005 - 0.008
8	-	3,500	0.006 - 0.011	3,500	0.006 - 0.011	3,200	0.006 - 0.009	2,400	0.006 - 0.009	3,200	0.006 - 0.009	2,400	0.006 - 0.009
-	3/8	3,000	0.007 - 0.012	3,000	0.007 - 0.012	2,700	0.007 - 0.011	2,000	0.007 - 0.011	2,700	0.007 - 0.011	2,000	0.007 - 0.011
10	-	2,800	0.008 - 0.012	2,800	0.008 - 0.012	2,600	0.008 - 0.012	1,900	0.007 - 0.011	2,500	0.007 - 0.011	1,900	0.007 - 0.011
-	7/16	2,600	0.008 - 0.012	2,600	0.008 - 0.012	2,300	0.008 - 0.012	1,700	0.007 - 0.011	2,300	0.007 - 0.011	1,700	0.007 - 0.011
12	-	2,300	0.008 - 0.012	2,300	0.008 - 0.012	2,100	0.008 - 0.012	1,600	0.007 - 0.012	2,100	0.007 - 0.012	1,600	0.007 - 0.012
-	1/2	2,200	0.008 - 0.013	2,200	0.008 - 0.013	2,000	0.008 - 0.012	1,500	0.008 - 0.012	2,000	0.008 - 0.012	1,500	0.008 - 0.012
14	-	2,000	0.009 - 0.014	2,000	0.009 - 0.014	1,800	0.008 - 0.013	1,400	0.008 - 0.013	1,800	0.008 - 0.013	1,400	0.008 - 0.013
-	5/8	1,800	0.010 - 0.015	1,800	0.010 - 0.015	1,600	0.009 - 0.015	1,200	0.009 - 0.015	1,600	0.009 - 0.015	1,200	0.009 - 0.015
16	-	1,800	0.010 - 0.015	1,800	0.010 - 0.015	1,600	0.009 - 0.015	1,200	0.009 - 0.015	1,600	0.009 - 0.015	1,200	0.009 - 0.015
18	-	1,600	0.011 - 0.015	1,600	0.011 - 0.015	1,400	0.010 - 0.016	1,100	0.010 - 0.016	1,400	0.010 - 0.016	1,100	0.010 - 0.016
-	3/4	1,500	0.012 - 0.016	1,500	0.012 - 0.016	1,300	0.011 - 0.016	1,000	0.011 - 0.016	1,300	0.011 - 0.016	1,000	0.011 - 0.016
20	-	1,400	0.012 - 0.016	1,500	0.012 - 0.016	1,300	0.011 - 0.016	1,000	0.011 - 0.016	1,300	0.011 - 0.016	1,000	0.011 - 0.016

General Drilling Operations

Work Material		Duplex Stainless Steels				Precipitation Hardened Stainless Steels 15-5, 17-4		Ductile Cast Iron/ Cast Iron		Cast Aluminum		Titanium Alloy	
Hardness		≤ 30 HRC		> 30 HRC		≤ 45 HRC						30-35 HRC	
Drilling Speed		130-260 SFM		100-165 SFM		130-200 SFM		195-330 SFM		325-700 SFM		100-165 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch												
2	-	9,600	0.0013 - 0.003	6,300	0.0013 - 0.003	7,950	0.0013 - 0.003	12,750	0.0013 - 0.003	24,900	0.002 - 0.004	6,300	0.0013 - 0.003
3	-	6,400	0.002 - 0.005	4,200	0.002 - 0.005	5,300	0.002 - 0.005	8,500	0.002 - 0.005	16,600	0.004 - 0.006	4,200	0.002 - 0.005
-	1/8	6,100	0.002 - 0.005	4,000	0.002 - 0.005	5,000	0.002 - 0.005	8,000	0.002 - 0.005	15,600	0.004 - 0.006	3,900	0.002 - 0.005
4	-	4,800	0.003 - 0.006	3,100	0.003 - 0.006	4,000	0.003 - 0.006	6,400	0.003 - 0.006	12,500	0.005 - 0.007	3,100	0.003 - 0.006
-	3/16	4,000	0.004 - 0.007	2,600	0.004 - 0.007	3,300	0.004 - 0.007	5,300	0.004 - 0.007	10,400	0.006 - 0.008	2,600	0.004 - 0.007
6	-	3,200	0.005 - 0.008	2,100	0.005 - 0.008	2,700	0.005 - 0.008	4,200	0.005 - 0.009	8,300	0.008 - 0.010	2,100	0.005 - 0.008
-	1/4	3,000	0.005 - 0.008	2,000	0.005 - 0.008	2,500	0.005 - 0.008	4,000	0.005 - 0.009	7,800	0.009 - 0.011	2,000	0.005 - 0.008
8	-	2,400	0.006 - 0.009	1,600	0.006 - 0.009	2,000	0.006 - 0.009	3,200	0.006 - 0.011	6,200	0.012 - 0.014	1,600	0.006 - 0.009
-	3/8	2,000	0.007 - 0.011	1,300	0.007 - 0.011	1,700	0.007 - 0.011	2,700	0.007 - 0.012	5,200	0.014 - 0.016	1,300	0.007 - 0.011
10	-	1,900	0.008 - 0.012	1,300	0.007 - 0.011	1,600	0.008 - 0.012	2,500	0.008 - 0.012	5,000	0.015 - 0.017	1,300	0.007 - 0.011
-	7/16	1,700	0.008 - 0.012	1,200	0.007 - 0.011	1,400	0.008 - 0.012	2,200	0.008 - 0.012	4,500	0.017 - 0.019	1,200	0.007 - 0.011
12	-	1,600	0.008 - 0.012	1,100	0.007 - 0.012	1,300	0.008 - 0.012	2,100	0.008 - 0.012	4,100	0.018 - 0.020	1,100	0.007 - 0.012
-	1/2	1,500	0.008 - 0.012	1,000	0.008 - 0.012	1,200	0.008 - 0.012	2,000	0.008 - 0.013	3,900	0.019 - 0.021	1,000	0.008 - 0.012
14	-	1,400	0.008 - 0.013	900	0.008 - 0.013	1,100	0.008 - 0.013	1,800	0.009 - 0.014	3,600	0.021 - 0.023	900	0.008 - 0.013
-	5/8	1,200	0.009 - 0.015	800	0.009 - 0.015	1,000	0.009 - 0.015	1,600	0.010 - 0.015	3,100	0.023 - 0.026	800	0.009 - 0.015
16	-	1,200	0.009 - 0.015	800	0.009 - 0.015	1,000	0.009 - 0.015	1,600	0.010 - 0.015	3,100	0.023 - 0.026	800	0.009 - 0.015
18	-	1,100	0.010 - 0.016	700	0.010 - 0.016	900	0.010 - 0.016	1,400	0.011 - 0.015	2,700	0.026 - 0.030	700	0.010 - 0.016
-	3/4	1,000	0.011 - 0.016	700	0.011 - 0.016	800	0.011 - 0.016	1,300	0.012 - 0.016	2,600	0.027 - 0.031	700	0.011 - 0.016
20	-	1,000	0.011 - 0.016	600	0.011 - 0.016	800	0.011 - 0.016	1,300	0.012 - 0.016	2,500	0.028 - 0.032	600	0.011 - 0.016





List 5190- A Brand[®] AD-LDS

General Drilling Operations

Work Material	Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Cast Iron		Cast Aluminum		Special Alloy Steels, Hardened Steels			
	Hardness								26-30 HRC		30-34 HRC	
Drilling Speed	200-260 SFM		100-165 SFM		200-325 SFM		260-525 SFM		65-90 SFM		50-75 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
0.5	20,000	0.0002-0.0008	20,000	0.0002-0.0008	40,000	0.0002-0.0006	60,000	0.0008-0.0020	15,000	0.0002-0.0008	9,000	0.0002-0.0008
1	10,000	0.0004-0.0012	10,000	0.0004-0.0012	20,000	0.0004-0.0012	30,000	0.001-0.004	7,500	0.0004-0.0012	4,500	0.0004-0.0012
2	5,000	0.001-0.002	5,000	0.001-0.002	12,000	0.001-0.002	15,000	0.002-0.008	3,800	0.001-0.002	2,200	0.001-0.002
3	7,500	0.001-0.003	4,500	0.001-0.003	8,000	0.002-0.003	12,000	0.004-0.009	2,500	0.001-0.003	1,500	0.001-0.003
4	5,700	0.002-0.004	3,300	0.002-0.004	6,500	0.003-0.005	9,500	0.005-0.010	1,900	0.002-0.004	1,100	0.002-0.004
6	3,800	0.002-0.005	2,300	0.002-0.005	4,300	0.005-0.007	6,400	0.005-0.011	1,300	0.002-0.005	750	0.002-0.005
8	2,800	0.003-0.006	1,700	0.003-0.006	3,200	0.005-0.008	4,800	0.007-0.012	1,000	0.003-0.006	550	0.003-0.006
10	2,300	0.004-0.007	1,400	0.004-0.007	2,600	0.007-0.010	3,800	0.009-0.014	750	0.004-0.007	450	0.004-0.007
12	1,900	0.005-0.008	1,200	0.005-0.008	2,200	0.008-0.012	3,200	0.010-0.016	650	0.005-0.008	370	0.005-0.008
16	1,400	0.006-0.011	900	0.006-0.011	1,600	0.009-0.013	2,400	0.012-0.019	480	0.006-0.011	280	0.006-0.011
20	1,150	0.008-0.013	700	0.008-0.013	1,300	0.010-0.016	1,900	0.016-0.024	380	0.008-0.013	220	0.008-0.013
25	900	0.010-0.018	560	0.010-0.018	1,000	0.012-0.019	1,500	0.020-0.030	300	0.010-0.018	180	0.010-0.018

1. The indicated speeds and feeds are for drilling with water soluble oil.
2. When using non-water soluble oil, reduce the drilling speed by 20%.
3. When centering on a curved or inclined surface, reduce the feed rate accordingly.
4. For machines that cannot achieve the speeds indicated in the table, please set rotation as high as possible.





List 5600-EXOPRO® Mega Muscle®: 3D

List 5610-EXOPRO® Mega Muscle®: 5D

General Drilling Operations

Work Material		Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Cast Iron		Ductile Cast Iron		Cast Aluminum	
Drilling Speed		260-395 SFM		200-295 SFM		260-395 SFM		195-330 SFM		260-660 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch										
4	-	8,000	0.005 - 0.009	8,000	0.005 - 0.009	8,000	0.005 - 0.009	6,300	0.005 - 0.009	11,100	0.006 - 0.012
6	-	5,300	0.008 - 0.012	5,300	0.007 - 0.013	5,300	0.008 - 0.014	4,200	0.008 - 0.013	7,400	0.009 - 0.019
-	1/4	5,000	0.009 - 0.014	5,000	0.007 - 0.014	5,000	0.009 - 0.016	4,000	0.007 - 0.014	7,000	0.010 - 0.020
8	-	4,000	0.011 - 0.016	4,000	0.009 - 0.017	4,000	0.011 - 0.019	3,200	0.009 - 0.017	5,600	0.013 - 0.025
-	3/8	3,300	0.012 - 0.021	3,300	0.012 - 0.021	3,300	0.013 - 0.023	2,700	0.012 - 0.021	4,700	0.015 - 0.030
10	-	3,200	0.013 - 0.020	3,200	0.012 - 0.022	3,200	0.014 - 0.024	2,500	0.012 - 0.022	4,500	0.016 - 0.031
-	7/16	2,900	0.013 - 0.023	2,900	0.013 - 0.023	2,900	0.015 - 0.026	2,300	0.013 - 0.023	4,000	0.017 - 0.035
12	-	2,700	0.016 - 0.024	2,700	0.014 - 0.024	2,700	0.017 - 0.028	2,100	0.014 - 0.024	3,700	0.019 - 0.038
-	1/2	2,500	0.016 - 0.025	2,500	0.015 - 0.025	2,500	0.018 - 0.028	2,000	0.015 - 0.025	3,500	0.020 - 0.040
14	-	2,300	0.019 - 0.028	2,300	0.017 - 0.028	2,300	0.019 - 0.030	1,800	0.017 - 0.028	3,200	0.022 - 0.044
-	5/8	2,000	0.019 - 0.031	2,000	0.019 - 0.031	2,000	0.022 - 0.034	1,600	0.019 - 0.031	2,800	0.025 - 0.050
18	-	1,800	0.021 - 0.032	1,800	0.021 - 0.032	1,800	0.025 - 0.035	1,400	0.021 - 0.032	2,500	0.028 - 0.057
-	3/4	1,700	0.023 - 0.034	1,700	0.023 - 0.034	1,700	0.026 - 0.037	1,300	0.023 - 0.034	2,300	0.030 - 0.060
20	-	1,600	0.024 - 0.035	1,600	0.024 - 0.035	1,600	0.028 - 0.039	1,300	0.024 - 0.035	2,200	0.031 - 0.063

General Drilling Operations

Work Material		Special Alloy Steels, Hardened Steels					
Hardness		26-30 HRC		30-34 HRC		34-43 HRC	
Drilling Speed		195-295 SFM		160-230 SFM		130-160 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch						
4	-	6,000	0.005 - 0.008	4,800	0.005 - 0.008	3,600	0.005 - 0.007
6	-	4,000	0.007 - 0.012	3,200	0.007 - 0.012	2,400	0.007 - 0.009
-	1/4	3,700	0.007 - 0.012	3,000	0.007 - 0.012	2,200	0.007 - 0.010
8	-	3,000	0.009 - 0.016	2,400	0.009 - 0.016	1,800	0.009 - 0.013
-	3/8	2,500	0.011 - 0.019	2,000	0.011 - 0.019	1,500	0.011 - 0.015
10	-	2,400	0.012 - 0.020	1,900	0.012 - 0.020	1,400	0.012 - 0.016
-	7/16	2,100	0.013 - 0.022	1,700	0.013 - 0.022	1,300	0.013 - 0.017
12	-	2,000	0.014 - 0.024	1,600	0.014 - 0.024	1,200	0.014 - 0.019
-	1/2	1,900	0.015 - 0.024	1,500	0.015 - 0.024	1,100	0.015 - 0.020
14	-	1,700	0.017 - 0.025	1,400	0.017 - 0.025	1,000	0.017 - 0.022
-	5/8	1,500	0.019 - 0.025	1,200	0.019 - 0.025	900	0.019 - 0.025
18	-	1,300	0.021 - 0.028	1,100	0.021 - 0.028	800	0.021 - 0.028
-	3/4	1,200	0.023 - 0.030	1,000	0.023 - 0.030	700	0.023 - 0.030
20	-	1,200	0.024 - 0.031	1,000	0.024 - 0.031	700	0.024 - 0.031





List 5630 - EXOPRO® Mega Muscle®: 10D

General Drilling Operations

Work Material		Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Cast Iron		Ductile Cast Iron		Cast Aluminum	
Drilling Speed		260-395 SFM		200-295 SFM		260-395 SFM		195-330 SFM		260-660 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch										
5	-	6,350	0.007 - 0.009	5,750	0.007 - 0.009	6,350	0.007 - 0.011	5,100	0.007 - 0.009	8,900	0.008 - 0.016
6	-	5,300	0.008 - 0.011	4,800	0.008 - 0.011	5,300	0.008 - 0.014	4,200	0.008 - 0.011	7,400	0.009 - 0.019
-	1/4	5,000	0.009 - 0.012	4,550	0.009 - 0.012	5,000	0.009 - 0.016	4,000	0.007 - 0.012	7,000	0.010 - 0.020
8	-	4,000	0.011 - 0.015	3,600	0.011 - 0.015	4,000	0.011 - 0.018	3,200	0.009 - 0.015	5,600	0.013 - 0.025
-	3/8	3,300	0.012 - 0.017	3,050	0.012 - 0.017	3,300	0.012 - 0.020	2,700	0.012 - 0.017	4,700	0.015 - 0.030
10	-	3,200	0.013 - 0.019	2,900	0.013 - 0.019	3,200	0.013 - 0.023	2,500	0.012 - 0.019	4,500	0.016 - 0.031
-	7/16	2,900	0.014 - 0.021	2,600	0.014 - 0.021	2,900	0.014 - 0.025	2,300	0.013 - 0.021	4,000	0.017 - 0.035
12	-	2,700	0.016 - 0.023	2,400	0.016 - 0.023	2,700	0.016 - 0.028	2,100	0.014 - 0.023	3,700	0.019 - 0.038
-	1/2	2,500	0.016 - 0.024	2,250	0.016 - 0.024	2,500	0.016 - 0.028	2,000	0.015 - 0.024	3,500	0.020 - 0.040
14	-	2,300	0.017 - 0.026	2,050	0.017 - 0.026	2,300	0.017 - 0.029	1,800	0.017 - 0.026	3,200	0.022 - 0.044
-	5/8	2,000	0.018 - 0.029	1,800	0.018 - 0.029	2,000	0.018 - 0.030	1,600	0.019 - 0.029	2,800	0.025 - 0.050

General Drilling Operations

Work Material		Special Alloy Steels, Hardened Steels			
Hardness		26-30 HRC		30-34 HRC	
Drilling Speed		195-295 SFM		160-230 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch				
5	-	4,950	0.006 - 0.007	3,500	0.005 - 0.007
6	-	4,000	0.007 - 0.010	3,200	0.007 - 0.010
-	1/4	3,700	0.007 - 0.010	3,000	0.007 - 0.010
8	-	3,000	0.009 - 0.014	2,400	0.009 - 0.014
-	3/8	2,500	0.011 - 0.017	2,000	0.011 - 0.017
10	-	2,400	0.012 - 0.018	1,900	0.012 - 0.018
-	7/16	2,100	0.013 - 0.020	1,700	0.013 - 0.020
12	-	2,000	0.014 - 0.022	1,600	0.014 - 0.022
-	1/2	1,900	0.015 - 0.022	1,500	0.015 - 0.022
14	-	1,700	0.017 - 0.023	1,400	0.017 - 0.023
-	5/8	1,500	0.019 - 0.024	1,200	0.018 - 0.023





List 5950Ni-EXOPRO® WHO-Ni: 3D
List 5955Ni-EXOPRO® WHO-Ni: 5D

General Drilling Operations

Work Material		Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Cast Iron		Ductile Cast Iron		Ni-Base Material, Inconel 38-43 HRC	
Hardness											
Drilling Speed		260-395 SFM		260-395 SFM		260-395 SFM		195-330 SFM		35-100 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch										
3	-	10,600	0.002-0.005	10,600	0.002-0.005	10,600	0.002-0.005	8,500	0.002-0.005	2,100	0.001-0.002
-	1/8	10,000	0.002-0.005	10,000	0.002-0.005	10,000	0.002-0.005	8,000	0.002-0.005	1,900	0.001-0.002
4	-	8,000	0.003-0.006	8,000	0.003-0.006	8,000	0.003-0.006	6,400	0.003-0.006	1,600	0.001-0.003
-	3/16	6,400	0.004-0.008	6,400	0.004-0.008	6,400	0.004-0.008	5,100	0.004-0.008	1,300	0.002-0.004
6	-	5,300	0.005-0.009	5,300	0.005-0.009	5,300	0.005-0.009	4,200	0.005-0.009	1,100	0.002-0.005
-	1/4	5,100	0.005-0.009	5,100	0.005-0.009	5,100	0.005-0.009	4,000	0.005-0.009	1,100	0.002-0.005
8	-	4,000	0.006-0.011	4,000	0.006-0.011	4,000	0.006-0.011	3,200	0.006-0.011	800	0.003-0.006
-	3/8	3,400	0.007-0.012	3,400	0.007-0.012	3,400	0.007-0.012	2,700	0.007-0.012	650	0.003-0.007
10	-	3,200	0.008-0.012	3,200	0.008-0.012	3,200	0.008-0.012	2,500	0.008-0.012	600	0.004-0.008
-	7/16	2,900	0.008-0.012	2,900	0.008-0.012	2,900	0.008-0.012	2,300	0.008-0.012	600	0.004-0.009
12	-	2,700	0.008-0.012	2,700	0.008-0.012	2,700	0.008-0.012	2,100	0.008-0.012	500	0.005-0.009
-	1/2	2,400	0.008-0.012	2,400	0.008-0.012	2,400	0.008-0.012	2,000	0.008-0.012	500	0.005-0.010

General Drilling Operations

Work Material		Special Alloy Steels, Hardened Steels					
Hardness		35-40 HRC		40-45 HRC		45-56 HRC	
Drilling Speed		130-160 SFM		115-150 SFM		65-100 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch						
3	-	4,700	0.002-0.003	4,200	0.001-0.002	2,675	0.001-0.002
-	1/8	4,000	0.002-0.003	3,900	0.001-0.002	2,400	0.001-0.002
4	-	3,600	0.003-0.004	3,200	0.001-0.003	2,000	0.001-0.003
-	3/16	2,900	0.004-0.005	2,500	0.002-0.004	1,600	0.002-0.004
6	-	2,400	0.005-0.006	2,100	0.002-0.005	1,300	0.002-0.005
-	1/4	2,300	0.005-0.006	2,000	0.002-0.005	1,200	0.002-0.005
8	-	1,800	0.006-0.008	1,600	0.003-0.006	1,000	0.003-0.006
-	3/8	1,550	0.007-0.009	1,350	0.003-0.007	850	0.003-0.007
10	-	1,400	0.008-0.010	1,300	0.004-0.008	800	0.004-0.008
-	7/16	1,300	0.009-0.011	1,150	0.004-0.009	720	0.004-0.009
12	-	1,200	0.009-0.012	1,100	0.005-0.009	700	0.005-0.009
-	1/2	1,100	0.010-0.013	1,100	0.005-0.010	625	0.005-0.010





List 5171 - EXOCARB® WH70

Work Material	Hardened Steels			
	D2-S7 55-60 HRC		D2, CPM-9V 60-70 HRC	
Drilling Speed	33-52 SFM		26-42 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR
2	2,050	0.001-0.002	1,900	0.001-0.002
3	1,360	0.001-0.002	1,250	0.001-0.002
4	1,020	0.001-0.002	950	0.001-0.002
5	820	0.001-0.002	760	0.001-0.002
6	680	0.001-0.002	630	0.001-0.002
7	580	0.001-0.002	540	0.001-0.002
8	510	0.001-0.002	470	0.001-0.002
9	450	0.001-0.002	420	0.001-0.002
10	410	0.001-0.002	380	0.001-0.002
11	370	0.001-0.002	350	0.001-0.002
12	340	0.001-0.002	315	0.001-0.002
14	290	0.001-0.002	270	0.001-0.002
15	270	0.001-0.002	250	0.001-0.002
16	260	0.001-0.002	240	0.001-0.002
17	240	0.001-0.002	220	0.001-0.002
18	230	0.001-0.002	210	0.001-0.002

1. Use a water soluble oil with high density (5 to 10 times dilution).
2. Tight clamping is critical.
3. For drilling depth > 3D, use a step feed.
4. For materials susceptible to chip packing in the flute, apply a step feed.

List 5172 - EXOCARB® XH

Work Material	Broken Taps & Drills
Drilling Speed	65-80 SFM
Drill Dia. mm	Speed RPM
2	3,150-3,880
3	2,100-2,590
4	1,580-1,940
5	1,260-1,550
6	1,050-1,290
7	900-1,110
8	790-970
9	700-860
10	630-780
11	570-710
12	530-650

1. Use a drilling speed of 65-80 SFM.
2. Hand feed of 0.0005~0.001 in/rev is normal.
3. Use a rigid holder.
4. Select a high quality cutting oil and apply in sufficient amounts.
5. This tool should not be used to drill soft steels, aluminum alloys or other soft materials.
6. Resharpener should be done periodically.
7. For through hole processing of heat treated steels, use a spare piece of material underneath the material being drilled as this will prevent breakage caused by sudden torque.
8. Cannot be used to remove forming taps.

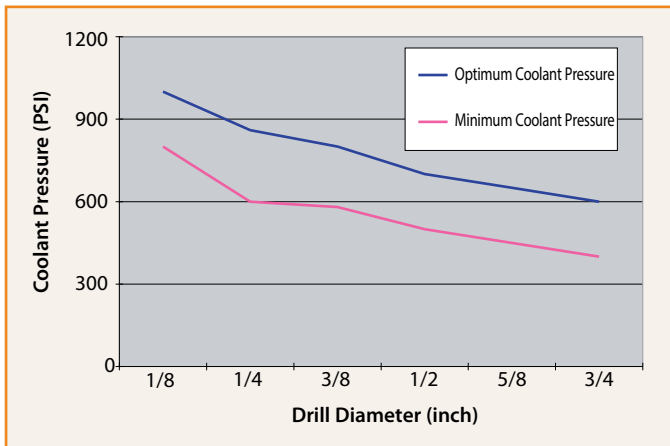




List 5275-EXOCARB® MAX-OIL-AL: 15D-30D

Work Material	Aluminum Alloy 2025, 5052		Aluminum Alloy Casting		Copper Alloy C1020	
Drilling Speed	200-390 SFM		260-650 SFM		190-400 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
3	10,700	0.0035-0.0059	12,800	0.0035-0.0059	12,800	0.0020-0.0035
4	8,000	0.0047-0.0079	9,600	0.0047-0.0079	9,600	0.0024-0.0039
5	6,400	0.0059-0.0098	7,700	0.0059-0.0098	7,700	0.0024-0.0039
6	5,400	0.0071-0.0118	6,400	0.0071-0.0118	6,400	0.0024-0.0039
8	4,000	0.0079-0.0157	4,800	0.0079-0.0157	4,800	0.0031-0.0059
10	3,200	0.0098-0.0197	3,900	0.0098-0.0197	3,900	0.0031-0.0059

Recommended Coolant Pressure





List 5310-EXOCARB® MAX-MINI FHL-GDTS

Work Material	Hardened Steel, Pre-Hardened Steels			Tool Steels H13, D2			Stainless Steels 440		
Drilling Speed	130-160 SFM			110-150 SFM			100-130 SFM		
Drill Dia. mm	Speed RPM	Feed IPR	Pecking (in)	Speed RPM	Feed IPR	Pecking (in)	Speed RPM	Feed IPR	Pecking (in)
1	14,000	0.0008-0.0020	0.0008-0.0020	13,000	0.0008-0.0020	0.0008-0.0020	11,000	0.0008-0.0020	0.0008-0.0020
1.1	13,000	0.0008-0.0020	0.0008-0.0020	12,000	0.0008-0.0020	0.0008-0.0020	10,000	0.0008-0.0020	0.0008-0.0020
1.2	12,000	0.0008-0.0020	0.0008-0.0020	11,000	0.0008-0.0020	0.0008-0.0020	9,000	0.0008-0.0020	0.0008-0.0020
1.3	11,000	0.0008-0.0020	0.0008-0.0020	10,000	0.0008-0.0020	0.0008-0.0020	8,600	0.0008-0.0020	0.0008-0.0020
1.4	10,000	0.0008-0.0020	0.0008-0.0020	9,000	0.0008-0.0020	0.0008-0.0020	8,000	0.0008-0.0020	0.0008-0.0020
1.5	9,500	0.0008-0.0020	0.0008-0.0020	8,500	0.0008-0.0020	0.0008-0.0020	7,400	0.0008-0.0020	0.0008-0.0020
1.6	9,000	0.0008-0.0020	0.0008-0.0020	8,000	0.0008-0.0020	0.0008-0.0020	7,000	0.0008-0.0020	0.0008-0.0020
1.7	8,400	0.0008-0.0020	0.0008-0.0020	7,500	0.0008-0.0020	0.0008-0.0020	6,600	0.0008-0.0020	0.0008-0.0020
1.8	8,000	0.0008-0.0020	0.0008-0.0020	7,100	0.0008-0.0020	0.0008-0.0020	6,200	0.0008-0.0020	0.0008-0.0020
1.9	7,500	0.0008-0.0020	0.0008-0.0020	6,700	0.0008-0.0020	0.0008-0.0020	5,900	0.0008-0.0020	0.0008-0.0020
2	7,200	0.0008-0.0020	0.0008-0.0020	6,400	0.0008-0.0020	0.0008-0.0020	5,600	0.0008-0.0020	0.0008-0.0020
2.5	5,700	0.0008-0.0020	0.0008-0.0020	5,100	0.0008-0.0020	0.0008-0.0020	4,500	0.0008-0.0020	0.0008-0.0020
3	4,800	0.0008-0.0020	0.0008-0.0020	4,200	0.0008-0.0020	0.0008-0.0020	3,700	0.0008-0.0020	0.0008-0.0020

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated speeds and feeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. We recommend the pilot hole operation prior to EXOCARB® MAX-MINI (List 5310).
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.





List 5315-EXOCARB® MAX-MINI UVM-LDS

List 5320-EXOCARB® MAX-MINI UVM-DRL: 5D

List 5325-EXOCARB® MAX-MINI UVM-DRL: 10D

Work Material	Stainless Steels 300SS, 400SS, 17-4PH			Special Alloy Steels, Hardened Steels			Aluminum Alloys, Cast Aluminum		
Drilling Speed	2-20 SFM			2-20 SFM			2-30 SFM		
Drill Dia. mm	Speed RPM	Feed IPR	Pecking (In)	Speed RPM	Feed IPR	Pecking (In)	Speed RPM	Feed IPR	Pecking (In)
0.02	10,000-20,000	0.00004-0.00006	0.00008	10,000-20,000	0.00004-0.00006	0.00008	10,000-30,000	0.0002-0.0004	0.00008
0.03	10,000-20,000	0.00004-0.00006	0.00012	10,000-20,000	0.00004-0.00006	0.00012	10,000-30,000	0.0002-0.0004	0.00012
0.04	10,000-20,000	0.00004-0.00006	0.00016	10,000-20,000	0.00004-0.00006	0.00016	10,000-30,000	0.0002-0.0004	0.00016
0.05	10,000-20,000	0.00004-0.00006	0.00020	10,000-20,000	0.00004-0.00006	0.00020	10,000-30,000	0.0002-0.0004	0.00020
0.06	10,000-20,000	0.00004-0.00006	0.00024	10,000-20,000	0.00004-0.00006	0.00024	10,000-30,000	0.0002-0.0004	0.00024
0.07	10,000-20,000	0.00004-0.00006	0.00027	10,000-20,000	0.00004-0.00006	0.00027	10,000-30,000	0.0002-0.0004	0.00027
0.08	10,000-20,000	0.00004-0.00006	0.00031	10,000-20,000	0.00004-0.00006	0.00031	10,000-30,000	0.0002-0.0004	0.00031
0.09	10,000-20,000	0.00004-0.00006	0.00035	10,000-20,000	0.00004-0.00006	0.00035	10,000-30,000	0.0002-0.0004	0.00035
0.10	10,000-20,000	0.00004-0.00006	0.00040	10,000-20,000	0.00004-0.00006	0.00040	10,000-30,000	0.0002-0.0004	0.00040

Work Material	High Heat Material					
	Ti-Alloy			Inconel, Waspaloy		
Drilling Speed	2-7 SFM			2-5 SFM		
Drill Dia. mm	Speed RPM	Feed IPR	Pecking (In)	Speed RPM	Feed IPR	Pecking (In)
0.02	19,400	0.000012-0.000028	0.00008	19,405	0.000012-0.000028	0.00008
0.03	16,200	0.000012-0.000028	0.00012	16,200	0.000012-0.000028	0.00012
0.04	14,500	0.000012-0.000028	0.00016	12,100	0.000012-0.000028	0.00016
0.05	13,600	0.000012-0.000028	0.00020	9,700	0.000012-0.000028	0.00020
0.06	11,300	0.000012-0.000028	0.00024	8,085	0.000012-0.000028	0.00024
0.07	9,700	0.000012-0.000028	0.00027	6,930	0.000012-0.000028	0.00027
0.08	8,500	0.000012-0.000028	0.00031	6,050	0.000012-0.000028	0.00031
0.09	7,550	0.000012-0.000028	0.00035	5,390	0.000012-0.000028	0.00035
0.10	7,400	0.000012-0.000028	0.00040	4,300	0.000012-0.000028	0.00040

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated feeds and speeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. Please utilize pecking cycle as specified in table.
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.



List 5330-EXOCARB® MAX-MINI WX-MS

General Drilling Operations

Work Material	Carbon Steels 1010, 1050		Alloy Steels 4140, 4130		Martensitic, Ferritic Stainless Steels 420, 430, 430F, 440		Copper, Copper Alloys C1020, S2600	
Drilling Speed	65-260 SFM		65-180 SFM		65-120 SFM		100-200 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
0.2	25,000	0.00008	25,000	0.00008	25,000	0.00008	25,000	0.00008
0.3	20,000	0.00012	20,000	0.00012	20,000	0.00012	20,000	0.0001
0.5	15,000	0.0003	14,000	0.0003	13,000	0.0003	15,000	0.0003
1	12,000	0.0008	11,000	0.0008	6,400	0.0004	12,000	0.0004
1.5	10,000	0.0008-0.0016	8,400	0.0008-0.0016	4,800	0.0005 - 0.0012	10,000	0.0005-0.0012
2	8,000	0.0012-0.0019	6,500	0.0012-0.0019	4,000	0.0006 - 0.0016	8,000	0.0006-0.0016
3	5,500	0.0016-0.0028	4,500	0.0016-0.0028	3,000	0.0009 - 0.0024	6,500	0.0009-0.0024
4	4,000	0.0024-0.0040	3,200	0.0024-0.0040	2,500	0.0012 - 0.0031	5,000	0.0012-0.0031
5	3,200	0.0027-0.0047	2,600	0.0027-0.0047	2,000	0.0016 - 0.004	4,000	0.0016-0.0040

General Drilling Operations

Work Material	Aluminum Alloy 6061, 7075		Cast Aluminum	
Drilling Speed	65-150 SFM		65-120 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR
0.2	25,000	0.00008	25,000	0.00008
0.3	20,000	0.00012	20,000	0.00012
0.5	13,000	0.00030	13,000	0.00030
1	6,400	0.00040	10,000	0.00080
1.5	4,800	0.0005-0.0012	6,800	0.0012-0.0019
2	4,000	0.0006-0.0016	5,000	0.0016-0.0024
3	3,000	0.0009-0.0024	3,400	0.0024-0.0035
4	2,500	0.0012-0.0031	2,500	0.0031-0.0047
5	2,000	0.0016-0.0040	2,000	0.0040-0.0059

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated feeds and speeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. These tables are applicable for less than 3xD deep drilling operations.
When drilling deeper than 3xD, please peck every 0.25-0.5xD accordingly.
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.





List 5340-EXOCARB® MAX-MINI MRS

General Drilling Operations

Work Material	Carbon Steels 1015, 1050		Alloy Steels 4140, 4130		Austenitic Stainless Steels 304, 316		Martensitic, Ferritic Stainless Steels 420, 430, 430F, 440		Precipitation Hardened Stainless Steels 17-4, 15-5	
Drilling Speed	65-260 SFM		65-180 SFM		50-130 SFM		65-165 SFM		50-130 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
0.5	15,000	0.0003	14,000	0.0003	17,465	0.0002-0.0006	22,300	0.0002-0.0006	17,465	0.0002-0.0006
1	12,000	0.0008	11,000	0.0008	8,730	0.0004-0.0012	11,150	0.0004-0.0012	8,730	0.0004-0.0012
1.5	10,000	0.0008-0.0016	8,400	0.0008-0.0016	5,820	0.0006-0.0018	7,440	0.0006-0.0018	5,820	0.0006-0.0018
2	8,000	0.0012-0.0019	6,500	0.0012-0.0019	4,365	0.0008-0.0024	5,580	0.0008-0.0024	4,365	0.0008-0.0024
2.5	6,400	0.0014-0.0025	5,400	0.0014-0.0025	3,500	0.0009-0.0030	4,460	0.0009-0.0030	3,500	0.0009-0.0030
3	5,500	0.0016-0.0028	4,500	0.0016-0.0028	2,900	0.0012-0.0035	3,720	0.0012-0.0035	2,900	0.0012-0.0035

General Drilling Operations

Work Material	Aluminum Alloy 6061, 7075		Cast Aluminum		Copper, Copper Alloys C1020, S2600		Special Alloy Steels, Hardened Steels	
Drilling Speed	100-260 SFM		100-200 SFM		65-150 SFM		65-120 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
0.5	15,000	0.0006	15,000	0.0003	13,000	0.0003	13,000	0.0003
1	12,000	0.0012	12,000	0.0004	6,400	0.0004	10,000	0.0008
1.5	10,000	0.0012-0.0031	10,000	0.0005-0.0012	4,800	0.0005-0.0012	6,800	0.0012-0.0019
2	8,000	0.0016-0.0040	8,000	0.0006-0.0016	4,000	0.0006-0.0016	5,000	0.0016-0.0024
2.5	7,000	0.0020-0.0049	7,000	0.0007-0.0020	3,600	0.0007-0.0020	4,100	0.0020-0.0030
3	6,500	0.0024-0.0059	6,500	0.0009-0.0024	3,000	0.0009-0.0024	3,400	0.0024-0.0035

1. Please use in a machine with precise spindle rotation. Tight clamping is critical.
2. The indicated feeds and speeds are for drilling with water-soluble fluid.
3. Please use water-soluble high density fluid (less than 20 times dilution).
4. These tables are applicable for less than 3xD deep drilling operations.
When drilling deeper than 3xD, please peck every 0.25-0.5xD accordingly.
5. The run out with a drill in the spindle should be less than 0.0001".
6. OSG's Shrink Fit System is the recommended tool holder for these drills.

For machines that cannot achieve the speeds indicated in the above table, please set rotation as high as possible. Tool life may be decreased.



List 7500 - EXOPRO® AERO-D-REAM

List 7501 - EXOPRO® AERO-STAD

List 7520 - EXOPRO® AERO-LHX

List 257 - CARBIDE AERO-D-REAM

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	165 - 260 SFM	
Drill Diameter (in)	Speed RPM	Feed IPR
#40	8,000	0.0008 - 0.002
#30	6,100	0.0008 - 0.003
#20	4,900	0.0012 - 0.003
#11	4,100	0.0012 - 0.003
#2	3,550	0.0014 - 0.004
1/4	3,100	0.0016 - 0.004
5/16	3,170	0.0016 - 0.004
3/8	2,100	0.002 - 0.004
7/16	1,790	0.002 - 0.004
1/2	1,570	0.002 - 0.004

1. Coolant is not needed, however, make sure dust is efficiently collected.
2. Peck drilling is not needed if drilling depth is less than 3D.
3. The machinability of CFRP depends on physical makeup and percentage of contents, both speed & feed may need adjustments depending on material.
4. Feed rate can be and should be adjusted depending on surface layer makeup.
5. Feed rates can be increased when an approved coolant is utilized.
6. Please contact OSG for specific application questions.

List 7530 - EXOPRO® AERO-S

Work Material	Carbon & Glass Fiber Reinforced Plastics		CFRP + Aluminum Stack	
Cutting Speed	165 - 260 SFM		200-400 SFM	
Drill Diameter (in)	Speed RPM	Feed IPR	Speed RPM	Feed IPR
#40	8,000	0.0008 - 0.002	10,135	0.001 - 0.003
#30	6,100	0.0008 - 0.003	8,110	0.003 - 0.004
#20	4,900	0.0012 - 0.003	6,310	0.004 - 0.005
#11	4,100	0.0012 - 0.003	5,410	0.004 - 0.005
#2	3,550	0.0014 - 0.004	4,730	0.005 - 0.006
1/4	3,100	0.0016 - 0.004	4,060	0.006 - 0.007
5/16	3,170	0.0016 - 0.004	3,380	0.007 - 0.008
3/8	2,100	0.002 - 0.004	2,710	0.009 - 0.010
7/16	1,790	0.002 - 0.004	2,370	0.010 - 0.011
1/2	1,570	0.002 - 0.004	2,030	0.012 - 0.013

1. Feed rates can and should be adjusted depending on stack makeup, with higher feed rates in the composite portion and lower feeds in the metal portion.
2. Peck drilling may be necessary for enhanced quality and proper chip evacuation.
3. There are many factors that can effect successful stack drilling; please contact OSG about your specific application for best recommendation.



List 7532 - EXOPRO® AERO-H List 5732 - EXOCARB® AERO-H

Work Material	Carbon & Glass Fiber Reinforced Plastics		CFRP + Aluminum Stack		CFRP + Titanium Stack		CFRP + CRES Stack	
Cutting Speed	165 - 260 SFM		200-400 SFM		40-60 SFM		30-50 SFM	
Drill Dia. (in)	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
#40	8,000	0.0008 - 0.002	10,135	0.001 - 0.003	1,900	0.0002 - 0.0007	1,550	0.0002 - 0.0007
#30	6,100	0.0008 - 0.003	8,110	0.003 - 0.004	1,500	0.0004 - 0.0009	1,150	0.0004 - 0.0009
#20	4,900	0.0012 - 0.003	6,310	0.004 - 0.005	1,225	0.0006 - 0.0011	950	0.0006 - 0.0011
#11	4,100	0.0012 - 0.003	5,410	0.004 - 0.005	1,000	0.0007 - 0.0012	800	0.0007 - 0.0012
#2	3,550	0.0014 - 0.004	4,730	0.005 - 0.006	875	0.0009 - 0.0014	675	0.0009 - 0.0014
1/4	3,100	0.0016 - 0.004	4,060	0.006 - 0.007	750	0.001 - 0.0015	600	0.0010 - 0.0015
5/16	3,170	0.0016 - 0.004	3,380	0.007 - 0.008	625	0.0013 - 0.0018	475	0.0013 - 0.0018
3/8	2,100	0.002 - 0.004	2,710	0.009 - 0.010	500	0.0016 - 0.0021	400	0.0016 - 0.0021
7/16	1,790	0.002 - 0.004	2,370	0.010 - 0.011	425	0.0019 - 0.0024	350	0.0019 - 0.0024
1/2	1,570	0.002 - 0.004	2,030	0.012 - 0.013	375	0.0023 - 0.0028	275	0.0023 - 0.0028

1. Feed rates can and should be adjusted depending on stack makeup, with higher feed rates in the composite portion and lower feeds in the metal portion.
2. Peck drilling may be necessary for enhanced quality and proper chip evacuation.
3. There are many factors that can effect successful stack drilling; please contact OSG about your specific application for best recommendation.

List HP700 - HY-PRO® CARB NEPTUNE®

Work Material	Carbon & Glass Fiber Reinforced Plastics		CFRP + Aluminum Stack		CFRP + Titanium Stack		CFRP + CRES Stack	
Cutting Speed	150-300 SFM		200-400 SFM		40-60 SFM		30-50 SFM	
Drill Diameter (in)	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
#40	8,900	0.001-0.002	11,250	0.001-0.003	1,900	0.0002-0.0007	1,550	0.0002-0.0007
#30	6,700	0.001-0.002	9,000	0.003-0.004	1,500	0.0004-0.0009	1,150	0.0004-0.0009
#20	5,250	0.001-0.002	7,000	0.004-0.005	1,225	0.0006-0.0011	950	0.0006-0.0011
#11	4,500	0.001-0.002	6,000	0.004-0.005	1,000	0.0007-0.0012	800	0.0007-0.0012
1/4	3,350	0.0015-0.003	4,500	0.006-0.007	750	0.001-0.0015	675	0.0009-0.0014



List HP243-HY-PRO® CARB: 3D

List HP245-HY-PRO® CARB: 5D

General Drilling Operations

Work Material	Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Ductile Cast Iron		Aluminum Alloy		
Drilling Speed	240-350 SFM		230-325 SFM		130-200 SFM		240-385 SFM		175-300 SFM		200-380 SFM		
Drill Dia. mm Inch	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	
	1	-	28,620	0.001-0.002	26,870	0.001-0.002	16,010	0.001-0.002	30,270	0.001-0.002	23,090	0.001-0.002	26,170
-	1/16	18,030	0.001-0.002	16,930	0.001-0.002	10,080	0.001-0.002	19,620	0.001-0.002	14,550	0.001-0.002	16,500	0.001-0.002
2	-	14,310	0.002-0.003	13,430	0.001-0.003	8,010	0.001-0.003	15,130	0.001-0.003	11,540	0.001-0.003	13,100	0.002-0.003
-	3/32	12,020	0.002-0.004	11,280	0.002-0.004	6,720	0.002-0.003	13,080	0.002-0.004	9,700	0.002-0.004	11,000	0.002-0.004
3	-	9,540	0.002-0.005	8,960	0.002-0.005	5,340	0.002-0.004	10,090	0.002-0.005	7,700	0.002-0.005	9,700	0.003-0.005
-	1/8	9,010	0.003-0.005	8,460	0.003-0.005	5,040	0.003-0.004	9,810	0.002-0.005	7,270	0.003-0.005	9,060	0.004-0.005
4	-	7,160	0.003-0.006	6,720	0.003-0.006	4,000	0.003-0.005	7,560	0.003-0.006	5,770	0.003-0.006	7,270	0.004-0.006
-	3/16	6,010	0.004-0.008	5,640	0.004-0.008	3,360	0.004-0.006	6,540	0.004-0.007	4,850	0.004-0.007	6,110	0.005-0.007
6	-	4,770	0.005-0.009	4,480	0.005-0.009	2,270	0.005-0.007	5,040	0.005-0.009	3,850	0.005-0.009	4,850	0.006-0.008
-	1/4	4,510	0.005-0.010	4,230	0.005-0.010	2,520	0.006-0.008	4,910	0.005-0.010	3,640	0.005-0.010	4,580	0.007-0.009
8	-	3,580	0.006-0.011	3,360	0.006-0.011	2,000	0.006-0.009	3,780	0.006-0.011	2,890	0.006-0.011	3,640	0.008-0.010
-	3/8	3,010	0.007-0.011	2,820	0.007-0.011	1,680	0.007-0.009	3,270	0.007-0.011	2,020	0.007-0.011	3,050	0.009-0.011
10	-	2,860	0.008-0.012	2,680	0.008-0.012	1,600	0.008-0.010	3,030	0.008-0.012	2,310	0.008-0.012	2,910	0.011-0.013
-	7/16	2,580	0.008-0.012	2,420	0.008-0.012	1,440	0.008-0.010	2,800	0.008-0.012	2,080	0.008-0.012	2,620	0.012-0.014
12	-	2,380	0.008-0.012	2,240	0.008-0.012	1,330	0.008-0.010	2,520	0.008-0.012	1,920	0.008-0.012	2,420	0.013-0.015
-	1/2	2,250	0.009-0.013	2,120	0.009-0.013	1,260	0.008-0.011	2,450	0.008-0.013	1,820	0.008-0.013	2,290	0.014-0.016
14	-	2,040	0.009-0.014	1,920	0.009-0.014	1,140	0.009-0.011	2,160	0.009-0.014	1,650	0.009-0.014	2,080	0.016-0.018
-	5/8	1,810	0.010-0.014	1,690	0.010-0.014	1,010	0.010-0.012	1,960	0.010-0.014	1,450	0.010-0.014	1,830	0.018-0.020
18	-	1,590	0.011-0.015	1,490	0.011-0.015	890	0.011-0.013	1,682	0.011-0.015	1,280	0.011-0.015	1,620	0.020-0.022
-	3/4	1,500	0.012-0.015	1,410	0.012-0.015	840	0.011-0.013	1,580	0.011-0.015	1,210	0.012-0.015	1,520	0.021-0.023
20	-	1,430	0.012-0.016	1,340	0.012-0.016	800	0.012-0.014	1,514	0.012-0.016	1,150	0.012-0.016	1,450	0.022-0.024

General Drilling Operations

Work Material Hardness	Cast Aluminum		Copper		Special Alloy Steels, Hardened Steels								
					26-30 HRC		30-34 HRC		34-43 HRC		43-48 HRC		
Drilling Speed	260- 640 SFM		190-320 SFM		160-240 SFM		110-185 SFM		100-150 SFM		75-100 SFM		
Drill Dia. mm Inch	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	
	1	-	31,990	0.002-0.003	24,740	0.001-0.002	19,400	0.001-0.002	14,260	0.001-0.002	12,130	0.001-0.001	8,440
-	1/16	20,170	0.002-0.003	15,580	0.001-0.002	12,220	0.001-0.002	8,980	0.001-0.002	7,640	0.001-0.002	5,320	0.0005-0.001
2	-	18,020	0.003-0.004	12,370	0.002-0.003	9,700	0.001-0.003	7,130	0.001-0.003	6,060	0.001-0.002	4,220	0.001-0.001
-	3/32	15,160	0.004-0.005	10,390	0.002-0.004	8,150	0.002-0.004	5,990	0.002-0.003	5,090	0.002-0.003	3,540	0.001-0.002
3	-	14,550	0.004-0.006	8,250	0.003-0.005	6,470	0.002-0.005	4,750	0.002-0.003	4,040	0.002-0.003	2,810	0.001-0.002
-	1/8	13,750	0.005-0.006	7,790	0.003-0.005	6,110	0.003-0.005	4,490	0.003-0.004	3,820	0.003-0.004	2,660	0.002-0.003
4	-	10,920	0.005-0.007	6,180	0.004-0.006	4,850	0.003-0.006	3,560	0.003-0.004	3,030	0.003-0.004	2,110	0.002-0.003
-	3/16	9,170	0.006-0.008	5,190	0.005-0.007	4,070	0.004-0.008	2,990	0.004-0.005	2,550	0.004-0.005	1,770	0.002-0.003
6	-	7,270	0.008-0.010	4,120	0.006-0.008	3,230	0.005-0.009	2,380	0.005-0.006	2,020	0.005-0.006	1,410	0.002-0.004
-	1/4	6,870	0.010-0.012	3,890	0.007-0.009	3,050	0.005-0.010	2,240	0.006-0.007	1,910	0.006-0.007	1,330	0.002-0.004
8	-	5,460	0.012-0.014	3,090	0.008-0.010	2,420	0.006-0.011	1,780	0.006-0.008	1,520	0.006-0.008	1,050	0.003-0.005
-	3/8	4,580	0.013-0.015	2,590	0.009-0.011	2,040	0.007-0.011	1,490	0.007-0.009	1,270	0.007-0.009	880	0.003-0.005
10	-	4,360	0.015-0.017	2,470	0.011-0.013	1,940	0.008-0.012	1,420	0.008-0.010	1,210	0.008-0.010	840	0.004-0.006
-	7/16	3,930	0.016-0.018	2,220	0.012-0.014	1,740	0.008-0.012	1,280	0.008-0.011	1,090	0.009-0.011	760	0.004-0.006
12	-	3,640	0.018-0.020	2,060	0.013-0.015	1,620	0.008-0.012	1,190	0.009-0.012	1,010	0.009-0.012	700	0.005-0.007
-	1/2	3,440	0.019-0.021	1,450	0.014-0.016	1,530	0.009-0.013	1,120	0.010-0.013	950	0.010-0.013	660	0.005-0.007
14	-	3,120	0.021-0.023	1,770	0.016-0.018	1,390	0.009-0.014	1,020	0.011-0.014	860	0.011-0.014	600	0.006-0.008
-	5/8	2,750	0.022-0.026	1,560	0.018-0.020	1,220	0.010-0.014	900	0.012-0.016	760	0.013-0.016	530	0.006-0.008
18	-	2,420	0.026-0.030	1,370	0.020-0.022	1,080	0.011-0.015	790	0.014-0.018	670	0.015-0.018	470	0.007-0.009
-	3/4	2,290	0.027-0.031	1,300	0.021-0.023	1,020	0.012-0.015	750	0.015-0.019	640	0.016-0.019	440	0.008-0.010
20	-	2,180	0.028-0.032	1,240	0.022-0.024	970	0.012-0.016	710	0.016-0.020	610	0.016-0.020	420	0.008-0.011





List HP253-HY-PRO® CARB: 3D Coolant-Through

List HP255-HY-PRO® CARB: 5D Coolant-Through

List HP258-HY-PRO® CARB: 8D Coolant-Through

General Drilling Operations

Work Material		Carbon Steels, Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Ductile Cast Iron		Aluminum Alloy		
Drilling Speed		310-455 SFM		265-380 SFM		145-220 SFM		285-420 SFM		215-350 SFM		260-450 SFM		
Drill Dia.	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
3	-	11,450	0.002-0.005	10,750	0.002-0.005	6,140	0.002-0.004	12,610	0.002-0.005	9,630	0.002-0.005	13,100	0.003-0.005	
-	1/8	10,810	0.002-0.005	10,170	0.002-0.005	5,810	0.002-0.004	11,850	0.002-0.005	9,110	0.002-0.005	12,370	0.003-0.005	
4	-	8,580	0.003-0.006	8,060	0.003-0.006	4,600	0.003-0.005	9,460	0.003-0.006	7,210	0.003-0.006	9,820	0.004-0.006	
-	3/16	7,200	0.004-0.007	6,780	0.004-0.007	3,870	0.004-0.006	7,900	0.004-0.007	6,070	0.004-0.007	8,250	0.005-0.007	
6	-	5,725	0.005-0.009	5,370	0.005-0.009	3,070	0.005-0.007	6,300	0.005-0.009	4,810	0.005-0.009	6,550	0.006-0.008	
-	1/4	5,410	0.005-0.010	5,090	0.005-0.010	2,900	0.006-0.008	5,920	0.005-0.010	4,550	0.005-0.010	6,190	0.007-0.009	
8	-	4,290	0.006-0.011	4,040	0.006-0.011	2,300	0.006-0.009	4,730	0.006-0.011	3,610	0.006-0.011	4,910	0.008-0.010	
-	3/8	3,600	0.007-0.011	3,390	0.007-0.011	1,930	0.007-0.009	3,950	0.007-0.011	3,030	0.007-0.011	4,120	0.009-0.011	
10	-	3,430	0.008-0.012	3,230	0.008-0.012	1,840	0.008-0.010	3,780	0.008-0.012	2,890	0.008-0.012	3,930	0.011-0.013	
-	7/16	3,090	0.008-0.012	2,910	0.008-0.012	1,660	0.008-0.010	3,380	0.008-0.012	2,600	0.008-0.012	3,530	0.012-0.014	
12	-	2,860	0.008-0.012	2,690	0.008-0.012	1,530	0.008-0.010	3,150	0.008-0.012	2,410	0.008-0.012	3,280	0.013-0.015	
-	1/2	2,700	0.008-0.013	2,540	0.008-0.013	1,450	0.008-0.010	2,960	0.008-0.013	2,270	0.008-0.013	3,090	0.014-0.016	
14	-	2,450	0.009-0.014	2,310	0.009-0.014	1,310	0.009-0.011	2,690	0.009-0.014	2,060	0.009-0.014	2,810	0.016-0.018	
-	5/8	2,160	0.010-0.014	2,030	0.010-0.014	1,160	0.010-0.012	2,370	0.010-0.014	1,820	0.010-0.014	2,470	0.018-0.020	
18	-	1,910	0.011-0.015	1,790	0.011-0.015	1,020	0.011-0.013	2,090	0.011-0.015	1,610	0.011-0.015	2,180	0.020-0.022	
-	3/4	1,800	0.011-0.015	1,690	0.011-0.015	960	0.011-0.013	1,970	0.011-0.015	1,520	0.011-0.015	2,060	0.021-0.023	
20	-	1,720	0.012-0.016	1,610	0.012-0.016	922	0.012-0.014	1,880	0.012-0.016	1,450	0.012-0.016	1,960	0.022-0.024	

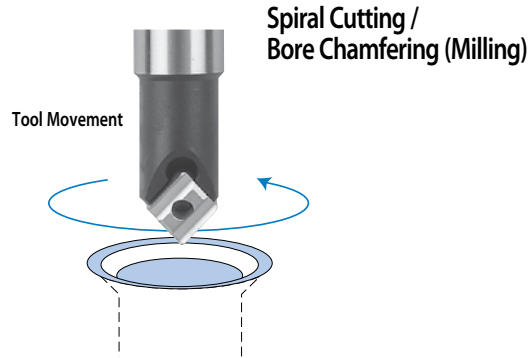
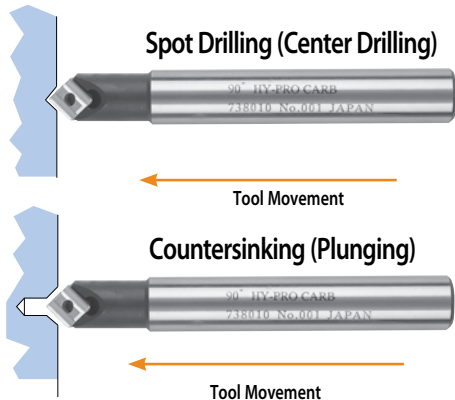
General Drilling Operations

Work Material		Cast Aluminum		Copper		Special Alloy Steels, Hardened Steels								
Hardness						26-30 HRC		30-34 HRC		34-43 HRC		43-48 HRC		
Drilling Speed		325- 700 SFM		230-380 SFM		185-295 SFM		130-210 SFM		120-180 SFM		80-110 SFM		
Drill Dia.	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
3	-	19,650	0.004-0.006	10,110	0.003-0.005	7,760	0.002-0.005	5,700	0.002-0.003	4,850	0.002-0.003	3,090	0.001-0.002	
-	1/8	18,580	0.004-0.006	8,950	0.003-0.005	7,330	0.002-0.005	5,410	0.002-0.003	4,560	0.002-0.003	2,930	0.001-0.003	
4	-	14,750	0.005-0.007	7,110	0.004-0.006	5,820	0.003-0.006	4,280	0.003-0.004	3,640	0.003-0.004	2,320	0.002-0.003	
-	3/16	12,380	0.006-0.008	5,970	0.005-0.007	4,890	0.004-0.007	3,600	0.004-0.005	3,040	0.004-0.005	1,950	0.002-0.004	
6	-	9,830	0.008-0.010	4,740	0.006-0.008	3,880	0.005-0.009	2,850	0.005-0.006	2,410	0.005-0.006	1,550	0.002-0.004	
-	1/4	9,290	0.009-0.011	4,470	0.007-0.009	3,670	0.005-0.010	2,710	0.005-0.007	2,080	0.005-0.007	1,460	0.003-0.005	
8	-	7,360	0.012-0.014	3,550	0.008-0.010	2,910	0.006-0.011	2,140	0.006-0.008	1,810	0.006-0.008	1,160	0.003-0.005	
-	3/8	6,190	0.013-0.015	2,980	0.009-0.011	2,440	0.007-0.011	1,800	0.007-0.009	1,520	0.007-0.009	980	0.003-0.005	
10	-	5,890	0.015-0.017	2,840	0.011-0.013	2,330	0.008-0.012	1,710	0.008-0.010	1,450	0.008-0.010	930	0.004-0.006	
-	7/16	5,310	0.016-0.018	2,560	0.012-0.014	2,090	0.008-0.012	1,540	0.008-0.011	1,300	0.008-0.011	840	0.004-0.006	
12	-	4,910	0.018-0.020	2,370	0.013-0.015	1,940	0.008-0.012	1,430	0.009-0.012	1,210	0.009-0.012	770	0.005-0.007	
-	1/2	4,640	0.019-0.021	2,340	0.014-0.016	1,830	0.008-0.013	1,350	0.010-0.013	1,140	0.010-0.013	730	0.005-0.007	
14	-	4,210	0.021-0.023	2,030	0.016-0.018	1,660	0.009-0.014	1,220	0.011-0.014	1,030	0.011-0.014	660	0.006-0.008	
-	5/8	3,720	0.022-0.024	1,790	0.018-0.020	1,470	0.010-0.014	1,080	0.012-0.015	900	0.013-0.016	580	0.006-0.008	
18	-	3,270	0.026-0.030	1,580	0.020-0.022	1,290	0.011-0.015	950	0.014-0.018	810	0.015-0.018	520	0.007-0.009	
-	3/4	3,090	0.027-0.031	1,490	0.021-0.023	1,220	0.011-0.015	900	0.015-0.019	760	0.015-0.019	490	0.007-0.009	
20	-	2,950	0.028-0.032	1,420	0.022-0.024	1,160	0.012-0.016	860	0.016-0.020	720	0.016-0.020	460	0.008-0.011	

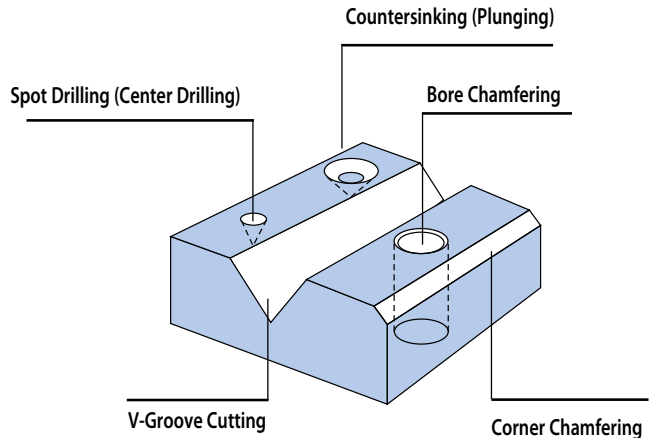
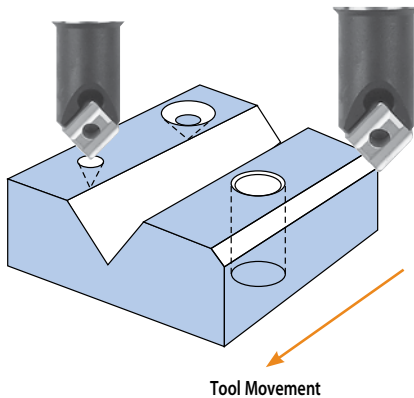




List 738



"V" Grooving / Corner Chamfering (Milling)



Eccentric Pin Lock (Pat. Pend.)



Place insert over Eccentric Pin in loading position. Rotate pin **counter-clockwise**, with supplied allen wrench, to lock insert solidly against machined faces of tool holder.

Center Drilling & V-Grooving

Materials	RPM	IPM	Grade
Mild Steels	3,000	3.20	NK2020
Stainless	2,000	2.00	NK2020
Die Steels	3,000	2.00	NK2020
Cast Iron	3,200	8.00	NK1010
Aluminum	4,000	6.00	NK1010

Chamfer Milling (Down Cut)

Materials	RPM	IPM	Grade
Mild Steels	3,000	8.00	NK2020
Stainless	2,500	6.00	NK2020
Die Steels	3,000	6.00	NK2020
Cast Iron	3,000	8.00	NK1010
Aluminum	4,000	12.00	NK1010



List 215, 220D, 200 & 233*

General Drilling Operations

Work Material		Mild Steels, Carbon Steels		Alloy Tool Steels, Tool Steels		Cast Iron		Aluminum	
Hardness				Up to 30 HRC					
Drilling Speed		280-320 SFM		250-270 SFM		250-350 SFM		550-650 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch								
1	-	29,100	0.0010-0.0012	25,300	0.0003-0.0005	29,100	0.0007-0.0009	58,200	0.0006-0.0008
-	1/16	18,300	0.0016-0.0018	15,900	0.0004-0.0006	18,300	0.0011-0.0013	36,700	0.0010-0.0012
2	-	14,600	0.0020-0.0022	12,600	0.0006-0.0008	14,600	0.0014-0.0016	29,100	0.0013-0.0015
-	3/32	12,200	0.0024-0.0026	10,600	0.0007-0.0009	12,200	0.0017-0.0019	24,400	0.0015-0.0017
3	-	9,700	0.0027-0.0029	8,400	0.0012-0.0014	9,700	0.0021-0.0023	19,400	0.0020-0.0022
-	1/8	9,200	0.0028-0.0030	7,950	0.0012-0.0015	9,200	0.0022-0.0024	18,300	0.0022-0.0024
4	-	7,300	0.0030-0.0032	6,300	0.0013-0.0015	7,300	0.0023-0.0025	14,500	0.0029-0.0031
-	3/16	6,100	0.0035-0.0037	5,300	0.0015-0.0017	6,100	0.0027-0.0029	12,200	0.0034-0.0036
6	-	4,850	0.0040-0.0042	4,200	0.0020-0.0022	4,850	0.0037-0.0039	9,700	0.0045-0.0047
-	1/4	4,600	0.0042-0.0044	3,950	0.0021-0.0023	4,600	0.0039-0.0041	9,150	0.0047-0.0049
8	-	3,650	0.0048-0.0050	3,150	0.0024-0.0026	3,650	0.0044-0.0046	7,250	0.0054-0.0056
-	3/8	3,050	0.0065-0.0067	2,650	0.0033-0.0035	3,050	0.0047-0.0049	6,100	0.0066-0.0068
10	-	2,900	0.0067-0.0069	2,500	0.0033-0.0036	2,900	0.0048-0.0050	5,800	0.0068-0.0070
-	7/16	2,600	0.0068-0.0070	2,250	0.0034-0.0036	2,600	0.0049-0.0051	5,200	0.0072-0.0074
12	-	2,400	0.0074-0.0076	2,100	0.0034-0.0036	2,400	0.0054-0.0056	4,800	0.0078-0.0080
-	1/2	2,250	0.0078-0.0080	1,950	0.0035-0.0036	2,250	0.0057-0.0059	4,550	0.0082-0.0084

General Drilling Operations

Work Material		Titanium Alloys (Annealed)		Inconel, Titanium Alloys (Solution Treated and Aged)		Hardened Steels, Prehardened Steels			
Hardness						30-38 HRC		38-45 HRC	
Drilling Speed		120-140 SFM		50-70 SFM		210-230 SFM		160-180 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch								
1	-	12,600	0.0003-0.0005	5,800	0.0002-0.0004	20,850	0.0002-0.0004	16,500	0.0002-0.0004
-	1/16	8,000	0.0004-0.0006	3,700	0.0003-0.0005	13,150	0.0004-0.0006	10,400	0.0004-0.0006
2	-	6,300	0.0006-0.0008	2,900	0.0004-0.0006	10,400	0.0005-0.0007	8,250	0.0005-0.0007
-	3/32	5,300	0.0007-0.0009	2,400	0.0005-0.0007	8,750	0.0007-0.0009	6,950	0.0007-0.0009
3	-	4,200	0.0010-0.0012	1,900	0.0008-0.0010	6,950	0.0011-0.0013	5,500	0.0011-0.0013
-	1/8	4,000	0.0011-0.0012	1,850	0.0008-0.0010	6,600	0.0012-0.0014	5,200	0.0012-0.0014
4	-	3,150	0.0011-0.0013	1,450	0.0009-0.0010	5,200	0.0013-0.0015	4,100	0.0013-0.0015
-	3/16	2,650	0.0013-0.0015	1,200	0.0010-0.0012	4,400	0.0015-0.0017	3,450	0.0015-0.0017
6	-	2,100	0.0015-0.0017	950	0.0013-0.0015	3,500	0.0023-0.0025	2,750	0.0023-0.0025
-	1/4	2,000	0.0016-0.0018	900	0.0014-0.0015	3,300	0.0024-0.0026	2,600	0.0024-0.0026
8	-	1,550	0.0018-0.0020	700	0.0015-0.0017	2,600	0.0028-0.0030	2,050	0.0028-0.0030
-	3/8	1,300	0.0023-0.0025	600	0.0018-0.0020	2,200	0.0039-0.0041	1,700	0.0039-0.0041
10	-	1,250	0.0024-0.0026	550	0.0019-0.0021	2,050	0.0040-0.0042	1,650	0.0040-0.0042
-	7/16	1,100	0.0025-0.0026	500	0.0019-0.0021	1,850	0.0041-0.0043	1,450	0.0041-0.0043
12	-	1,000	0.0025-0.0027	450	0.0020-0.0022	1,700	0.0041-0.0043	1,350	0.0041-0.0043
-	1/2	950	0.0026-0.0027	420	0.0020-0.0022	1,600	0.0042-0.0043	1,250	0.0042-0.0043

*When using our List 233 three flute drills, we recommend the same RPM but feed rates should be increased by 25-35%.

▶ continued on next page ▶





List 215, 220D, 200 & 233* (Continued)

Aerospace Operations

Work Material		Graphite Composite		Epoxy Fiber		Acrylic Plastics		Graphite Composite Titanium Stack	
Drilling Speed		200-220 SFM		200-220 SFM		150-170 SFM		12-20 SFM	
Drill Dia. mm	Inch	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
		3	-	6,800	0.0017-0.0022	6,800	0.0017-0.0022	5,200	0.0017-0.0022
-	1/8	6,400	0.0015-0.0025	6,400	0.0015-0.0025	4,900	0.0015-0.0025	490	0.0010-0.0015
4	-	5,100	0.0020-0.0030	5,100	0.0020-0.0030	3,900	0.0020-0.0030	390	0.0010-0.0020
-	3/16	4,250	0.0025-0.0035	4,250	0.0025-0.0035	3,250	0.0025-0.0035	325	0.0015-0.0025
6	-	3,400	0.0035-0.0045	3,400	0.0035-0.0045	2,580	0.0035-0.0045	260	0.0015-0.0025
-	1/4	3,200	0.0035-0.0045	3,200	0.0035-0.0045	2,450	0.0035-0.0045	245	0.0020-0.0030
8	-	2,550	0.0045-0.0055	2,550	0.0045-0.0055	1,950	0.0045-0.0055	195	0.0025-0.0035
-	3/8	2,140	0.0055-0.0065	2,140	0.0055-0.0065	1,630	0.0055-0.0065	165	0.0030-0.0040
10	-	2,030	0.0055-0.0065	2,030	0.0055-0.0065	1,550	0.0055-0.0065	155	0.0035-0.0045
-	7/16	1,830	0.0060-0.0070	1,830	0.0060-0.0070	1,400	0.0060-0.0070	140	0.0035-0.0045
12	-	1,700	0.0065-0.0075	1,700	0.0065-0.0075	1,280	0.0065-0.0075	130	0.0040-0.0050
-	1/2	1,600	0.0065-0.0075	1,600	0.0065-0.0075	1,200	0.0065-0.0075	120	0.0040-0.0050

The chart above is for materials typically used in aircraft structures. Speeds may be less than optimal because of limitations in the portable machine tools utilized.

*When using our List 233 three flute drills we recommend the same RPM but feed rates should be increased by 25-35%.

Hole Depth Diameters	Reduce Spindle Speed	Reduce Infeed Rate
3 x Dia.	10%	10%
4 x Dia.	20%	10%
5 x Dia.	30%	20%
6 x Dia.	35%	20%
8 x Dia.	40%	20%

When drilling deep holes, the recommended speeds and feeds should be reduced proportionately based on the hole depth. Below are guidelines for reducing the speeds and feeds.



List 300D

General Drilling Operations

Work Material		Mild Steels, Carbon Steels		Alloy Tool Steels, Tool Steels		Cast Iron		Aluminum	
Hardness				Up to 30 HRC					
Drilling Speed		200-230 SFM		160-190 SFM		250-350 SFM		370-470 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch								
1	-	20,850	0.0010-0.0014	16,950	0.0010-0.0014	19,400	0.0007-0.0012	40,700	0.0008-0.0013
-	1/16	13,150	0.0015-0.0021	10,700	0.0015-0.0021	12,200	0.0012-0.0017	25,650	0.0012-0.0018
2	-	10,400	0.0022-0.0028	8,500	0.0022-0.0028	9,700	0.0017-0.0023	20,350	0.0017-0.0022
-	3/32	8,750	0.0026-0.0033	7,150	0.0026-0.0033	8,150	0.0022-0.0028	17,100	0.0023-0.0027
3	-	6,950	0.0033-0.0040	5,650	0.0032-0.0040	6,450	0.0032-0.0038	13,550	0.0027-0.0033
-	1/8	6,550	0.0034-0.0042	5,350	0.0033-0.0042	6,100	0.0035-0.0042	12,800	0.0028-0.0036
4	-	5,200	0.0040-0.0050	4,250	0.0040-0.0050	4,850	0.0044-0.0052	10,200	0.0034-0.0044
-	3/16	4,400	0.0048-0.0058	3,550	0.0045-0.0055	4,050	0.0056-0.0064	8,550	0.0040-0.0050
6	-	3,450	0.0060-0.0070	2,830	0.0057-0.0067	3,200	0.0070-0.0080	6,800	0.0051-0.0061
-	1/4	3,300	0.0062-0.0072	2,670	0.0060-0.0070	3,050	0.0070-0.0080	6,400	0.0055-0.0065
8	-	2,600	0.0076-0.0086	2,120	0.0070-0.0080	2,400	0.0080-0.0090	5,100	0.0065-0.0075
-	3/8	2,200	0.0090-0.0100	1,780	0.0082-0.0092	2,000	0.0100-0.0110	4,250	0.0075-0.0085
10	-	2,050	0.0095-0.0105	1,690	0.0087-0.0097	1,900	0.0110-0.0120	4,050	0.0080-0.0090
-	7/16	1,850	0.0105-0.0115	1,520	0.0090-0.0100	1,750	0.0120-0.0130	3,650	0.0090-0.0100
12	-	1,700	0.0115-0.0125	1,400	0.0105-0.0115	1,600	0.0130-0.0140	3,350	0.0095-0.0105
-	1/2	1,600	0.0120-0.0130	1,320	0.0108-0.0118	1,500	0.0133-0.0143	3,150	0.0100-0.0112

General Drilling Operations

Work Material		Titanium Alloys (Annealed)		Inconel, Titanium Alloys		Hardened Steels, Prehardened Steels			
Hardness						30-38 HRC		38-45 HRC	
Drilling Speed		75-90 SFM		45-50 SFM		135-155 SFM		100-120 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch								
1	-	7,950	0.0008-0.0013	4,650	0.0008-0.0013	14,050	0.0010-0.0014	10,650	0.0008-0.0013
-	1/16	5,000	0.0012-0.0018	2,950	0.0012-0.0018	8,850	0.0015-0.0021	6,700	0.0012-0.0018
2	-	3,950	0.0017-0.0022	2,300	0.0017-0.0022	7,000	0.0022-0.0028	5,300	0.0017-0.0022
-	3/32	3,350	0.0023-0.0027	1,950	0.0023-0.0027	5,900	0.0026-0.0033	4,500	0.0020-0.0028
3	-	2,650	0.0027-0.0033	1,550	0.0027-0.0033	4,700	0.0032-0.0040	3,550	0.0025-0.0033
-	1/8	2,500	0.0028-0.0036	1,450	0.0028-0.0036	4,450	0.0033-0.0042	3,350	0.0025-0.0035
4	-	1,950	0.0031-0.0041	1,160	0.0032-0.0040	3,500	0.0040-0.0050	2,650	0.0033-0.0043
-	3/16	1,650	0.0037-0.0047	970	0.0036-0.0046	2,950	0.0045-0.0055	2,250	0.0040-0.0050
6	-	1,300	0.0048-0.0058	770	0.0048-0.0058	2,350	0.0057-0.0067	1,750	0.0048-0.0058
-	1/4	1,250	0.0049-0.0059	730	0.0049-0.0059	2,200	0.0060-0.0070	1,650	0.0050-0.0060
8	-	1,000	0.0058-0.0068	580	0.0058-0.0068	1,750	0.0070-0.0080	1,300	0.0060-0.0070
-	3/8	830	0.0068-0.0078	480	0.0068-0.0078	1,450	0.0082-0.0092	1,100	0.0070-0.0080
10	-	790	0.0073-0.0083	460	0.0073-0.0083	1,400	0.0087-0.0097	1,050	0.0073-0.0083
-	7/16	710	0.0080-0.0090	410	0.0080-0.0090	1,250	0.0090-0.0100	950	0.0080-0.0090
12	-	660	0.0087-0.0097	380	0.0087-0.0097	1,150	0.0105-0.0115	880	0.0088-0.0098
-	1/2	620	0.0090-0.0100	360	0.0090-0.0100	1,100	0.0108-0.0118	830	0.0093-0.0103



List 1900 - VPH GDS: **Stub** List 1950 - VPH GDR: **Jobbers**

General Drilling Operations

Work Material		Low Carbon Steels 1010, 1018		Carbon Steels 1045, 1050		Alloy Steels 4140, 4330		Tool Steels D2, H13		Cast Iron	
Drilling Speed		125-160 SFM		80-120 SFM		80-100 SFM		30-50 SFM		130-200 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
0.5	-	25,400	0.001-0.002	19,970	0.001-0.002	18,030	0.001-0.002	8,330	0.001-0.002	33,540	0.001-0.002
-	3/64	10,670	0.001-0.003	8,390	0.002-0.003	7,570	0.002-0.003	3,500	0.002-0.003	14,090	0.002-0.003
2	-	6,350	0.002-0.004	5,000	0.002-0.004	4,500	0.002-0.004	2,100	0.002-0.004	8,400	0.003-0.004
-	3/32	5,340	0.003-0.005	4,200	0.003-0.005	3,790	0.003-0.005	1,750	0.003-0.005	7,050	0.003-0.005
3	-	4,250	0.003-0.005	3,400	0.003-0.005	3,000	0.003-0.005	1,400	0.003-0.005	5,600	0.004-0.006
-	1/8	4,000	0.003-0.005	3,200	0.003-0.005	2,850	0.003-0.005	1,300	0.003-0.005	5,300	0.004-0.006
4	-	3,200	0.004-0.006	2,550	0.004-0.006	2,250	0.004-0.006	1,030	0.004-0.006	4,220	0.005-0.007
-	3/16	2,650	0.005-0.007	2,150	0.005-0.007	1,900	0.005-0.007	870	0.005-0.007	3,540	0.006-0.008
6	-	2,100	0.005-0.007	1,700	0.005-0.007	1,500	0.005-0.007	690	0.005-0.007	2,800	0.007-0.010
-	1/4	2,000	0.005-0.008	1,600	0.005-0.008	1,420	0.005-0.008	660	0.005-0.008	2,650	0.007-0.010
8	-	1,600	0.006-0.009	1,270	0.006-0.009	1,100	0.006-0.009	520	0.006-0.009	2,100	0.008-0.012
-	3/8	1,330	0.008-0.011	1,060	0.008-0.011	950	0.008-0.011	430	0.008-0.011	1,790	0.010-0.013
10	-	1,270	0.008-0.011	1,000	0.008-0.011	900	0.008-0.011	410	0.008-0.011	1,700	0.010-0.014
-	7/16	1,140	0.009-0.012	920	0.009-0.012	820	0.009-0.012	370	0.009-0.012	1,520	0.011-0.016
12	-	1,060	0.009-0.013	850	0.009-0.013	760	0.009-0.013	350	0.009-0.013	1,400	0.012-0.017
-	1/2	1,000	0.010-0.014	810	0.010-0.014	720	0.010-0.014	330	0.010-0.014	1,330	0.012-0.017
14	-	900	0.011-0.014	730	0.011-0.014	650	0.011-0.014	300	0.011-0.014	1,210	0.014-0.019
-	5/8	800	0.012-0.016	640	0.012-0.016	570	0.012-0.016	260	0.012-0.016	1,070	0.016-0.021
18	-	700	0.014-0.018	560	0.014-0.018	500	0.014-0.018	230	0.014-0.018	950	0.018-0.025
-	3/4	660	0.015-0.019	530	0.015-0.019	470	0.015-0.019	220	0.015-0.019	890	0.019-0.026
20	-	630	0.016-0.020	510	0.016-0.020	450	0.016-0.020	210	0.016-0.020	850	0.020-0.027

1. The indicated speeds and feeds are when water soluble oil is used.
2. Suitable cutting fluid is water-emulsifiable, high density oil (less than 20 time dilution).
3. When using non-water soluble oil or water-emulsifiable oil (over 20 times dilution), reduce drilling speed by 20%.
4. Pecking is necessary when drilling depth of the hole exceeds 3 times drill diameter for lathe/horizontal machines.

D: Drill Diameter

Drilling Depth	≤4D	≤5D	≤6D
Coefficient for reducing RPM	x0.9	x0.8	x0.75

continued on next page



Work Material	High Heat Material						Hardened Steels						
	Ti Alloy Ti-6Al-4V		Fe Base Material Incoloy 901, A286		Ni & Co Base Material Inconel718, Waspaloy		33-43 HRC		43-48 HRC		48-53 HRC		
Drilling Speed	20-26 SFM		20-26 SFM		20 SFM		40-60 SFM		20-32 SFM		15-25 SFM		
Drill Dia.	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	
	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	
mm	Inch												
0.5	-	4,840	0.0005-0.0008	4,840	0.0005-0.0008	3,870	0.0005	10,270	0.001	5,040	0.001	4,260	0.001
-	3/64	2,030	0.0006-0.0010	2,030	0.0006-0.0010	1,630	0.0006	4,310	0.001-0.002	2,120	0.001	1,790	0.001
2	-	1,200	0.0008-0.0012	1,200	0.0008-0.0012	950	0.0008	2,550	0.001-0.002	1,250	0.001-0.002	1,050	0.001-0.002
-	3/32	1,020	0.0010-0.0014	1,020	0.0010-0.0014	810	0.0010	2,160	0.001-0.003	1,060	0.001-0.002	890	0.001-0.002
3	-	850	0.0012-0.0018	850	0.0012-0.0018	630	0.0012	1,700	0.001-0.003	850	0.001-0.002	700	0.001-0.002
-	1/8	800	0.0013-0.0019	800	0.0013-0.0019	590	0.0013	1,600	0.001-0.003	800	0.001-0.002	660	0.001-0.002
4	-	630	0.0016-0.0024	630	0.0016-0.0024	470	0.0016	1,250	0.002-0.004	640	0.002-0.003	520	0.002-0.003
-	3/16	530	0.0019-0.0028	530	0.0019-0.0028	400	0.0019	1,050	0.002-0.005	540	0.002-0.004	430	0.002-0.004
6	-	420	0.0024-0.0035	420	0.0024-0.0035	320	0.0024	850	0.002-0.006	430	0.002-0.005	350	0.002-0.005
-	1/4	400	0.0026-0.0037	400	0.0026-0.0037	300	0.0026	800	0.002-0.006	400	0.002-0.005	330	0.002-0.005
8	-	320	0.0031-0.0047	320	0.0031-0.0047	230	0.0031	640	0.003-0.008	320	0.003-0.006	260	0.003-0.006
-	3/8	260	0.0037-0.0056	260	0.0037-0.0056	200	0.0037	540	0.004-0.009	270	0.004-0.008	220	0.004-0.008
10	-	250	0.0039-0.0059	250	0.0039-0.0059	190	0.0039	510	0.004-0.010	260	0.004-0.008	210	0.004-0.008
-	7/16	230	0.0043-0.0066	230	0.0043-0.0066	170	0.0043	450	0.004-0.011	230	0.004-0.009	185	0.004-0.009
12	-	210	0.0047-0.0071	210	0.0047-0.0071	160	0.0047	430	0.005-0.012	210	0.005-0.009	170	0.005-0.009
-	1/2	200	0.0050-0.0075	200	0.0050-0.0075	150	0.0050	410	0.005-0.013	200	0.005-0.010	165	0.005-0.010
14	-	180	0.0055-0.0083	180	0.0055-0.0083	130	0.0055	360	0.005-0.014	180	0.005-0.011	150	0.005-0.011
-	5/8	160	0.0062-0.0093	160	0.0062-0.0093	115	0.0062	320	0.006-0.016	160	0.006-0.012	130	0.006-0.012
18	-	140	0.0071-0.0106	140	0.0071-0.0106	100	0.0071	280	0.007-0.018	140	0.007-0.014	115	0.007-0.014
-	3/4	130	0.0075-0.0112	130	0.0075-0.0112	95	0.0075	265	0.007-0.019	130	0.007-0.015	110	0.007-0.015
20	-	125	0.0079-0.0118	125	0.0079-0.0118	90	0.0079	250	0.008-0.020	125	0.008-0.016	105	0.008-0.016



List 2000 - VP® GDR

General Drilling Operations

Work Material		Low Carbon Steels 1010, 1018		Carbon Steels 1045, 1050		Alloy Steels 4140, 4330		Tool Steels D2, H13		Cast Iron		Cast Aluminum	
Drilling Speed		125-160 SFM		80-120 SFM		80-100 SFM		30-50 SFM		130-200 SFM		230-400 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
2	-	6,350	0.002-0.004	5,100	0.002-0.004	4,450	0.002-0.004	2,050	0.002-0.004	8,435	0.003-0.004	15,000	0.005-0.007
3	-	4,250	0.004-0.005	3,400	0.004-0.005	2,970	0.004-0.005	1,370	0.004-0.005	5,620	0.004-0.006	10,000	0.008-0.011
-	1/8	4,000	0.004-0.005	3,200	0.004-0.005	2,800	0.004-0.005	1,300	0.004-0.005	5,300	0.004-0.006	9,700	0.008-0.012
4	-	3,200	0.004-0.006	2,550	0.004-0.006	2,230	0.004-0.006	1,035	0.004-0.006	4,220	0.005-0.007	8,000	0.009-0.015
-	3/16	2,650	0.005-0.007	2,140	0.005-0.007	1,870	0.005-0.007	870	0.005-0.007	3,530	0.006-0.008	6,700	0.011-0.016
6	-	2,100	0.005-0.007	1,700	0.005-0.007	1,490	0.005-0.007	690	0.005-0.007	2,810	0.007-0.010	5,300	0.013-0.019
-	1/4	2,000	0.005-0.008	1,600	0.005-0.008	1,400	0.005-0.008	650	0.005-0.008	2,650	0.007-0.010	5,000	0.013-0.019
8	-	1,600	0.006-0.009	1,270	0.006-0.009	1,110	0.006-0.009	515	0.006-0.009	2,110	0.008-0.012	4,000	0.015-0.021
-	3/8	1,330	0.007-0.011	1,070	0.007-0.011	940	0.007-0.011	440	0.007-0.011	1,770	0.009-0.013	3,350	0.017-0.024
10	-	1,270	0.008-0.011	1,020	0.008-0.011	890	0.008-0.011	410	0.008-0.011	1,690	0.010-0.014	3,200	0.018-0.025
-	7/16	1,140	0.009-0.012	920	0.009-0.012	800	0.009-0.012	370	0.009-0.012	1,520	0.011-0.015	2,900	0.020-0.028
12	-	1,060	0.009-0.013	850	0.009-0.013	740	0.009-0.013	345	0.009-0.013	1,410	0.012-0.017	2,700	0.021-0.030
-	1/2	1,000	0.010-0.014	800	0.010-0.014	700	0.010-0.014	330	0.010-0.014	1,330	0.012-0.017	2,550	0.021-0.031
14	-	900	0.011-0.015	720	0.011-0.015	640	0.011-0.015	300	0.011-0.015	1,200	0.013-0.017	2,300	0.022-0.032
-	5/8	800	0.012-0.016	640	0.012-0.016	560	0.012-0.016	260	0.012-0.016	1,060	0.013-0.018	2,020	0.023-0.033
16	-	800	0.012-0.017	640	0.012-0.017	560	0.012-0.017	260	0.012-0.017	1,050	0.013-0.018	2,000	0.024-0.033
18	-	700	0.013-0.019	560	0.013-0.019	500	0.013-0.019	230	0.013-0.019	950	0.014-0.020	1,800	0.025-0.035
-	3/4	670	0.013-0.020	530	0.013-0.020	470	0.013-0.020	220	0.013-0.020	880	0.015-0.021	1,690	0.026-0.037
20	-	650	0.014-0.020	500	0.014-0.020	450	0.014-0.020	210	0.014-0.020	830	0.016-0.022	1,600	0.027-0.039
22	-	580	0.016-0.022	460	0.016-0.022	400	0.016-0.022	190	0.016-0.022	750	0.017-0.023	1,500	0.029-0.042
24	-	530	0.016-0.024	420	0.016-0.024	370	0.016-0.024	170	0.016-0.024	700	0.018-0.026	1,350	0.030-0.044
26	-	500	0.017-0.026	400	0.017-0.026	340	0.017-0.026	160	0.017-0.026	650	0.019-0.027	1,250	0.032-0.047
28	-	450	0.018-0.028	360	0.018-0.028	320	0.018-0.028	150	0.018-0.028	600	0.020-0.029	1,150	0.033-0.050
30	-	420	0.019-0.030	340	0.019-0.030	300	0.019-0.030	140	0.019-0.030	550	0.021-0.031	1,100	0.034-0.052
32	-	400	0.020-0.031	320	0.020-0.031	280	0.020-0.031	130	0.020-0.031	520	0.023-0.033	1,000	0.035-0.054

1. The indicated speeds and feeds are when water soluble oil is used.
2. Suitable cutting fluid is water-emulsifiable, high density oil (less than 10 times dilution).
3. With the exception of using milling chucks, pay careful attention to ensure that drill is rigidly clamped and keep deflection at a minimum.
4. In case of drilling depth: >4D, reduce drilling speed as below.
5. When using non-water soluble oil or water-emulsifiable oil (over 10 times dilution), reduce drilling speed by 20%.
6. Step process should be used when drilling depth of the hole exceeds 4 times drill diameter for vertical machines or 3 times drill diameter for horizontal lathe machines.

D: Drill Diameter

Drilling Depth	≤5D	≤6D
Coefficient for reducing RPM	x0.9	x0.7



List 1700 - V-HO GDR: Coolant-Through

General Drilling Operations

Work Material	Low Carbon Steels 1010, 1018		Carbon Steels 1045, 1050		Tool Steels D2, H13		Tool Steels H13 (20 HRC)		Cast Iron		Cast Aluminum	
Drilling Speed	120-160 SFM		100-140 SFM		83-120 SFM		50-90 SFM		150-200 SFM		250-400 SFM	
Drill Dia. Inch	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
1/4	2,140	0.005-0.007	1,830	0.005-0.007	1,530	0.005-0.007	1,070	0.005-0.007	2,680	0.008-0.010	4,970	0.013-0.019
9/32	1,900	0.006-0.008	1,630	0.006-0.008	1,360	0.006-0.008	950	0.006-0.008	2,380	0.008-0.011	4,420	0.014-0.020
5/16	1,710	0.007-0.009	1,470	0.007-0.009	1,220	0.007-0.009	860	0.007-0.009	2,140	0.008-0.012	3,970	0.015-0.021
11/32	1,560	0.007-0.009	1,330	0.007-0.009	1,110	0.007-0.009	780	0.007-0.009	1,950	0.009-0.013	3,610	0.016-0.022
3/8	1,430	0.008-0.011	1,220	0.008-0.011	1,020	0.008-0.011	710	0.008-0.011	1,780	0.010-0.014	3,310	0.017-0.025
13/32	1,320	0.008-0.011	1,130	0.008-0.011	940	0.008-0.011	660	0.008-0.011	1,650	0.010-0.014	3,060	0.018-0.026
7/16	1,220	0.009-0.012	1,050	0.009-0.012	870	0.009-0.012	610	0.009-0.012	1,530	0.011-0.015	2,840	0.019-0.027
15/32	1,140	0.009-0.012	980	0.009-0.012	820	0.009-0.012	570	0.009-0.012	1,430	0.011-0.015	2,650	0.020-0.028
1/2	1,070	0.010-0.013	920	0.010-0.013	760	0.010-0.013	540	0.010-0.013	1,340	0.013-0.017	2,480	0.021-0.030
9/16	950	0.011-0.014	820	0.011-0.014	680	0.011-0.014	480	0.011-0.014	1,190	0.013-0.017	2,210	0.022-0.031
5/8	860	0.012-0.015	730	0.012-0.015	610	0.012-0.015	430	0.011-0.014	1,070	0.014-0.018	1,990	0.023-0.032
11/16	780	0.013-0.016	670	0.013-0.016	560	0.013-0.016	390	0.012-0.015	970	0.014-0.018	1,810	0.024-0.033
3/4	710	0.014-0.017	610	0.014-0.017	510	0.014-0.017	360	0.013-0.016	890	0.015-0.019	1,660	0.025-0.034
13/16	660	0.016-0.021	560	0.016-0.021	470	0.016-0.021	330	0.015-0.020	820	0.017-0.022	1,530	0.028-0.040
7/8	610	0.017-0.022	520	0.017-0.022	440	0.017-0.022	310	0.017-0.022	760	0.018-0.023	1,420	0.030-0.042
15/16	570	0.018-0.023	490	0.018-0.023	410	0.018-0.023	290	0.018-0.023	710	0.020-0.025	1,320	0.032-0.044
1	540	0.019-0.024	460	0.019-0.024	380	0.019-0.024	270	0.019-0.024	670	0.021-0.026	1,240	0.033-0.045
1-1/8	480	0.020-0.025	410	0.020-0.025	340	0.020-0.025	240	0.020-0.025	590	0.022-0.027	1,100	0.034-0.046
1-1/4	430	0.021-0.026	370	0.021-0.026	310	0.021-0.026	210	0.020-0.025	540	0.023-0.028	990	0.035-0.047

1. Speeds and feeds are based on using soluble oil where applicable 1:5 to 1:10 concentration.
2. When other than an end mill collet is used, make sure the drill shank is firmly attached.
3. For deep holes (4 times the drill diameter or deeper) use the lower recommended feed rate as a starting point and increase as needed for the best result.
4. Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used, and coolant.



List 1750 - HELIOS®:10D

List 1760 - HELIOS®:15D

List 1770 - HELIOS®:20D

General Drilling Operations

Work Material		Carbon Steels Mild Steels 1010, 1050, 12L14		Alloy Steels 4140, 4130		Tool Steels Die Steels D2, H13, P20, S7		Stainless Steels 300, 400, 17-4 PH	
Drilling Speed		65-80 SFM		60-75 SFM		40-55 SFM		20-45 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch								
2	-	3,300	0.001-0.002	3,300	0.001-0.002	2,230	0.001-0.002	1,160	0.001-0.002
-	3/32	2,770	0.001-0.002	2,770	0.001-0.002	1,870	0.001-0.002	980	0.001-0.002
3	-	2,200	0.001-0.003	2,200	0.001-0.003	1,500	0.001-0.003	770	0.001-0.003
-	1/8	2,050	0.001-0.003	2,050	0.001-0.003	1,450	0.001-0.003	750	0.001-0.003
4	-	1,600	0.002-0.004	1,600	0.002-0.004	1,150	0.002-0.004	610	0.002-0.004
-	3/16	1,350	0.002-0.005	1,350	0.002-0.005	950	0.002-0.005	510	0.002-0.005
5	-	1,300	0.002-0.005	1,300	0.002-0.005	900	0.002-0.005	490	0.002-0.005
-	7/32	1,200	0.002-0.005	1,200	0.002-0.005	800	0.002-0.005	440	0.002-0.005
6	-	1,100	0.002-0.006	1,100	0.002-0.006	750	0.002-0.006	405	0.002-0.006
-	1/4	1,000	0.003-0.006	1,000	0.003-0.006	700	0.003-0.006	380	0.003-0.006
8	-	800	0.003-0.008	800	0.003-0.008	550	0.003-0.008	300	0.003-0.007
-	3/8	700	0.004-0.009	700	0.004-0.009	475	0.004-0.009	255	0.004-0.009
10	-	650	0.004-0.010	650	0.004-0.010	450	0.004-0.010	240	0.004-0.009
-	7/16	600	0.004-0.011	600	0.004-0.011	400	0.004-0.011	220	0.004-0.010
12	-	550	0.005-0.012	550	0.005-0.012	380	0.005-0.012	200	0.005-0.011
-	1/2	520	0.005-0.012	520	0.005-0.012	350	0.005-0.012	190	0.005-0.011
14	-	470	0.005-0.014	470	0.005-0.014	320	0.005-0.014	180	0.005-0.012
-	9/16	460	0.006-0.014	460	0.006-0.014	310	0.006-0.014	170	0.006-0.012

For Stainless Steel and Aluminum Alloys, peck cycles may be necessary.

General Drilling Operations

Work Material		Ductile Cast Iron		Cast Iron		Aluminum Alloy, Cast Aluminum	
Drilling Speed		55-65 SFM		60-80 SFM		105-205 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch						
2	-	2,860	0.001-0.002	3,390	0.001-0.002	5,530	0.002-0.003
-	3/32	2,410	0.001-0.002	2,850	0.002-0.003	4,640	0.003-0.004
3	-	1,900	0.001-0.003	2,250	0.002-0.004	3,670	0.004-0.005
-	1/8	1,800	0.001-0.003	2,100	0.002-0.004	3,600	0.004-0.005
4	-	1,450	0.001-0.004	1,650	0.003-0.005	2,920	0.005-0.006
-	3/16	1,200	0.001-0.005	1,400	0.004-0.006	2,450	0.006-0.007
5	-	1,150	0.001-0.005	1,350	0.004-0.006	2,340	0.006-0.008
-	7/32	1,010	0.001-0.005	1,225	0.004-0.007	2,100	0.007-0.009
6	-	955	0.001-0.006	1,100	0.005-0.008	1,940	0.007-0.009
-	1/4	885	0.002-0.006	1,010	0.005-0.008	1,830	0.008-0.010
8	-	715	0.002-0.008	835	0.006-0.010	1,455	0.009-0.013
-	3/8	625	0.002-0.009	725	0.008-0.012	1,220	0.011-0.015
10	-	575	0.002-0.010	670	0.008-0.013	1,160	0.012-0.016
-	7/16	525	0.003-0.011	610	0.009-0.014	1,050	0.013-0.018
12	-	475	0.003-0.012	555	0.009-0.015	970	0.014-0.019
-	1/2	445	0.003-0.012	535	0.010-0.016	915	0.015-0.020
14	-	400	0.003-0.014	485	0.011-0.018	830	0.016-0.022
-	9/16	395	0.003-0.014	475	0.011-0.018	815	0.017-0.022

For Stainless Steel and Aluminum Alloys, peck cycles may be necessary.
For deep hold drilling procedure please refer to page: 296.

continued on next page



List 1800 - V-Select

General Drilling Operations

Work Material	Low Carbon Steels 1010, 1018		Carbon Steels		Alloy Steels 4140, 4340		Tool Steels D2, H13		Cast Iron		Cast Aluminum	
Drilling Speed	72-132 SFM		52-99 SFM		40-82 SFM		26-52 SFM		72-131 SFM		164-328 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
2	5,700	0.002-0.004	4,000	0.002-0.004	3,500	0.002-0.004	1,900	0.002-0.004	5,700	0.003-0.004	12,000	0.005-0.007
3	3,850	0.004-0.005	2,800	0.004-0.005	2,400	0.004-0.005	1,320	0.004-0.005	3,850	0.004-0.006	10,000	0.008-0.011
4	2,900	0.004-0.006	2,100	0.004-0.006	1,800	0.004-0.006	950	0.004-0.006	2,900	0.005-0.007	7,500	0.009-0.015
5	2,260	0.005-0.007	1,600	0.005-0.007	1,400	0.005-0.007	750	0.005-0.007	2,260	0.006-0.009	6,300	0.011-0.016
6	1,900	0.005-0.007	1,320	0.005-0.007	1,180	0.005-0.007	630	0.005-0.007	1,900	0.007-0.010	5,000	0.013-0.019
8	1,400	0.006-0.009	1,000	0.006-0.009	900	0.006-0.009	480	0.006-0.009	1,400	0.008-0.012	4,000	0.015-0.021
10	1,120	0.008-0.011	800	0.008-0.011	710	0.008-0.011	380	0.008-0.011	1,120	0.010-0.014	3,150	0.018-0.025
12	950	0.009-0.013	670	0.009-0.013	600	0.009-0.013	320	0.009-0.013	950	0.012-0.017	2,650	0.021-0.030
13	880	0.010-0.014	620	0.010-0.014	550	0.010-0.014	300	0.010-0.014	880	0.012-0.017	2,450	0.022-0.031



List 1150 - NEXUS GDS: **Stub** List 1650 - NEXUS GDR: **Jobbers**

General Drilling Operations

Work Material	Low Carbon Steels Mild Steels 1010, 1018		Medium Carbon Steels 1035, 1045		Alloy Steels 4140, 4130		Tool Steels D2, H13		Stainless Steels				
									Austenitic 304 (Sulfur < 0.02%)		Austenitic 304 (Sulfur > 0.02%) 303, 317		
Drilling Speed	130-195 SFM		80-150 SFM		60-125 SFM		40-80 SFM		40-50 SFM		41-50 SFM		
Drill Dia. mm Inch	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	
	1	-	15,920	0.001-0.002	11,160	0.001-0.002	9,700	0.001-0.002	5,820	0.001-0.002	4,460	0.0005-0.001	6,370
-	1/16	10,000	0.001-0.003	7,000	0.001-0.003	6,100	0.001-0.003	3,650	0.001-0.003	2,820	0.0005-0.001	4,000	0.001-0.002
2	-	7,960	0.002-0.004	5,580	0.002-0.004	4,850	0.002-0.004	2,910	0.002-0.004	2,230	0.001-0.002	3,180	0.002-0.003
-	3/32	6,700	0.003-0.004	4,680	0.003-0.004	4,070	0.003-0.004	2,440	0.003-0.004	1,880	0.001-0.002	2,670	0.002-0.003
3	-	5,310	0.004-0.005	3,720	0.004-0.005	3,235	0.004-0.005	1,940	0.004-0.005	1,490	0.001-0.003	2,120	0.003-0.004
-	1/8	5,020	0.004-0.005	3,500	0.004-0.005	3,050	0.004-0.005	1,830	0.004-0.005	1,350	0.001-0.003	2,000	0.003-0.004
4	-	3,980	0.004-0.006	2,790	0.004-0.006	2,425	0.004-0.006	1,455	0.004-0.006	1,030	0.002-0.003	1,590	0.003-0.005
-	3/16	3,350	0.005-0.007	2,340	0.005-0.007	2,030	0.005-0.007	1,220	0.005-0.007	870	0.002-0.004	1,330	0.004-0.006
6	-	2,650	0.005-0.008	1,860	0.005-0.008	1,620	0.005-0.008	970	0.005-0.008	690	0.003-0.005	1,060	0.005-0.007
-	1/4	2,500	0.005-0.008	1,750	0.005-0.008	1,520	0.005-0.008	910	0.005-0.008	630	0.003-0.005	1,000	0.005-0.007
8	-	1,990	0.007-0.009	1,395	0.007-0.009	1,210	0.007-0.009	725	0.007-0.009	480	0.003-0.006	800	0.006-0.009
-	3/8	1,670	0.008-0.011	1,170	0.008-0.011	1,020	0.008-0.011	610	0.008-0.011	400	0.004-0.007	670	0.007-0.011
10	-	1,590	0.008-0.011	1,115	0.008-0.011	970	0.008-0.011	580	0.008-0.011	380	0.004-0.008	640	0.008-0.011
-	7/16	1,430	0.009-0.012	1,000	0.009-0.012	870	0.009-0.012	520	0.009-0.012	340	0.005-0.009	570	0.009-0.012
12	-	1,330	0.009-0.013	930	0.009-0.013	810	0.009-0.013	485	0.009-0.013	320	0.005-0.009	530	0.009-0.013
-	1/2	1,250	0.010-0.014	870	0.010-0.014	760	0.010-0.014	450	0.010-0.014	300	0.005-0.010	500	0.010-0.014

1. The indicated speeds and feeds are for drilling with water soluble coolant.
2. The most suitable cutting fluid is water-emulsifiable high density oil (less than 10 times dilution)
3. When drilling cast surface (ie.not ground surface), reduce drilling speed by 20%.
4. For drilling depth>3D, reduce drilling speed (using the table below).
5. Step feeding is required for drilling depth>4D.
6. When using non-water soluble coolant or water-emulsifiable (over 10 times dilution), reduce the drilling speed by 20%.

D: Drill Diameter

Drilling Depth	≤4D	≤5D	≤6D
Coefficient for reducing RPM	x0.9	x0.8	x0.75

continued on next page



Work Material	Stainless Steels						Cast Iron	Aluminum Alloy 5052, 7075	Cast Aluminum	Copper Copper Alloy				
	Martensitic 420, 440		Ferritic 430, 405		15-5PH 17-4PH									
Drilling Speed	42-50 SFM		43-50 SFM		44-50 SFM		110-195 SFM		105-205 SFM		205-325 SFM		130-195 SFM	
Drill Dia. mm Inch	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
1 -	6,370	0.0005-0.001	7,000	0.0005-0.001	4,770	0.0005-0.001	14,550	0.001-0.002	15,000	0.001-0.002	25,000	0.001-0.002	15,920	0.0005-0.001
- 1/16	4,000	0.0005-0.001	4,400	0.0005-0.001	3,000	0.0005-0.001	9,150	0.002-0.003	9,900	0.001-0.003	14,000	0.001-0.003	10,000	0.001-0.002
2 -	3,180	0.001-0.002	3,500	0.001-0.002	2,390	0.001-0.002	7,280	0.003-0.004	8,000	0.002-0.005	10,000	0.002-0.005	7,960	0.001-0.002
- 3/32	2,670	0.001-0.002	2,940	0.001-0.002	2,000	0.001-0.002	6,100	0.003-0.004	6,700	0.002-0.006	8,400	0.002-0.006	6,700	0.002-0.003
3 -	2,120	0.002-0.003	2,330	0.002-0.003	1,590	0.002-0.003	4,850	0.004-0.006	5,300	0.003-0.007	6,700	0.003-0.007	5,310	0.002-0.004
- 1/8	2,000	0.002-0.003	2,200	0.002-0.003	1,500	0.002-0.003	4,580	0.004-0.006	5,000	0.003-0.007	6,600	0.003-0.007	5,020	0.002-0.004
4 -	1,590	0.002-0.003	1,750	0.002-0.003	1,190	0.002-0.003	3,640	0.006-0.008	4,000	0.003-0.009	6,400	0.003-0.009	3,980	0.003-0.004
- 3/16	1,330	0.002-0.004	1,470	0.003-0.004	1,000	0.003-0.004	3,050	0.006-0.009	3,350	0.004-0.011	5,300	0.004-0.011	3,350	0.004-0.005
6 -	1,060	0.002-0.005	1,170	0.004-0.005	800	0.004-0.005	2,425	0.008-0.010	2,700	0.005-0.014	4,200	0.005-0.014	2,650	0.005-0.006
- 1/4	1,000	0.002-0.005	1,110	0.004-0.005	750	0.004-0.005	2,290	0.008-0.010	2,500	0.005-0.015	4,000	0.005-0.015	2,500	0.005-0.006
8 -	800	0.003-0.006	880	0.005-0.006	600	0.005-0.006	1,820	0.008-0.012	2,000	0.006-0.018	3,200	0.006-0.018	1,990	0.006-0.008
- 3/8	670	0.003-0.007	740	0.006-0.007	500	0.006-0.007	1,530	0.009-0.013	1,680	0.007-0.021	2,700	0.007-0.021	1,670	0.007-0.009
10 -	640	0.004-0.008	700	0.006-0.008	480	0.006-0.008	1,455	0.010-0.014	1,600	0.008-0.022	2,500	0.008-0.022	1,590	0.008-0.010
- 7/16	570	0.004-0.009	630	0.007-0.009	430	0.007-0.009	1,310	0.010-0.015	1,450	0.009-0.024	2,300	0.009-0.024	1,430	0.009-0.011
12 -	530	0.005-0.009	580	0.007-0.009	400	0.007-0.009	1,210	0.011-0.015	1,350	0.009-0.026	2,100	0.009-0.026	1,330	0.009-0.012
- 1/2	500	0.005-0.010	550	0.008-0.010	380	0.008-0.010	1,140	0.011-0.015	1,270	0.010-0.027	2,000	0.010-0.027	1,250	0.010-0.013



List 1000 - EX-GOLD®: Stub List 1500 - EX-GOLD®: Jobbers

General Drilling Operations

Work Material		Low Carbon Steels 1010, 1018		Medium Carbon Steels 1035, 1045		Alloy Steels 4140, 4340		Tool Steels D2, H13		Cast Iron		Cast Aluminum	
Drilling Speed		105-130 SFM		70-100 SFM		65-80 SFM		25-40 SFM		105-130 SFM		205-330 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
2	-	5,710	0.002-0.004	4,120	0.002-0.004	3,520	0.002-0.004	1,570	0.002-0.004	5,700	0.003-0.004	13,000	0.006-0.008
-	3/32	4,790	0.003-0.004	3,460	0.003-0.004	2,960	0.003-0.004	1,320	0.003-0.004	4,790	0.003-0.004	10,900	0.007-0.009
3	-	3,800	0.004-0.005	2,750	0.004-0.005	2,350	0.004-0.005	1,050	0.004-0.005	3,800	0.004-0.006	8,650	0.008-0.011
-	1/8	3,590	0.004-0.005	2,600	0.004-0.005	2,220	0.004-0.005	990	0.004-0.005	3,590	0.004-0.006	8,180	0.008-0.011
4	-	2,850	0.004-0.006	2,060	0.004-0.006	1,760	0.004-0.006	790	0.004-0.006	2,850	0.006-0.008	6,480	0.010-0.013
-	3/16	2,390	0.005-0.007	1,730	0.005-0.007	1,480	0.005-0.007	660	0.005-0.007	2,390	0.006-0.009	5,450	0.011-0.016
6	-	1,900	0.005-0.007	1,370	0.005-0.007	1,170	0.005-0.007	530	0.005-0.007	1,900	0.007-0.010	4,320	0.013-0.018
-	1/4	1,800	0.005-0.007	1,300	0.005-0.007	1,110	0.005-0.007	500	0.005-0.007	1,800	0.008-0.010	4,090	0.013-0.019
8	-	1,430	0.007-0.009	1,030	0.007-0.009	880	0.007-0.009	390	0.007-0.009	1,430	0.008-0.012	3,240	0.015-0.021
-	3/8	1,200	0.008-0.011	870	0.008-0.011	740	0.008-0.011	330	0.008-0.011	1,200	0.010-0.014	2,730	0.017-0.025
10	-	1,140	0.008-0.011	820	0.008-0.011	700	0.008-0.011	320	0.008-0.011	1,140	0.010-0.014	2,600	0.018-0.025
-	7/16	1,030	0.009-0.012	740	0.009-0.012	630	0.009-0.012	280	0.009-0.012	1,030	0.011-0.015	2,340	0.019-0.027
12	-	950	0.009-0.012	680	0.009-0.012	580	0.009-0.012	260	0.009-0.012	950	0.011-0.016	2,160	0.020-0.028
-	1/2	900	0.010-0.013	650	0.010-0.013	550	0.010-0.013	250	0.010-0.013	900	0.012-0.017	2,040	0.021-0.030
14	-	810	0.011-0.014	590	0.011-0.014	500	0.011-0.014	230	0.011-0.014	820	0.012-0.017	1,850	0.022-0.031
-	5/8	720	0.012-0.015	520	0.012-0.015	440	0.012-0.015	200	0.011-0.014	720	0.013-0.018	1,640	0.023-0.032
18	-	630	0.013-0.016	450	0.013-0.016	390	0.013-0.016	180	0.012-0.015	630	0.013-0.018	1,440	0.024-0.033
-	3/4	600	0.014-0.017	430	0.014-0.017	370	0.014-0.017	170	0.013-0.016	600	0.014-0.019	1,360	0.025-0.034

1. Speeds and feeds are based on using soluble oil where applicable 1:5 to 1:10 concentration.
2. When other than an end mill collet is used, make sure the drill shank is firmly attached.
3. For deep holes (4 times the drill diameter or deeper) use the lower recommended feed rate as a starting point and increase as needed for the best result.
4. Recommended feeds and speeds are starting points only. Actual performance will be determined by specific material, the condition of equipment being used, and coolant.



List 1100 - EX-SUS-GOLD: Stub

List 1600 - EX-SUS-GOLD: Jobbers

General Drilling Operations

Work Material	Low Carbon Steels Mild Steels 1010, 1018		Stainless Steels								Aluminum 5052, 7075		Cast Aluminum		Copper Copper Alloy	
			Austenitic 304, 316		Martensitic 420, 440		Ferritic 430, 405		15-5PH 17-4PH							
Drilling Speed	100-130 SFM		40-60 SFM		50-65 SFM		50-65 SFM		25-40 SFM		105 - 205 SFM		205-325 SFM		80 - 160 SFM	
Drill Dia. mm Inch	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
	1 -	10,000	0.001-0.002	4,800	0.001-0.002	5,550	0.001-0.002	5,550	-0.001	3,200	-0.001	15,000	0.001-0.002	25,000	0.001-0.002	12,000
- 1/16	7,200	0.002-0.003	3,000	0.001-0.003	3,600	0.001-0.003	3,600	-0.001	2,000	-0.001	10,000	0.001-0.004	13,000	0.002-0.004	6,600	0.001-0.002
2 -	5,700	0.002-0.004	2,400	0.002-0.003	2,850	0.002-0.003	2,850	0.001-0.002	1,600	0.001-0.002	8,000	0.002-0.005	10,000	0.002-0.005	5,100	0.001-0.002
- 3/32	4,800	0.003-0.004	2,000	0.002-0.003	2,400	0.002-0.003	2,400	0.001-0.002	1,350	0.001-0.002	6,700	0.002-0.006	8,400	0.002-0.006	4,300	0.001-0.003
3 -	3,850	0.004-0.005	1,600	0.002-0.004	1,900	0.002-0.004	1,900	0.002-0.003	1,100	0.002-0.003	5,300	0.002-0.007	6,700	0.002-0.007	3,400	0.002-0.004
- 1/8	3,600	0.004-0.005	1,500	0.003-0.004	1,800	0.002-0.004	1,800	0.002-0.003	1,000	0.002-0.003	5,000	0.003-0.007	6,600	0.003-0.007	3,200	0.002-0.004
4 -	2,900	0.004-0.006	1,200	0.003-0.005	1,450	0.003-0.005	1,450	0.002-0.003	800	0.002-0.003	4,000	0.003-0.009	6,400	0.003-0.009	2,550	0.003-0.004
- 3/16	2,400	0.005-0.007	1,000	0.004-0.006	1,200	0.004-0.006	1,200	0.003-0.004	680	0.003-0.004	3,400	0.004-0.011	5,300	0.004-0.011	2,150	0.004-0.005
6 -	1,900	0.005-0.008	800	0.005-0.007	950	0.006-0.007	950	0.004-0.005	550	0.004-0.005	2,700	0.005-0.014	4,200	0.005-0.014	1,700	0.005-0.006
- 1/4	1,780	0.006-0.008	750	0.005-0.007	900	0.006-0.007	900	0.004-0.005	510	0.004-0.005	2,500	0.005-0.015	4,000	0.005-0.015	1,600	0.005-0.007
8 -	1,400	0.007-0.009	600	0.006-0.009	720	0.008-0.009	720	0.005-0.006	400	0.005-0.006	2,000	0.006-0.018	3,200	0.006-0.018	1,250	0.006-0.008
- 3/8	1,180	0.008-0.010	500	0.007-0.010	600	0.009-0.011	600	0.006-0.007	340	0.006-0.007	1,700	0.007-0.021	2,800	0.007-0.021	1,050	0.007-0.009
10 -	1,120	0.008-0.011	480	0.008-0.011	570	0.010-0.012	570	0.006-0.008	320	0.006-0.008	1,600	0.008-0.022	2,500	0.008-0.022	1,000	0.008-0.010
- 7/16	1,020	0.009-0.012	430	0.008-0.012	520	0.011-0.013	520	0.006-0.009	300	0.006-0.009	1,450	0.008-0.024	2,300	0.008-0.024	920	0.009-0.011
12 -	950	0.009-0.013	400	0.009-0.013	480	0.012-0.014	480	0.007-0.009	280	0.007-0.009	1,350	0.009-0.026	2,100	0.009-0.026	850	0.009-0.012
- 1/2	900	0.010-0.014	380	0.010-0.014	450	0.013-0.015	450	0.007-0.010	260	0.007-0.010	1,270	0.010-0.027	2,000	0.010-0.027	800	0.010-0.012
14 -	820	0.011-0.015	340	0.011-0.015	410	0.014-0.018	410	0.008-0.012	225	0.008-0.012	1,140	0.011-0.029	1,850	0.011-0.029	730	0.010-0.013
- 5/8	720	0.011-0.016	300	0.012-0.017	360	0.015-0.020	360	0.009-0.012	200	0.009-0.012	1,010	0.012-0.032	1,620	0.012-0.032	640	0.011-0.014
16 -	720	0.011-0.017	300	0.012-0.017	355	0.015-0.020	355	0.009-0.013	200	0.009-0.013	1,000	0.012-0.033	1,600	0.012-0.033	640	0.011-0.015
18 -	640	0.013-0.019	265	0.013-0.019	320	0.016-0.021	320	0.010-0.014	175	0.010-0.014	885	0.013-0.037	1,450	0.013-0.037	570	0.011-0.016
- 3/4	600	0.013-0.020	250	0.013-0.019	300	0.016-0.021	300	0.010-0.015	165	0.010-0.015	840	0.013-0.038	1,370	0.013-0.038	530	0.012-0.016
20 -	570	0.013-0.021	240	0.013-0.020	285	0.016-0.022	285	0.010-0.016	160	0.010-0.016	800	0.014-0.039	1,300	0.014-0.039	510	0.012-0.017
22 -	520	0.015-0.022	215	0.014-0.021	260	0.017-0.024	260	0.011-0.017	145	0.011-0.017	730	0.015-0.043	1,200	0.015-0.043	460	0.013-0.019
24 -	480	0.015-0.024	200	0.015-0.022	240	0.017-0.026	240	0.012-0.019	135	0.012-0.019	670	0.016-0.045	1,100	0.016-0.045	420	0.013-0.021
26 -	450	0.016-0.026	185	0.016-0.024	220	0.018-0.028	220	0.013-0.021	120	0.013-0.021	320	0.017-0.048	1,000	0.017-0.048	390	0.013-0.022
28 -	410	0.017-0.028	170	0.016-0.025	200	0.018-0.029	200	0.013-0.022	115	0.013-0.022	570	0.018-0.051	930	0.018-0.051	360	0.014-0.023
30 -	380	0.018-0.030	160	0.017-0.026	190	0.018-0.031	190	0.014-0.024	105	0.014-0.024	530	0.019-0.053	870	0.019-0.053	340	0.014-0.025
32 -	360	0.019-0.032	150	0.017-0.028	180	0.018-0.032	180	0.015-0.025	100	0.015-0.025	500	0.020-0.056	820	0.020-0.056	320	0.015-0.026



List 1200 - EX-SPOT TiN-NC-LDS List 1250 - EX-SPOT LS-NC-LDS

General Drilling Operations

Work Material	Carbon Steels, Mild Steel 1010, 1050		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Cast Aluminum		Tool Steels, Hardened Steels			
	Hardness										26-30 HRC		30-34 HRC	
Drilling Speed	105-130 SFM		65-85 SFM		25-40 SFM		85-105 SFM		165-325 SFM		30-45 SFM		25-40 SFM	
Drill Dia. mm	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
3	3,850	0.001-0.003	2,400	0.001-0.003	1,060	0.001-0.003	3,100	0.001-0.003	8,000	0.004-0.009	1,220	0.001-0.003	1,060	0.001-0.003
4	2,900	0.002-0.004	1,800	0.002-0.004	800	0.002-0.004	2,400	0.002-0.005	6,000	0.005-0.010	910	0.002-0.004	800	0.002-0.004
6	1,900	0.002-0.005	1,180	0.002-0.005	530	0.002-0.005	1,600	0.002-0.005	4,000	0.005-0.011	610	0.002-0.005	530	0.002-0.005
8	1,400	0.003-0.006	900	0.003-0.006	400	0.003-0.006	1,200	0.003-0.006	3,000	0.007-0.012	450	0.003-0.006	400	0.003-0.006
10	1,120	0.004-0.007	710	0.004-0.007	320	0.004-0.007	950	0.004-0.007	2,400	0.009-0.014	360	0.004-0.007	320	0.004-0.007
12	950	0.005-0.008	600	0.005-0.008	270	0.005-0.008	800	0.005-0.008	2,000	0.010-0.016	300	0.005-0.008	270	0.005-0.008
16	720	0.006-0.011	450	0.006-0.011	200	0.006-0.011	600	0.006-0.011	1,500	0.012-0.019	220	0.006-0.011	200	0.006-0.011
20	560	0.008-0.013	360	0.008-0.013	160	0.008-0.013	480	0.008-0.013	1,200	0.016-0.024	180	0.008-0.013	160	0.008-0.013
25	450	0.010-0.018	290	0.010-0.018	130	0.010-0.018	380	0.010-0.018	960	0.020-0.029	150	0.010-0.018	130	0.010-0.018

1. The indicated speeds and feeds are for drilling with water soluble oil.
2. When using non-water soluble oil, reduce the drilling speed by 20%.
3. When centering on a curved or inclined surface, reduce the feed rate accordingly.
4. When using a coated tool, the drilling speed can be increased by 1.2 times the value in the table.



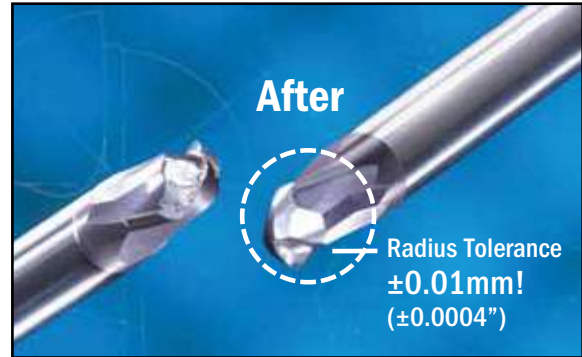
Drill Reconditioning





OSG Tool Reconditioning

OSG's Bensenville facility is the special cutting tool and regrinding authority based in the Chicago area. Through accurate and expedient regrinds of high-end cutting tools, OSG helps customers extend tool life and save money by restoring their used cutting tools to their original condition. In addition to regrinding, the Bensenville facility also manufactures custom drills, reamers, and other special cutting tools, performs product modifications and provides premium coating services.



Before:

After:



As part of the OSG Corporation (headquartered in Japan), the regrind facility is the only OSG authorized regrinding source in America. The regrinding program uses the same OSG manufacturing drawings, adheres to OSG's strict quality control standards and uses the same equipment for OSG manufacturing and inspection procedures. As one of the world's leading cutting tool manufacturers, OSG offers a global network of support to our customers.

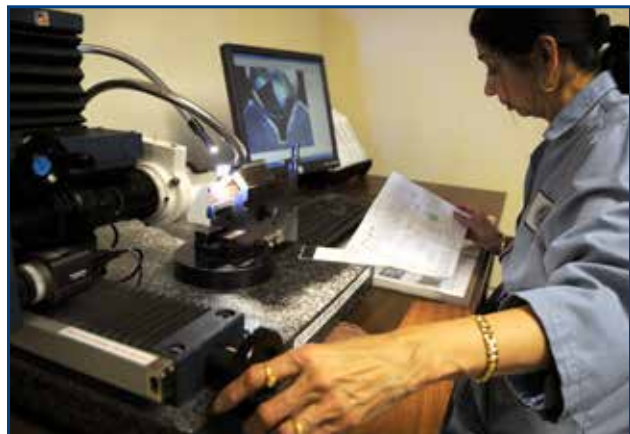
Tool Reconditioning Lowers Costs

The primary benefit of tool reconditioning is clear: the reduction in overall tooling costs. As part of normal production, tool wear, chipping and breakage occurs often affecting tool performance and increasing manufacturing costs. By reconditioning high performance drills, end mills and taps, OSG helps manufacturers realize substantial cost savings through extended tool life without jeopardizing production quality or performance. Because OSG's reconditioned tools are manufactured to the same high level of quality and held to the same exacting standards that new tools are, customers of OSG's tool reconditioning services can expect the same high performance and quality they are accustomed with OSG's new tools even after regrinding multiple times.

Engineering & Sales Support

OSG reconditions OSG tools using the same prints as the original tools made in our plants around the world. By using original part drawings, tools are accurately reconditioned to the original specifications, so customers are assured that reconditioned tools realize the same high level of performance. Manufacturers can also work directly with OSG design engineers to customize tools for enhanced performance or to meet specific requirements.

OSG's national sales team provides tooling expertise in the field for onsite evaluations and recommendations for manufacturers to implement a customized reconditioning program. The goal is to help manufacturers reduce tool costs and inventory, optimize performance and enhance overall profits.



Contact your OSG representative or distributor to review your tool reconditioning program.





CNC Training

OSG CNC technicians are extensively trained on proper setup methodologies and reconditioning processes by an on-staff CNC trainer. Through their development, the CNC Technician training program moves operators through three levels where they are diligently monitored and certified/reevaluated annually to maintain consistency and quality in our tools. Technicians are also trained and certified/reevaluated annually by Quality Assurance to perform inspections to print on first piece and in process tools.

Inspector Training

In order to guarantee that our tools are reconditioned to the highest standards, inspectors also undergo annual training and certifications which involve standardized procedures. These are the same methods that are used in the OSG manufacturing facilities in Japan and around the world. Inspectors are trained to inspect and measure tools completely to the original tool prints.

Throughout the reconditioning process, the tools are also continuously inspected until 100% visual inspection ensures that no chipped or defective tools are received by the customer. The high tech inspection equipment used at the reconditioning facility is the same equipment used at all OSG locations. This includes in-house developed tool analyzers and state-of-the-art equipment with up to 300x magnification capabilities. The key to inspecting high performance, accurate reconditioned tools is assuring that they are held to the same inspection standards through the use of the same inspection methods as new OSG tools.

The Bensenville plant is subject to OSG's stringent JQA regrinding standards and is certified regularly by OSG Japan.

Equipment and Facility

In 2015, OSG opened a reconditioning facility which is equipped with state-of-the-art production and inspection equipment. The facility uses high precision 5-Axis CNC grinders throughout the reconditioning process for improved repeatability and precision.

OSG's weekly equipment Preventive Maintenance (PM) program ensures consistency and accuracy throughout the reconditioning process. Through this PM program, OSG's tool reconditioning performance will be consistent year after year.



THREADING

The A Brand[™]

OSG's premium tooling brand. Features products that are designed to exceed the evolving manufacturing needs of our customers.

EXOPRO[®]

OSG's ultra-premium tooling series. Features supreme performance threading products with OSG's proprietary coatings for maximum cost-efficiency and productivity.

EXOCARB[®] Thread Mill

Premium sub-micrograin carbide thread mills suited for cast iron, steels, exotics and difficult-to-machine materials.

EXOCARB[®]

Ultra-high performance taps made from premium micrograin carbide used in automotive production, tapping hardened steels and threading the most abrasive of composite materials.

EXOTAP[®]

Ultra-premium taps made from VC-10 powdered metal high speed steel. EXOTAP[®] is the industry solution for difficult materials and applications, when no other tap seems to do the job.

HY-PRO[®]

Premium taps made from vanadium high speed steel and designed for a wide range of applications and industries.

HY-PRO[®] SEVEN

Semi-premium taps made from premium high speed steel for general purpose tapping applications.

GENERAL PURPOSE

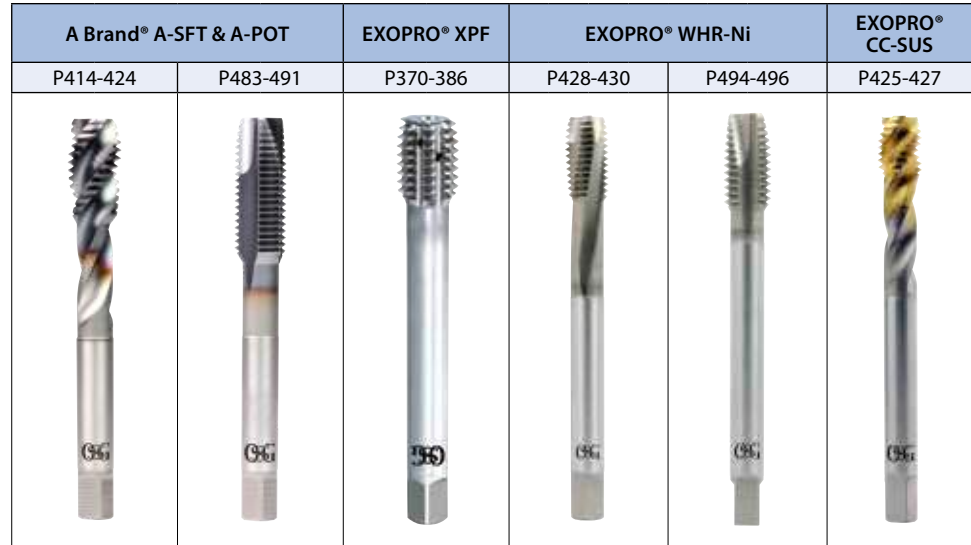
Premium general purpose taps for general machining applications. Available in a variety of styles and coatings.







Featured Threading Products



Inch/Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
Size Range	No. 4 - 2"	M1.4 - M56	No. 2 - 1"	M1.4 - M24	No. 0 - 1-3/4"	M1 - M45	No. 2 - 1"	M2.5 - M24	No. 2 - 1"	M2.5 - M24	No. 2 - 1"	M2 - M24
Type	Spiral Flute		Spiral Point		Form Tap		Spiral Flute		Spiral Point		Spiral Flute	
Number of Flutes	2, 3 & 4				Fluteless		2, 3 & 4	3 & 4	2, 3 & 4	3 & 4	2, 3 & 4	2, 3 & 4
Solid/Coolant-Through	Solid & Coolant-Through				Solid & Coolant-Through		Solid				Solid	
Overall Length	DIN & Long Shank				DIN & Long Shank		DIN				DIN	
Limit/Tolerance	H	D	H	D	H		H	D	H	D	H	D
Substrate	VC-10				HSS-CO		VC-10				HSSE	
Coating	V				V		HR				TiN	
Chamfer Length	Bottom & Modified Bottom		Plug		Bottom, Modified Bottom & Plug		Modified Bottom & Plug				Modified Bottom	

P	Carbon Steels (1010, 1018)			
	Mild Steels, Alloy Steels (1050, 4140)			
	Die Steels (H13, D2)			
M	Stainless Steel (304SS, 420SS)			
K	Cast Iron			
	Ductile Cast Iron			
N	Aluminum Alloys (6061, 7075)			
S	Heat Resistant Alloys (Inconel 718)			
	Titanium Alloy (Ti-6Al-4V)			
H	Pre-Hardened Steel (P20)			
	Die Cast Steels (A2, S7)			
	Hardened Steels (D2)			





EXOPRO® Ti		EXOTAP® DC		EXOTAP® VC-10 Series (VC-10Ti, VC-10Ni, VC-10)				EXOTAP® VA-3				EXOTAP® VCX		EXOCARB® VX	
P492-493		P568-577		P432-444		P497-509		P445-451		P510-515		P565-566		P556-557	
Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
No. 2 - 1/2"	M2.5 - M.12	1/4" - 1"	M6 - M24	No. 2 - 1"	M3 - M12	No. 2 - 1"	M3 - M12	No. 2 - 1"	M3 - M18	No. 2 - 1"	M3 - M18	No. 6 - 1"	M3 - M24	No. 4 - 1/2"	M2.6 - M20
Spiral Point		Straight Flute		Spiral Flute		Spiral Point		Spiral Flute		Spiral Point		Straight Flute		Straight Flute	
3		3, 4 & 5		2, 3 & 4	3 & 4	2, 3 & 4	3 & 4	2, 3 & 4	3 & 4	2, 3 & 4	3 & 4	4 & 5		4 & 5	4, 5 & 6
Solid		Solid & Coolant-Through		Solid				Solid				Solid		Solid	
ANSI		ANSI & DIN		ANSI				ANSI & Long Shank				ANSI		DIN	
H	D	H	D	H	D	H	D	H	D	H	D	H	D	H	D
VC-10		VC-10		VC-10				HSSE				XPM		Carbide	
V		V		S/O & V				S/O, TiN, & V				V		V	
Plug				Bottom & Modified Bottom		Plug		Bottom & Modified Bottom		Plug		Modified Bottom		Modified Bottom	

For OSG's complete tap offering please refer to the Application Guide on pages 336-337 or the Illustrated Index starting on page 338.

1st Choice 2nd Choice Recommended





Threading Application Guide

Page Number					
	Work Material	Material Designation	Material Condition	Hardness	
				BHN	HRC
P	Low Carbon Steel	1010, 1018	Normalized	~190	~10
	Medium Carbon Steel	1035, 1045	Normalized	~208	~15
	High Carbon Steel	1065, 1095	Normalized	~253	~25
	Alloy Steel	4140, 4340, 8620	Normalized	253~301	25~32
4140, 4340, 8620		Hardened	327~390	35~42	
M	Stainless Steel	300 Series / 400 Series	Annealed	~253	~25
		300 Series / 400 Series	Hardened	327~390	35~42
		17-4, 15-5, A286	Annealed	~253	~25
		17-4, 15-5, A286	Hardened	327~390	35~42
K	Cast Iron	Nodular, Grey	As Cast	~208	~15
N	Aluminum Alloy	6061, 7075, 2011	Normalized	~150	
	Die Cast Aluminum	356AL, 390AL	As Cast	~150	
S	Nickel Based Alloy	Inconel 718, 625	Annealed	253~301	25~32
		Inconel 718	Hardened	327~390	35~42
		Hastelloy, Waspaloy	Normalized		25~40
		Kovar	Normalized		25~40
	Titanium Alloy	6Al4V	Annealed	253~301	25~32
		6Al4V, 6Al6V	Hardened	327~390	35~42
H	Tool Steel	D2, H13, P20, S7	Annealed	190~253	10~25
		H13	Hardened	327~450	35~48
		D2, A2	Hardened		48~55
		D2, A2	Hardened		55~70



OSG **TOOL SELECTOR**
Find the Tapping Solution for your Application
www.osgtool.com/toolselector





Form Taps				Cut Taps									Pipe Taps
390-410	375-386	370-374	387-389	See Index	See Index	414-419 422-424	420-421	483-486 489-491	487-488	466-467 529-530	556-557	See Index	629-641
EXOTAP® NRT & HY-PRO® NRT	EXOPRO® XPF	EXOPRO® XPF-OIL <i>Coolant-Through</i>	EXOCARB® Carbide	General	General <i>Coolant-Through</i>	A Brand® A-SFT	A Brand® A-OIL-SFT <i>Coolant-Through</i>	A Brand® A-POT	A Brand® A-OIL-POT <i>Coolant-Through</i>	HY-PRO® Synchro AL	EXOCARB® VX	Carbide	Pipe Taps
35-130	50-115	75-130	40-145	25-80	50-120	80-120	100-200	80-120	100-200	85-105	-	35-100	15-40
20-50	50-115	75-130	25-60	20-50	45-110	80-120	100-200	80-120	100-200	85-105	-	30-70	10-25
15-30	50-85	65-100	20-35	20-45	40-100	80-120	100-200	80-120	100-200	70-85	-	30-60	10-20
15-30	50-85	65-100	20-35	20-50	45-110	35-50	50-100	40-65	50-120	70-85	-	30-70	10-25
-	10-40	20-50	-	15-20	20-60	20-40	40-80	35-55	45-110	-	-	20-35	10-15
15-40	15-40	20-50	20-60	20-45	30-70	15-35	25-70	25-75	40-120	-	-	25-55	10-25
15-35	15-35	20-45	20-50	12-20	20-50	15-35	25-70	25-75	40-120	-	-	15-30	8-12
15-25	15-30	20-40	20-40	15-20	20-50	15-25	25-50	25-60	40-100	-	-	20-35	8-12
-	10-25	15-30	-	8-20	15-40	15-25	25-50	25-60	40-100	-	-	10-25	8-12
-	-	-	-	25-75	40-100	50-80	60-150	60-100	80-160	-	-	40-90	15-50
50-150	65-115	80-130	60-160	40-80	50-125	70-120	90-220	70-120	90-220	300-800	-	50-100	15-40
45-130	65-90	75-110	55-120	40-65	50-110	70-120	90-220	70-120	90-220	200-700	-	50-80	20-35
-	8-12	8-10	-	8-15	-	-	-	-	-	-	-	10-20	-
-	8-10	-	-	8-15	-	-	-	-	-	-	-	10-20	-
-	-	-	-	8-15	-	-	-	-	-	-	-	10-20	-
-	-	-	-	8-15	-	-	-	-	-	-	-	10-20	-
-	8-15	8-10	-	15-20	-	-	-	-	-	-	-	20-30	-
-	8-12	-	-	3-10	-	-	-	-	-	-	-	5-12	-
20-45	15-50	20-65	25-60	15-35	20-60	30-55	50-110	40-65	60-120	-	-	20-50	10-20
10-15	12-25	20-35	15-30	8-15	15-50	-	-	20-50	30-80	-	-	10-20	8-12
-	-	-	-	3-10	-	-	-	15-40	25-75	-	5-12	5-12	-
-	-	-	-	3-8	-	-	-	-	-	-	3-10	3-10	-











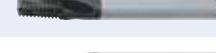

For Thread Mills please refer to page 677-681.
For conversions to RPM please refer to page 652.











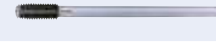



List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Thread Mills

16625		NEW	A Brand® AT-1	Inch	Carbide	EgiAs	1/4" - 1"	Helical Flute	358	679
16620		NEW	A Brand® AT-1	Metric	Carbide	EgiAs	M6 - M24	Helical Flute	359	679
16630		NEW	A Brand® AT-1	Inch	Carbide	EgiAs	1/16" - 2"	NPT, Helical Flute	360	679
16631		NEW	A Brand® AT-1	Inch	Carbide	EgiAs	1/16" - 2"	NPTF, Helical Flute	361	679
41200			EXOCARB® Mini	Inch	Carbide	WXS® SS	No. 0 - No. 8	Miniature, Helical Flute	362	681
41300			EXOCARB® Mini	Metric	Carbide	WXS® SS	M1 - M5	Miniature, Helical Flute	363	681
41000			EXOCARB®	Inch	Carbide	EXO®	No. 10 - 1"	Helical Flute	364- 365	680
41100			EXOCARB®	Metric	Carbide	EXO®	M6 - M24	Helical Flute	366	680
41050			EXOCARB® Oil	Inch	Carbide	EXO®	¼ - 1"	Coolant-Through, Long Length, Helical Flute	367	680
41150			EXOCARB® Oil	Metric	Carbide	EXO®	M6 - M24	Coolant-Through, Long Length, Helical Flute	368	680
42000			EXOCARB® Pipe	Inch	Carbide	EXO®	1/16 - 2 1/2	NPT, Helical Flute	369	680
42001			EXOCARB® Pipe	Inch	Carbide	EXO®	1/16 - 2 1/2	NPTF, Helical Flute	369	680

Forming Taps

16050			EXOPRO® XPF-OIL	Inch	HSS-Co	V	¼ - 1 ¾	Coolant-Through, DIN OAL	370-371
16150			EXOPRO® XPF-OIL	Metric	HSS-Co	V	M6 - M45	Coolant-Through, DIN OAL	372-374
16250			EXOPRO® XPF	Inch	HSS-Co	V	No. 0 - 1 ¾	DIN OAL	375-378
16350			EXOPRO® XPF	Metric	HSS-Co	V	M1 - M45	DIN OAL	379-382
16255			EXOPRO® XPF-LS	Inch	HSS-Co	V	No. 5 - 1"	Long Shank	383-384
16355			EXOPRO® XPF-LS	Metric	HSS-Co	V	M3 - M20	Long Shank	385-386
14153			EXOCARB®	Metric	Carbide	Bright	M6 - M10	Carbide Inlaid, DIN/DIN	387
369			EXOCARB®	Metric	Carbide	Bright	M3 - M12	JIS	388
357			EXOCARB®	Metric	Carbide	Bright	M6 - M12	JIS, Long Shank	389
14050			EXOTAP® NRT®	Inch	VC-10	V	No. 0 - 3/8		390-392





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Thread Mills

16625	⊙	⊙	⊙	⊙		⊙	○	○	⊙	⊙	⊙			⊙	⊙		
16620	⊙	⊙	⊙	⊙		⊙	○	○	⊙	⊙	⊙			⊙	⊙		
16630	⊙	⊙	⊙	⊙		⊙	○	○	⊙	⊙	⊙			⊙	⊙		
16631	⊙	⊙	⊙	⊙		⊙	○	○	⊙	⊙	⊙			⊙	⊙		
41200	○	○	○	○		⊙	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○
41300	○	○	○	○		⊙	⊙	⊙	○	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○
41000	⊙	⊙	○	○		○	○	○	⊙	⊙	⊙			○	○		
41100	⊙	⊙	○	○		○	○	○	⊙	⊙	⊙	○	○	○	○		
41050	○	⊙	⊙	⊙		○	○	○	○					⊙	⊙		
41150	○	⊙	⊙	⊙		○	○	○	○					⊙	⊙		
42000	⊙	⊙	○	○		○	○	○	⊙	⊙	⊙			○	○		
42001	⊙	⊙	○	○		○	○	○	⊙	⊙	⊙			○	○		

Forming Taps

16050	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙	○	○	⊙	○		
16150	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙	○	○	⊙	○		
16250	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙	○	○	⊙	○		
16350	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙	○	○	⊙	○		
16255	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙	○	○	⊙	○		
16355	⊙	⊙	⊙	⊙	⊙	⊙	⊙	⊙		⊙	⊙	○	○	⊙	○		
14153										⊙	⊙						
369										⊙	⊙						
357										⊙	⊙						
14050	⊙	⊙	⊙	⊙	⊙	⊙	⊙	○		⊙	⊙			○			

○ good ⊙ best





List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page/Tech Page
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Forming Taps

14150		EXOTAP® NRT®	Metric	VC-10	V	M1.6 - M12		393-394
14001		HY-PRO® NRT®	Inch	HSS-CO	TiCN, TiN, Bright, S/O	No. 0 - 3/4"		395-407
14101		HY-PRO® NRT®	Metric	HSS-CO	TiCN, TiN, Bright, S/O	M1.6 - M12		408-410
285		HY-PRO® SEVEN	Inch	HSS	TiCN, TiN, Bright	No. 0 - 1/2"		411
286		HY-PRO® SEVEN	Metric	HSS	TiCN, TiN, Bright	M3 - M12		411

Spiral Fluted Taps

16605		NEW	A Brand® A-CSF	Inch	Carbide	Bright	1/4" - 1/2"	Coolant-Through, DIN OAL	412
16600		NEW	A Brand® A-CSF	Metric	Carbide	Bright	M5 - M12	Coolant-Through, DIN OAL	413
16505		NEW SIZES	A Brand® A-SFT	Inch	VC-10	V	No. 4 - 2"	Variable Helix, DIN OAL	414-416
16500		NEW SIZES	A Brand® A-SFT	Metric	VC-10	V	M1.4 - M56	Variable Helix, DIN OAL	417-419
16545			A Brand® A-OIL-SFT	Inch	VC-10	V	1/4 - 2"	Variable Helix, Coolant-Through, DIN OAL	420
16540			A Brand® A-OIL-SFT	Metric	VC-10	V	M6 - M56	Variable Helix, Coolant-Through, DIN OAL	421
16525		NEW SIZES	A Brand® A-LT-SFT	Inch	VC-10	V	No. 4 - 1"	Variable Helix, Long Shank	422
16520			A Brand® A-LT-SFT	Metric	VC-10	V	M3 - M24	Variable Helix, Long Shank	423-424
16450			EXOPRO® CC-SUS	Inch	HSSE	TiN	No. 2 - 1"	Variable Helix, DIN OAL	425-426
16455			EXOPRO® CC-SUS	Metric	HSSE	TiN	M2 - M24	Variable Helix, DIN OAL	427
335Ni			EXOPRO® WHR-Ni	Inch	VC10	HR	No. 2 - 1"	DIN OAL	428-429
336Ni			EXOPRO® WHR-Ni	Metric	VC10	HR	M2.5 - M24	DIN OAL	430
389			EXOCARB®	Metric	Carbide	Bright	M3 - M12	JIS	431
313Ti			EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1"		432-433
345Ti			EXOTAP® VC-10 Ti	Metric	VC-10	V	M2.5 - M12		434
317Ti		NEW	EXOTAP® VC-10 Ti Oil	Inch	VC-10	V	1/4" - 1"	Coolant-Through, DIN OAL	435
348Ti		NEW	EXOTAP® VC-10 Ti Oil	Metric	VC-10	V	M8 - M24	Coolant-Through, DIN OAL	436





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Forming Taps

14150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
14101	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
285	<input checked="" type="checkbox"/>	<input type="checkbox"/>								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
286	<input checked="" type="checkbox"/>	<input type="checkbox"/>								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

Spiral Fluted Taps

16605									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
16600									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
16505	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>			
16500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>			
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16525	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>			
16520	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>			
16450	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
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335Ni								<input type="checkbox"/>				<input checked="" type="checkbox"/>					<input type="checkbox"/>
336Ni								<input type="checkbox"/>				<input checked="" type="checkbox"/>					<input type="checkbox"/>
389								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
313Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
345Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
317Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
348Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		

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List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page/Tech Page
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Spiral Fluted Taps

313Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V, S/O	No. 2 - 1"		437-438
345Ni		EXOTAP® VC-10 Ni	Metric	VC-10	S/O	M2.5 - M12		439
313		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 3/4"		440-441
345		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12		442
317	 NEW	EXOTAP® VC-10 Oil	Inch	VC-10	V	5/16" - 1"	Coolant-Through, DIN OAL	443
351	 NEW	EXOTAP® VC-10 Oil	Metric	VC-10	V	M8 - M24	Coolant-Through, DIN OAL	444
303		EXOTAP VA-3®	Inch	HSSE	V, TiN, S/O	No. 2 - 1"		445-447
343		EXOTAP VA-3®	Metric	HSSE	V, TiN, S/O	M3 - M18		448
307	 NEW	EXOTAP VA-3® Oil	Inch	HSSE	V	1/4" - 1"	Coolant-Through, DIN OAL	449
347	 NEW	EXOTAP VA-3® Oil	Metric	HSSE	V	M6 - M24	Coolant-Through, DIN OAL	450
398		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - 5/8"	Long Shank	451
220		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - 2"	DIN OAL	452
229		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	DIN OAL	453
230		HY-PRO® DIN	Inch	HSSE	TiN	1/4 - 1"	Coolant-Through, DIN OAL	454
239		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Coolant-Through, DIN OAL	455
13013		HY-PRO® ALLOY	Inch	HSSE	V	1/4 - 3/4"	Coolant-Through, DIN OAL	456
13113		HY-PRO® ALLOY	Metric	HSSE	V	M6 - M20	Coolant-Through, DIN OAL	457
13014		HY-PRO® HXL	Inch	HSSE	S/O	1/2 - 2 1/2"	DIN OAL	458
13024		HY-PRO® HXL-OIL	Inch	HSSE	S/O	1/2 - 2 1/2"	Coolant-Through, DIN OAL	459
13015		HY-PRO® VXL	Inch	HSSE	S/O	1/2 - 2 1/2"	DIN OAL	460
13025		HY-PRO® VXL-OIL	Inch	HSSE	S/O	1/2 - 2 1/2"	Coolant-Through, DIN OAL	461
13116		HY-PRO® HXL-W	Metric	HSSE	S/O	M16 - M42	DIN OAL	462
13126		HY-PRO® HXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Coolant-Through, DIN OAL	463





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010	1035	1045	1018	1045	1065	4140	4340									

Spiral Fluted Taps

313Ni								○				⊗	○	○	○		
345Ni								○				⊗	○	○	○		
313				⊗	○		○	⊗				○	○	⊗	○		
345				⊗	○		○	⊗				○	○	⊗	○		
317					⊗	○		○	⊗				○	○	⊗	○	
351	○				⊗	○		○	⊗				○	○	⊗	○	
303	⊗	○	○			⊗	⊗	○									
343	⊗	○	○			⊗	⊗	○									
307	⊗	○	○			⊗	⊗	○									
347	⊗	○	○			⊗	⊗	○									
398	⊗	○	○			⊗	⊗	○									
220	○	○	⊗	⊗	○	○	○	○	○					○			
229	○	○	⊗	⊗	○	○	○	○	○					○			
230	○	○	⊗	⊗	⊗	○	○	○	○	○	○			○			
239	○	○	⊗	⊗	⊗	○	○	○	○	○	○			○			
13013			○	⊗	○				○		○			○	○		
13113			○	⊗	○				○		○			○	○		
13014	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		
13024	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		
13015	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		
13025	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		
13116	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		
13126	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		

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List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Spiral Fluted Taps

13117		HY-PRO® VXL-W	Metric	HSSE	S/O	M16 - M42	DIN OAL	464
13127		HY-PRO® VXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Coolant-Through, DIN OAL	465
13058		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - 1/2"	Synchronized	466
13158		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Synchronized	467
295		HY-PRO® AL	Inch	HSSE	Bright	No. 4 - 3/8"		468
296		HY-PRO® AL	Metric	HSSE	Bright	M3 - M10		469
13019		HY-PRO® AL-DIN	Inch	HSSE	N	No. 2 - 1/2"	DIN OAL	470
13119		HY-PRO® AL-DIN	Metric	HSSE	N	M3 - M12	DIN OAL	471
290		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 1/2"		472-474
299		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30		475
297		HY-PRO® SEVEN	Inch	HSS	TiN, S/O, Bright	No. 3 - 1/2"		476
298		HY-PRO® SEVEN	Metric	HSS	TiN, S/O, Bright	M3 - M12		477
107		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 3 - 3/4"		478
143		GENERAL PURPOSE	Metric	HSS	TiCN, TiN, S/O, Bright	M3 - M12		479
13020		GENERAL PURPOSE	Inch	HSSE	S/O	No. 6 - 5/8"		480
123		GENERAL PURPOSE	Metric	HSSE	Bright	M3 - M24	JIS	481
918		GENERAL PURPOSE	Inch	HSS	Bright	No. 4 - 5/8"	Long Shank	482

Spiral Pointed Taps

16515		A Brand® A-POT	Inch	VC-10	V	No. 2 - 1"	DIN OAL	483-484
16510		A Brand® A-POT	Metric	VC-10	V	M1.4 - M24	DIN OAL	485-486
16555		A Brand® A-OIL-POT	Inch	VC-10	V	1/4 - 1"	Coolant-Through, DIN OAL	487
16550		A Brand® A-OIL-POT	Metric	VC-10	V	M6 - M24	Coolant-Through, DIN OAL	488
16535		A Brand® A-LT-POT	Inch	VC-10	V	No. 4 - 1"	Long Shank	489





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Spiral Fluted Taps

13117	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		
13127	⊗	⊗	⊗	⊗	○	○	○	○	⊗					⊗	○		
13058										⊗	⊗						
13158										⊗	⊗						
295										⊗	⊗						
296										⊗	⊗						
13019										⊗	⊗						
13119										⊗	⊗						
290	○	⊗	⊗	⊗	○	○	○	○	○					○			
299	○	⊗	⊗	⊗	○	○	○	○	○					○			
297	⊗	⊗								○	○						
298	⊗	⊗								○	○						
107	○	○	○						○	○	○						
143	○	○	○						○	○	○						
13020	○	○	○						○	○	○						
123	○	○	○						○	○	○						
918	○	○	○						○	○	○						

Spiral Pointed Taps

16515	⊗	⊗	⊗	⊗	○	⊗	⊗	⊗	○	○	○			⊗			
16510	⊗	⊗	⊗	⊗	○	⊗	⊗	⊗	○	○	○			⊗			
16555	⊗	⊗	⊗	⊗	○	⊗	⊗	⊗	○	○	○			⊗			
16550	⊗	⊗	⊗	⊗	○	⊗	⊗	⊗	○	○	○			⊗			
16535	⊗	⊗	⊗	⊗	○	⊗	⊗	⊗	○	○	○			⊗			



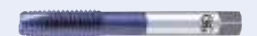








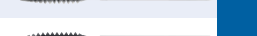

○ good ⊗ best





List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Spiral Pointed Taps

16530		A Brand® A-LT-POT	Metric	VC-10	V	M3 - M24	Long Shank	490-491
13063		EXOPRO® Ti	Inch	VC-10	V	No. 2 - 1/2"	RHC/LHS	492
13163		EXOPRO® Ti	Metric	VC-10	V	M2.5 - M12	RHC/LHS	493
337Ni		EXOPRO® WHR-Ni	Inch	VC-10	HR	No. 2 - 1"	DIN OAL	494-495
338Ni		EXOPRO® WHR-Ni	Metric	VC-10	HR	M2.5 - M24	DIN OAL	496
312Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1"		497-498
344Ti		EXOTAP® VC-10 Ti	Metric	VC-10	V	M3 - M12		499
316Ti		NEW EXOTAP® VC-10 Ti Oil	Inch	VC-10	V	1/4" - 1"	Coolant-Through, DIN OAL	500
347Ti		NEW EXOTAP® VC-10 Ti Oil	Metric	VC-10	V	M8 - M24	Coolant-Through, DIN OAL	501
312Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V, S/O	No. 2 - 1"		502-503
344Ni		EXOTAP® VC-10 Ni	Metric	VC-10	V, S/O	M2.5 - M12		504
312		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 3/4"		505-506
344		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12		507
316		NEW EXOTAP® VC-10 Oil	Inch	VC-10	V	1/4" - 1"	Coolant-Through, DIN OAL	508
350		NEW EXOTAP® VC-10 Oil	Metric	VC-10	V	M6 - M24	Coolant-Through, DIN OAL	509
300		EXOTAP VA-3®	Inch	HSSE	V, TiN, S/O	No. 2 - 1"		510-511
342		EXOTAP VA-3®	Metric	HSSE	V, TiN, S/O	M3 - M18		512
306		NEW EXOTAP VA-3® Oil	Inch	HSSE	V	1/4" - 1"	Coolant-Through, DIN OAL	513
346		NEW EXOTAP VA-3® Oil	Metric	HSSE	V	M6 - M24	Coolant-Through, DIN OAL	514
397		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - 5/8"	Long Shank	515
320		EXOTIN	Inch	HSSE	TiN	No. 4 - 3/4"		516
250		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - 3/4"	DIN OAL	517





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Spiral Pointed Taps

16530	☐	☐	☐	☐	○	☐	☐	☐	○	○	○			☐			
13063				○				○					☐	○			
13163				○				○					☐	○			
337Ni								○					☐				○
338Ni								○					☐				○
312Ti				○				○					☐	☐	○	○	
344Ti				○				○					☐	☐	○	○	
316Ti				○				○					☐	☐	○	○	
347Ti				○				○					☐	☐	○	○	
312Ni								○					☐	○	○	○	
344Ni								○					☐	○	○	○	
312				☐	○		○	☐					○	○	☐	○	
344				☐	○		○	☐					○	○	☐	○	
316				☐	○		○	☐					○	○	☐	○	
350				☐	○		○	☐					○	○	☐	○	
300	☐	○	○			☐	☐	○									
342	☐	○	○			☐	☐	○									
306	☐	○	○			☐	☐	○									
346	☐	○	○			☐	☐	○									
397	☐	○	○			☐	☐	○									
320	○	○	☐	☐	☐	○	○	○	○	○	○			○			
250	○	○	☐	☐	○	○	○	○	○					○			

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Spiral Pointed Taps

259		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	DIN OAL	518
260		HY-PRO® DIN	Inch	HSSE	TiN	¼ - 1"	Coolant-Through, DIN OAL	519
269		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Coolant-Through, DIN OAL	520
11015		HY-PRO® AERO-F	Inch	HSS-Co	TiN	No. 4 - 1"		521-525
11115		HY-PRO® AERO-F	Metric	HSS-Co	TiN	M3 - M14		526-527
13118		HY-PRO® RXL-W	Metric	HSSE	V	M16 - M42	DIN OAL & Extended OAL, For Through Holes, LHS	528
13059		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - ½"	Synchronized, RHC/LHS	529
13159		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Synchronized, RHC/LHS	530
11016		HY-PRO® AL-DIN	Inch	HSSE	N	No. 2 - ½"	DIN OAL	531
11116		HY-PRO® AL-DIN	Metric	HSSE	N	M3 - M12	DIN OAL	532
11017		HY-PRO® V DIN	Inch	HSSE	V	No. 4 - ½"	DIN OAL	533
11117		HY-PRO® V DIN	Metric	HSSE	V	M3 - M12	DIN OAL	534
280		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 ½"		535-537
289		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30		538
287		HY-PRO® SEVEN	Inch	HSS	TiN, S/O, Bright	No. 0 - ½"		539
288		HY-PRO® SEVEN	Metric	HSS	TiN, S/O, Bright	M3 - M12		540
105		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - ¾"		541-543
105B		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 0 - 7/16"		544
105A		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - ½"	Assembly Type Taps	545
105+		GENERAL PURPOSE	Inch	HSS	TiN, Bright	No. 4 - No. 10	H7 Taps	546
105H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	No. 6 - ¾"	+0.005" Oversize	547
142H		GENERAL PURPOSE	Metric	HSS	Bright	M4 - M12	+0.005" Oversize	548





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Spiral Pointed Taps

259	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>			
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11015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
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288	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								<input type="checkbox"/>	<input type="checkbox"/>						
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105B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
105A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
105+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
105H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
142H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

good best





List	Item	Brand	Inch/Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Spiral Pointed Taps

142		GENERAL PURPOSE	Metric	HSS	TiCN, TiN, S/O, Bright	M1.6 - M20		549
122		GENERAL PURPOSE	Metric	HSSE	S/O, Bright	M3 - M24	JIS	550
917		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - 5/8"	Long Shank	551
11118		GENERAL PURPOSE	Metric	HSS	S/O	M4 - M12	Extended Length	552
S111		GENERAL PURPOSE	Inch	HSS	Bright	No. 00	Miniature	553

Straight Fluted Taps

16615		NEW A Brand® A-CHT	Inch	Carbide	Bright	No. 12 - 1/2"	Coolant-Through, DIN OAL	554
16610		NEW A Brand® A-CHT	Metric	Carbide	Bright	M5 - M12	Coolant-Through, DIN OAL	555
311		EXOCARB® VX	Inch	Carbide	V	No. 4 - 1/2"	DIN OAL	556
341		EXOCARB® VX	Metric	Carbide	V	M2.6 - M20	JIS	557
329		EXOCARB® Diamond	Inch	Carbide	DIA	No. 4 - 1/2"	UNJC, UNJF, DIN OAL	558
359		EXOCARB® Diamond	Metric	Carbide	DIA	M3 - M12	JIS	559
319		EXOCARB®	Inch	Carbide	Bright	No. 4 - 1/2"	DIN OAL	560
10059		EXOCARB®	Inch	Carbide	Bright	No. 10 - 3/8"		561
10061		EXOCARB®	Metric	Carbide	Bright	M3 - M10	DIN OAL	562
349		EXOCARB®	Metric	Carbide	Bright	M1.4 - M24	JIS	563
356		EXOCARB®	Metric	Carbide	Bright	M6 - M12	JIS, Long Shank	564
10051		NEW SIZES EXOTAP® VCX	Inch	XPM	V	No. 6 - 1"		565
11051		NEW SIZES EXOTAP® VCX	Metric	XPM	V	M3 - M24		566
305		EXOTAP-MOLD®	Inch	HSS-CO	Bright	No. 4 - 3/4"		567
10052		EXOTAP® DC	Inch	VC-10	V	1/4 - 1"	DIN OAL	568
11052		EXOTAP® DC	Metric	VC-10	V	M6 - M24	DIN OAL	569
10053		EXOTAP® DC-OIL	Inch	VC-10	V	1/4 - 1"	Coolant-Through, DIN OAL	570





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Spiral Pointed Taps

142	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
122	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
917	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
11118	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
5111	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								

Straight Fluted Taps

16615									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
16610									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
311																	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
341																	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
329											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
359											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
319									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
10059									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
10061									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
349									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
356									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
10051				<input type="checkbox"/>														<input checked="" type="checkbox"/>	
11051				<input type="checkbox"/>														<input checked="" type="checkbox"/>	
305				<input type="checkbox"/>	<input checked="" type="checkbox"/>								<input checked="" type="checkbox"/>	<input type="checkbox"/>					
10052									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>								
11052									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>								
10053									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>								

good best





List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Straight Fluted Taps

11053		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M24	Coolant-Through, DIN OAL	571
11054		EXOTAP® DC	Metric	VC-10	V	M6 - M10	DIN Shank, DIN OAL	572
11055		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M12	Coolant-Through, DIN Shank, DIN OAL	573
10056		EXOTAP® DC	Inch	VC-10	V	¼ - ¾"		574
11056		EXOTAP® DC	Metric	VC-10	V	M6 - M14		575
10057		EXOTAP® DC-OIL	Inch	VC-10	V	¼ - ½"	Coolant-Through	576
11057		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M14	Coolant-Through	577
240		HYPRO® DC	Inch	HSSE	N, Bright	No. 2 - ½"		578
241		HYPRO® DC	Metric	HSSE	N	M3 - M12		579
101C		GENERAL PURPOSE	Inch	HSS	N, S/O	¼ - ¾"		580
141C		GENERAL PURPOSE	Metric	HSS	N, S/O	M6 - M12		581
101		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	¼ - 1 ½"		582-583
101H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	¼ - ¾"	+0.005" Oversize	584
102		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - No. 12		585-586
102H		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 6 - No. 10	+0.005" Oversize	587
103		GENERAL PURPOSE	Inch	HSS	TiN, S/O, Bright	No. 8 - ½"	Three Flutes	588
104		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 2 - 5/16"	Two Flutes	589
101N		GENERAL PURPOSE	Inch	HSS	Bright	No. 12 - 1"	UNEF	590
141		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M1.6 - M36		591
121		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M2 - M36	JIS	592-593
916		GENERAL PURPOSE	Inch	HSS	S/O	¼ - ¾"	Pulley Taps, Long Shank	594
S110		GENERAL PURPOSE	Inch	HSS	Bright	No. 000 - No. 00	Miniature	595
114		GENERAL PURPOSE	Inch	HSS-CO	N	No. 2 - ¼"	For Plastics	596





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V	~35	35-45
	1010	1035	1065	4140	4340	300	400	17-4 PH	6061	7075	Inconel	6Al4V	(30 HRC)	~35	35-45	45-50	50-70
1018	1045	1065	4140	4340	300	400	17-4 PH	6061	7075	Inconel	6Al4V	(30 HRC)	~35	35-45	45-50	50-70	

Straight Fluted Taps

11053									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
11054									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
11055									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
10056									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
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10057									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
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240									<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>						
241									<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>						
101C									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
141C									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>						
101	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
101H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
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102H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
103	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
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141	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
121	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
916	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>								
S110	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
114																	

good best





List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Straight Fluted Taps

180		GENERAL PURPOSE	Inch	HSS	Bright	1 1/8 - 2 1/4"	8 Pitch	597
101L		GENERAL PURPOSE	Inch	HSS	Bright	No. 6 - 1"	Left Hand	598

Screw Thread Insert Taps

16260		EXOPRO® XPF	Inch	HSS-CO	V	No. 2 - 1"	STI, Forming Tap, DIN OAL	599-600
16360		EXOPRO® XPF	Metric	HSS-CO	V	M2 - M24	STI, Forming Tap, DIN OAL	601
315Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1/2"	STI, Spiral Fluted	602
315Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - 1/2"	STI, Spiral Fluted	603
315		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Fluted	604-605
345STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Fluted	606
302		EXOTAP VA-3°	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Fluted	607-608
343STI		EXOTAP VA-3°	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Fluted	609
13039		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - 1/2"	STI, Spiral Fluted	610
S108		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Fluted	611-612
S109		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Fluted	613
314Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1/2"	STI, Spiral Pointed	614
314Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - 1/2"	STI, Spiral Pointed	615
314		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Pointed	616-617
344STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Pointed	618
301		EXOTAP VA-3°	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Pointed	619-620
342STI		EXOTAP VA-3°	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Pointed	621
11036		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - 1/2"	STI, Spiral Pointed	622
125		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Pointed	623-624
127		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Pointed	625





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010	1035	1065	4140	4340												

Straight Fluted Taps

180	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
101L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

Screw Thread Insert Taps

16260	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
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315Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
315Ni								<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
315				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
345STI				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
302	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
343STI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
13039										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
S108	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
S109	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
314Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
314Ni								<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
314				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
344STI				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
301	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
342STI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
13036										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
125	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
127	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

good best





List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
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Screw Thread Insert Taps

126		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Straight Fluted	626-627
128		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Straight Fluted	628

Pipe Taps

308		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16 - 1"	NPT	629
318		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16 - 1"	NPTF	630
12053		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8 - 1"	NPT, Interrupted	631
12054		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8 - 1"	NPTF, Interrupted	632
328		EXOTAP-MOLD®	Inch	HSS-CO	Bright	1/8 - 3/4"	NPT, ANPT	633
108		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16 - 2"	NPT, ANPT	634
108AL		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - 1"	NPT	635
118		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16 - 2"	NPTF	636
108G		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8 - 2"	NPT, NPTF, ANPT, Interrupted Thread	637
S125		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8 - 1"	NPT, NPTF, Short Projection	638
12006		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - 3/4"	NPTF, Special Short Projection	639
12007		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - 3/4"	NPT	640
109		GENERAL PURPOSE	Inch	HSS	S/O, Bright	1/8 - 1"	NPS, NPSF	641

Round Dies

134		GENERAL	Inch	HSS	Bright	No. 0 - 1 1/2"	Solid & Adjustable Round Split Dies	642-644
134P		GENERAL	Inch	HSS	Bright	1/8 - 1/2"	Adjustable Round Split Dies, Taper Pipe	645
135		GENERAL	Metric	HSS	Bright	M2 - M30	Adjustable Round Split Dies	646

Thread Gages

15001		GENERAL	Inch	HSS	Bright	No. 2 - 1 1/2"	GO/NOGO Set, Class 2B	647
15002		GENERAL	Metric	HSS	Bright	M3 - M24	GO/NOGO Set, Class 6H	648





List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V	~35	35-45
	1010	1035	1065	4140	4340	300	400	17-4 PH	6061	7075	7075	7075	7075	7075	7075	7075	7075

Screw Thread Insert Taps

126	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
128	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

Pipe Taps

308	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
318	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
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12054	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		
328	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input checked="" type="checkbox"/>	<input type="checkbox"/>		
108	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
108AL										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
118	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
108G	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
S125	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
12006	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
12007	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
109	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						

good best

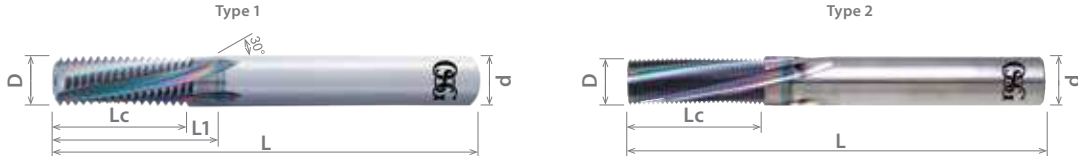




List 16625

AT-1, Helical Flute

NEW	SPEED FEED P679	CARBIDE	EgiAs	11°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter D	Overall Length L	Length of Cut Lc	Neck Length L1	Shank Diameter d	No. of Flutes	Type	EDP Number				
									EgiAs				
1/4	20	0.179	3	0.600	0.700	1/4	4	1	1662500017				
	28			0.607	0.680				1662500117				
	32			0.563	0.625				1662500217				
5/16	18	0.224		0.778	0.889				1662500317				
	24			0.750	0.833				1662500417				
	32			0.688	0.750				1662500517				
3/8	16	0.264	3 1/2	0.875	1.000	5/16	4	1	1662500617				
	24			0.813	0.958				1662500717				
	32			0.875	0.875				1662500817				
7/16	14	0.303		1.071	-				1662500917				
	20			1.000	-				1662501017				
	28			0.964	-				1662501117				
1/2	13	0.343	1.154	1.308	3/8	4	2	1662501217					
	20		1.100	1.200				1662501317					
	28		1.107	1.178				1662501417					
9/16	12	0.382	5	1.333				1.500	1/2	5	1	1662501517	
	18			1.278				1.389				1662501617	
	24			1.250				1.333				1662501717	
5/8	11	0.421		1.454	1.636	1662501817							
	18			1.389	1.500	1662501917							
	24			1.374	1.458	1662502017							
3/4	10	0.461	1.700	1.900	1662502117								
	16		1.626	1.750	1662502217								
	20		1.600	1.700	1662502317								
7/8	9	0.539	5 1/2	2.000	2.222	5/8	4	1	1662502417				
	14			1.928	2.071				1662502517				
	20			1.850	1.950				1662502617				
1	8	0.736		6	2.250				2.500	3/4	6	1	1662502717
	12				2.167				2.334				1662502817
	20				2.100				2.200				1662502917

Packed: 1 pc.
Available in EgiAs coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



List No.	Work Material															
	P					M			K	N		S		H		
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels		
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
16625	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

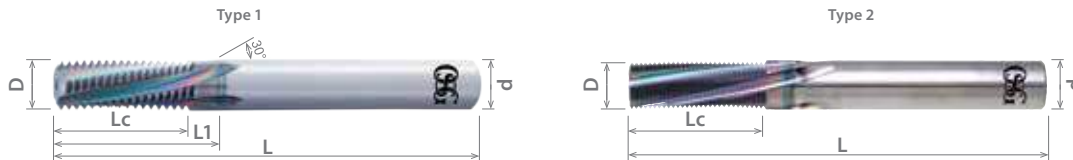




List 16620

AT-1, Helical Flute

NEW	SPEED FEED P679	CARBIDE	EgiAs	11°	SHANK h6
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Size	Pitch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			EgiAs
M6	1	4.5	75	14	16	6	4	1	8331001
	0.75			13.5					8331000
M8	1.25	5.7	75	18.75	-	6	4	1	8331004
	1			18	-				8331003
M10	1.5	7.7	85	24	-	8	4	2	8331007
	1.25			22.5	-				8331006
M12	1	9.7	100	22	-	10	5	2	8331005
	1.75			28	-				8331011
	1.5			27	-				8331010
	1.25			27.5	-				8331009
M14	1	10.7	120	26	-	12	5	1	8331008
	2			32	-				8331016
M16	1.5	11.7	135	31.5	34.5	16	6	2	8331015
	2			36	-				8331019
M18	1.5	13.7	135	39	-	16	6	1	8331018
	2.5			42.5	-				8331020
M20	2.5	11.7	120	45	50	12	6	2	8331021
	1.5			43.5	-				8331022
M24	3	15.7	135	54	-	16	6	1	8331025
	2			52	-				8331024

Packed: 1 pc.
Available in EgiAs coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Titanium	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Nickel Alloy	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16620	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





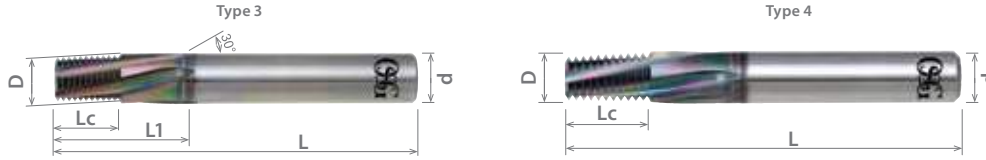
A Brand[®] AT-1

Advanced Performance One Pass Thread Mill

List 16630

NEW	SPEED FEED P679	CARBIDE	EgiAs	11°	SHANK h6
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AT-1, NPT



Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut		Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			EgiAs
1/16 or 1/8 1/8	27	0.223	3	0.407	0.480	1/4	4	3	1663000017
		0.302			-	5/16			4
1/4 or 3/8 3/8	18	0.381	3 1/2	0.611	0.720	1/2	5	3	1663000217
		0.461							1663000317
1/2 or 3/4 1 thru 2	14 11-1/2	0.617 0.737	4	0.786	-	5/8	6	4	1663000417
				0.957	-	3/4			1663000517

Packed: 1 pc.
Available in EgiAs coating only.
For internal and external threads.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16630	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

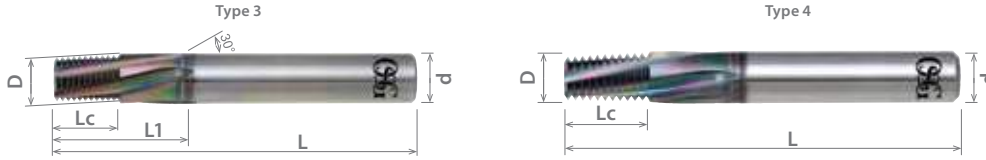




List 16631

NEW	SPEED FEED P679	CARBIDE	EgiAs	11°	SHANK h6
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AT-1, NPTF



Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			EgiAs
1/16 or 1/8 1/8	27	0.223	3	0.407	0.480	1/4	4	3	1663100017
		0.302			-	5/16			4
1/4 or 3/8 3/8	18	0.381	3 1/2	0.611	0.720	1/2	5	3	1663100217
		0.459							1663100317
1/2 or 3/4 1 thru 2	14	0.617	4	0.786	-	5/8	6	4	1663100417
		0.737		0.957	-	3/4			1663100517

Packed: 1 pc.
Available in EgiAs coating only.
For internal and external threads.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16631	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





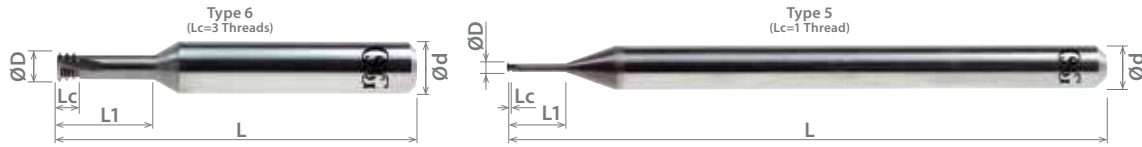
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41200

WH-VM-PNC, Miniature, Helical Flute

SPEED FEED P681	CARBIDE	SS	WXS	11°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number	
		D	L	Lc	L1	d			SS	WXS®
0	80	0.045	1.625	0.013	0.162	1/8	3	5	4120000115	-
1	64	0.055		0.016	0.198				4120000315	
1	72			0.014	0.196				-	
2	64	0.064	1.661	0.047	0.189	1/4		6	-	4120000513
2, 3	56			0.054					-	4120000413
3, 4	48	0.074		0.063	0.220				-	4120000613
4, 5, 6	40	0.083		0.075	0.248	-	4120000713			
5	44	0.096		0.068	0.272	-	4120000813			
6, 8	32	0.103		0.094	0.307	-	4120000913			
8	36	0.129	0.083	0.354	-	4120001013				

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Super Smooth or WXS® coatings as shown above.

For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

List No.	P				Die Steels	M			K	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
41200	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best

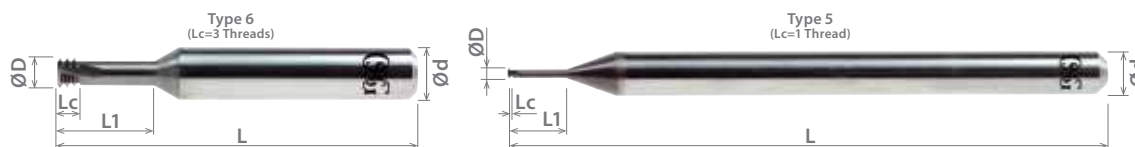




List 41300

WH-VM-PNC, Miniature, Helical Flute

SPEED FEED P681	CARBIDE	SS	WXS	11°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number	
									D	L
M1	0.25	0.72	40	0.26	2.75	3	3	5	3900495	-
M1.2		0.91			3.25				3900496	-
M1.4	1.05	3.80		3900497	-					
M1.6	1.20	4.35		3900498	-					
M1.7, M1.8	1.30	4.85		3900499	-					
M2	1.50	4.40		-	3900500					
M2.5, M2.6	0.45	1.90	41	1.35	5.60	6	6	-	3900501	
M3	2.40	1.50		6.50	-			3900502		
M4	3.10	2.10		8.70	-			3900503		
M5	4.00	2.40		10.80	-			3900504		

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Super Smooth or WXS® coatings as shown above.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High				300	400		17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
41300	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best





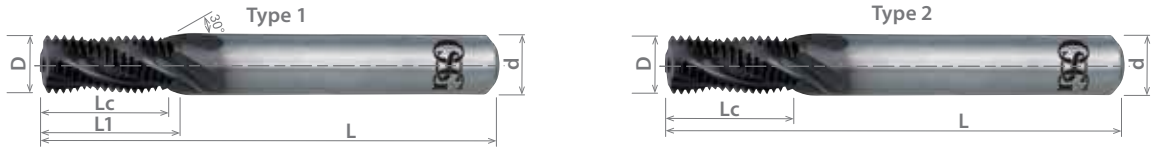
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41000

SPEED FEED P680	CARBIDE	EXO®	11-30°	SHANK h6
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OT-SFT-PNGT, UNC/UNF/UNEF/UNS, Regular & Long Length, Helical Flute



Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			
10	24 UNC	0.130	2.5	0.374	0.437	3/16	3	1	4100000411
	32 UNF								4100000511
12	24 UNC	0.160	3	0.331	0.374	1/4	3	1	4100000611
	28 UNF			0.323	0.358				4100000711
1/4	20 UNC	0.180	3	0.402	0.449	1/4	3	1	4100000811
				28 UNF	0.394				0.429
	32 UNEF	0.551		0.598	4100000911				
		0.535		0.571	4100003311				
5/16	18 UNC	0.245	3	0.374	0.406	5/16	3	2	4100002811
				24 UNF	0.500				-
	32 UNEF	0.720		-	4100003411				
		0.500		-	4100001111				
3/8	16 UNC	0.300	3	0.752	-	3/8	3	2	4100003511
				24 UNF	0.469				-
	32 UNEF	0.594		-	4100001211				
		0.874		-	4100003611				
7/16	14 UNC	0.350	3	0.583	-	7/16	3	1	4100001311
				20 UNF	0.874				-
	32 UNS	0.563		-	4100003011				
		0.713		0.783	4100001411				
1/2	13 UNC	0.370	3	1.071	1.142	1/2	3	2	4100003811
				20 UNF	0.701				0.752
	32 UNS	1.051		1.098	4100003911				
		0.768		-	4100001611				
9/16	12 UNC	0.430	3	1.079	-	9/16	3	1	4100004011
				18 UNF	0.750				-
	32 UNS	1.098		-	4100004111				
		0.752		-	4100003111				
5/8	11 UNC	0.430	4	0.917	1.000	5/8	3	1	4100001811
				18 UNF	1.335				1.417
	32 UNS	0.890		0.945	4100001911				
		1.390		1.445	4100004311				
3/4	10 UNC	0.620	4	1.000	1.091	3/4	3	2	4100002011
				16 UNF	1.453				1.547
	32 UNS	0.945		-	4100002111				
		1.500		-	4100004511				
7/8	9 UNC	0.745	4.5	1.201	-	7/8	3	1	4100002211
				14 UNF	1.701				-
	32 UNS	1.126		-	4100002311				
		1.689		-	4100004711				
1 1/8	9 UNC	0.745	5	1.335	-	1 1/8	3	2	4100002411
				14 UNF	2.000				-
	32 UNS	1.358		-	4100002511				
		2.000		-	4100004911				

Packed: 1 pc.
 Available EXO® coating only.
 For internal threads only.





List 41000 (Continued)

SPEED FEED P680	CARBIDE	EXO	11-30°	SHANK h6
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OT-SFT-PNGT, UNC/UNF/UNEF/UNS, Regular & Long Length, Helical Flute

Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			
1	8 UNC	0.745	4	1.626	-	3/4	4	2	4100002611
			5	2.000	-				4100005011
	12 UNF		4	1.583	-				4100002711
			5	2.000	-				4100005111

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
41000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





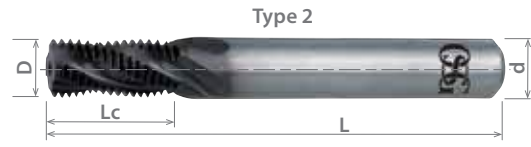
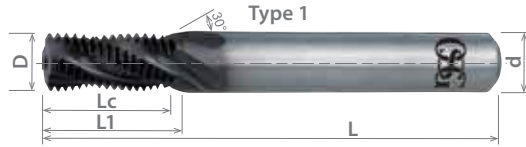
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41100

OT-SFT-PNGT & WX-PNC, Regular & Long Length, Helical Flute

SPEED FEED P680	CARBIDE	EXO®	11-30°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			
M6	1.00	4.5	60	10.00	15	6	3	1	4110000111 3900001
				13.00					
M8	1.25	6.0	65	13.80	-	6	3	2	4110000311 3900012 4110000211 3900011
	1.00			17.50					
				13.00					
	17.00								
M10	1.50	7.5	70	16.50	26	8	3	1	4110000611 3900023 4110000511 4110000411 3900021
	1.25			22.50					
				16.25					
	1.00			16.00					
M12	1.75	9.5	85	21.00	28	10	3	1	4110000811 3900034 4110000711 3900032
	1.25			26.30					
				20.00					
	26.30								
M14	2.00	10.0	95	24.00	-	10	4	2	4110001011 3900044 4110000911 3900043
	1.50			30.00					
				22.50					
	30.00								
M16	2.00	12.0	95	34.00	-	12	4	2	3900054 4110001111 3900053
	1.50			25.50					
				34.50					
M20	2.50	16.0	105	42.50	-	16	4	2	3900075 4110001211 3900073
	1.50			31.50					
				42.00					
M24	3.00	20.0	120	51.00	-	20	5	2	3900086 3900084
	2.00			50.00					

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Titanium	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Nickel Alloy	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
41100	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

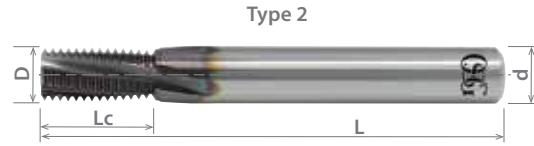
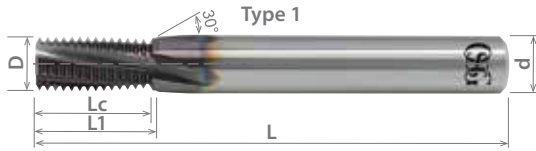




List 41050

WXO-ST-PNC, UNC/UNF, Coolant-Through, Long Length, Helical Flute

SPEED FEED P680		CARBIDE	EXO®	11°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			
1/4	20 UNC	0.180	3	0.401	0.448	1/4	4	1	4105000111
	28 UNF			0.393	0.429				4105000211
5/16	18 UNC	0.245		0.500	—	5/16		2	4105000311
	24 UNF			—	—				4105000411
3/8	16 UNC	0.300		0.562	—	3/8	1	4105000511	
	24 UNF			0.582	—			4105000611	
7/16	14 UNC	0.350		0.712	0.783	7/16	1	4105000711	
	20 UNF			0.700	0.751			4105000811	
1/2	13 UNC	0.370		0.767	—	1/2	2	4105000911	
	20 UNF			0.750	—			4105001011	
9/16	12 UNC	0.430	4	0.917	1.000	9/16	5	1	4105001111
	18 UNF			0.889	0.944				4105001211
5/8	11 UNC	0.430		1.000	1.090	5/8	2	4105001311	
	18 UNF			0.944	—			4105001411	
3/4	10 UNC	0.620		1.200	—	3/4	1	4105001511	
	16 UNF			1.125	—			4105001611	
7/8	9 UNC	0.745		1.330	—	7/8	2	4105001711	
	14 UNF			1.358	—			4105001811	
1	8 UNC	0.745		1.625	—	1	6	4105001911	
	12 UNF			1.582	—			4105002011	

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



List No.	Work Material																
	P				Die Steels	M			K	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
Low	Med.	High	Alloy Steels	300	400	17-4 PH	Cast Iron	6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
41050	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

good best





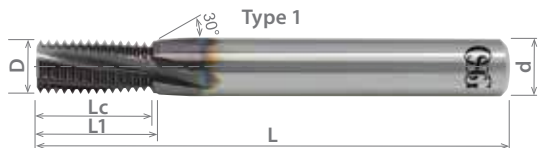
EXOCARB® Thread Mill

Ideal for Steels, Exotics and Difficult to Machine Materials

List 41150

WXO-ST-PNC, Coolant-through, Long Length, Helical Flute

SPEED FEED P680		CARBIDE	EXO	11°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut		Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			
M6	1.00	4.5	60	13	15.0	6	4	1	8304701
M8		6.0	65	17	-			2	8304711
	1.25				17.5	-			8304712
M10	1.50	7.5	70	22.5	26.0	8		1	8304723
	1.00	9.5	85	21	28.0	10	5	1	8304721
M12	1.75			26.3					
	1.25				8304732				
M14	2.00	10.0	95	30	-	12		2	8304744
	1.50								8304743
M16	2.00	12.0	105	34	-	16	2	8304754	
	1.50			34.5	-				8304753
M20	2.50	16.0	120	42.5	-	20		1	8304775
	1.50			42	-				8304773
M24	3.00	20.0	120	51	-	20		2	8304786
	2.00			50	-				8304784

Packed: 1 pc.
Available EXO®coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
41150	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

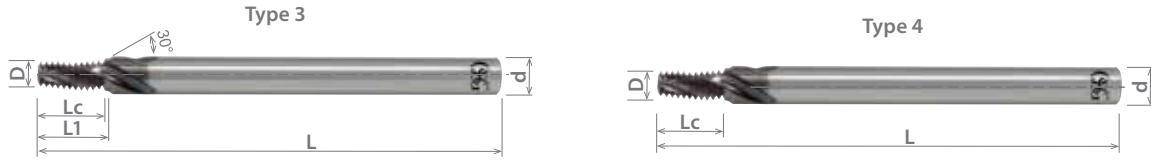




List 42000

OT-SFT-PNGT, NPT, Helical Flute

SPEED FEED P680	CARBIDE	EXO [®]	30°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			
1/16	27	0.186	3	0.409	0.44	1/4	3	3	4200000111
1/8		0.286			-	5/16			4200000211
1/4 or 3/8	18	0.334	4	0.787	-	3/8	4	4	4200000311
1/2 or 3/4	14	0.575			-	5/8			4200000411
1 thru 2	11-1/2	0.785	4	1.358	1.04	1	4	3	4200000511
2-1/2	8	0.917			-				4

Packed: 1 pc.
Available EXO[®] coating only.
For internal threads only.



List 42001

OT-SFT-PNGT, NPTF, Helical Flute

SPEED FEED P680	CARBIDE	EXO [®]	30°	SHANK h6
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Size	Threads Per Inch	Cutter Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter	No. of Flutes	Type	EDP Number
		D	L	Lc	L1	d			
1/16	27	0.186	3	0.409	0.44	1/4	3	3	4200100111
1/8		0.286			-	5/16			4200100211
1/4 or 3/8	18	0.335	4	0.787	-	3/8	4	4	4200100311
1/2	14	0.575			-	5/8			4200100411
3/4			4200100711						
1 or 1-1/4	11-1/2	0.785	4	1.04	1	1	4	3	4200100511
1-1/2 or 2									4200100811
2-1/2	8	0.917	-	-	-	-	4	4	4200100611

Packed: 1 pc.
Available EXO[®] coating only.
For internal threads only.



For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
42000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
42001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 16050



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				V	Lc	Ln	d	k	lk	Min	Max	2B	3B
				L	Lc	Ln	d	k	lk			2B	3B
1/4 - 20 UNC	1.5P	H6	1605014216	3.15	0.500	1.181	0.255	0.191	0.311	0.2245	0.2295	H6	H4
	2.5P	H4	1605014204										
	4.5P	H6	1605014206										
1/4 - 28 UNF	1.5P	H6	1605014246										
	2.5P	H4	1605014816										
	4.5P	H6	1605014816										
5/16 - 18 UNC	1.5P	H7	1605014284	3.54	0.555	1.378	0.318	0.238	0.374	0.2842	0.2898	H7	H4
	2.5P	H5	1605056187										
	4.5P	H7	1605056187										
5/16 - 24 UNF	1.5P	H7	1605056217										
	2.5P	H5	1605056245										
	4.5P	H7	1605056247										
3/8 - 16 UNC	1.5P	H7	1605056447	3.94	0.626	1.575	0.381	0.286	0.437	0.2912	0.0296	H7	H5
	2.5P	H5	1605038117										
	4.5P	H7	1605038165										
3/8 - 24 UNF	1.5P	H5	1605038167										
	2.5P	H7	1605038147										
	4.5P	H5	1605038217										
7/16 - 14 UNC	1.5P	H5	1605038245	0.713	1.713	0.323	0.242	0.406	0.4011	0.4084	H8	H5	
	2.5P	H8	1605038247										
	4.5P	H5	1605038447										
7/16 - 20 UNF	1.5P	H8	1605076118										
	2.5P	H5	1605076145										
	4.5P	H8	1605076148										
1/2 - 13 UNC	1.5P	H8	1605076448	4.33	0.768	1.933	0.367	0.275	0.437	0.4120	0.4171	H8	H7
	2.5P	H5	1605076218										
	4.5P	H8	1605076205										
1/2 - 20 UNF	1.5P	H5	1605076208										
	2.5P	H8	1605076248										
	4.5P	H5	1605012118										
9/16 - 12 UNC	1.5P	H5	1605012135	4.33	0.835	1.972	0.429	0.322	0.500	0.4608	0.4686	H10	H7
	2.5P	H8	1605012138										
	4.5P	H5	1605012148										
9/16 - 18 UNF	1.5P	H8	1605012218										
	2.5P	H5	1605012205										
	4.5P	H8	1605012208										
5/8 - 11 UNC	1.5P	H10	1605091110	4.33	0.909	2.126	0.480	0.360	0.563	0.5200	0.5285	H10	H7
	2.5P	H7	1605096127										
	4.5P	H10	1605096120										
5/8 - 11 UNC	1.5P	H10	1605091140										
	2.5P	H7	1605091810										
	4.5P	H10	1605096187										
5/8 - 11 UNC	1.5P	H7	1605096180	4.33	0.909	2.126	0.480	0.360	0.563	0.5342	0.5398	H10	H7
	2.5P	H10	1605091840										
	4.5P	H7	1605058150										
5/8 - 11 UNC	1.5P	H10	1605058117										
	2.5P	H7	1605058110										
	4.5P	H10	1605058140										

Packed: 1 pc.
Available V coating only.





List 16050 (Continued)



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit							
			V	L	Lc	Ln	d	k	lk	Min	Max	2B	3B						
5/8 - 18 UNF	1.5P	H10	1605058810	3.94	0.909	2.126	0.480	0.360	0.563	0.5967	0.6023								
	2.5P	H7	1605058187																
	4.5P	H10	1605058180																
3/4 - 10 UNC	1.5P	H10	1605058840	4.92	1.000	2.433	0.590	0.442	0.689	0.6990	0.7092	H10	H7						
	2.5P	H7	1605034110																
	4.5P	H10	1605034107																
3/4 - 16 UNF	1.5P	H10	1605034100	4.33						0.7181	0.7245								
	2.5P	H7	1605034140																
	4.5P	H10	1605034610																
7/8 - 9 UNC	1.5P	H11	1605034167	5.51						0.8183	0.8297								
	2.5P	H8	1605078911																
	4.5P	H11	1605078908																
7/8 - 14 UNF	1.5P	H11	1605078901	4.92	1.110	2.654	0.697	0.523	0.752	0.8386	0.8459	H11	H8						
	2.5P	H8	1605078941																
	4.5P	H11	1605078111																
1 - 8 UNC	1.5P	H8	1605078148	6.30	1.252	3.012	0.800	0.600	0.811	0.9363	0.9490								
	2.5P	H11	1605001088																
	4.5P	H11	1605001081																
1 - 12 UNF	1.5P	H8	1605018411	5.51			1.194			0.9575	0.9660								
	2.5P	H8	1605011211																
	4.5P	H11	1605011212																
1, 1/8 - 7 UNC	2.5P	H13	1605018111	7.09	0.858	2.835	0.896	0.672	0.874	1.0521	1.0667	H13	-						
1, 1/8 - 8 UNS		H11	1605018111							1.0613	1.0740	H11	-						
1, 1/8 - 12 UNF		H11	1605018111							1.0825	1.0910	H11	-						
1, 1/4 - 7 UNC		H13	1605011211							7.09	0.858	2.835	1.021	0.766	1.000	1.1771	1.1917	H13	-
1, 1/4 - 8 UNS		H11	1605012526							5.91	0.835	2.362			0.961	1.1863	1.1990	H11	-
1, 1/4 - 12 UNF		H11	1605012526							5.91	0.835	2.362				1.2075	1.2160	H11	-
1, 3/8 - 6 UNC		H14	1605013768							7.87	1.000	3.150	1.108	0.831	1.063	1.2900	1.3070	H14	-
1, 3/8 - 8 UNS		H13	1605013788							7.87	1.000	3.150	1.233	0.925	1.126	1.3113	1.3240	H13	-
1, 3/8 - 12 UNF		H11	1605013126							6.69	0.835	2.677				1.3325	1.3410	H11	-
1, 1/2 - 6 UNC		H15	1605011268							7.87	1.000	3.150				1.4150	1.4320	H15	-
1, 1/2 - 8 UNS		H13	1605011288							7.87	1.000	3.150	1.305	0.979		1.4363	1.4490	H13	-
1, 1/2 - 12 UNF		H11	1605012126							6.69	0.835	2.677				1.4575	1.4660	H11	-
1, 5/8 - 8 UNS		H13	1605016288							7.87	1.000	3.150	1.305	0.979		1.5613	1.5740	H13	-
1, 3/4 - 5 UNC		H16	1605017558							8.66		3.465	1.430	1.072	1.252	1.6480	1.6684	H16	-
1, 3/4 - 8 UNS		H13	1605017588							7.87	1.201	3.150				1.6863	1.6990	H13	-

Packed: 1 pc.
Available V coating only.



List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
16050	☐	☐	☐	☐	☐	☐*	☐*	☐*		☐	☐	☐	☐	☐	☐				
SFM	75-130	75-130	65-100	65-100	20-65	20-50	20-45	15-40		80-130	75-110	8-10	8-10	50-100	8-20				

*For Stainless Steel, please use non-water-soluble coolant.

☐ good ☐ best





List 16150



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				L						Lc	Ln	d	k
M6 x 1.0	1.5P	D8	1615060118	80	10	30.0	6.47	4.85	7.3	5.49	5.59	D8	D5
	2.5P	D5	1615006015										
	4.5P	D8	1615006018										
M6 x 0.75	1.5P	D7	1615067517	80	10	30.0	6.47	4.85	7.3	5.62	5.69	D7	D4
	2.5P	D4	1615006754										
	4.5P	D7	1615006757										
M7 x 1.0	1.5P	D8	1615070118	90	12	35.0	8.07	6.05	9.5	6.49	6.59	D8	D5
	2.5P	D5	1615007015										
	4.5P	D8	1615007018										
M8 x 1.25	1.5P	D9	1615081219	90	12	35.0	8.07	6.05	9.5	7.36	7.49	D9	D5
	2.5P	D5	1615008255										
	4.5P	D9	1615008259										
M8 x 1.0	1.5P	D8	1615080118	80	12	35.0	8.07	6.05	9.5	7.49	7.59	D8	D4
	2.5P	D5	1615008015										
	4.5P	D8	1615008018										
M8 x 0.75	1.5P	D7	1615087517	80	12	35.0	8.07	6.05	9.5	7.62	7.69	D7	D4
	2.5P	D4	1615008754										
	4.5P	D7	1615008757										
M10 X 1.5	1.5P	D10	1615010110	100	15	39.0	9.67	7.26	11.1	9.24	9.39	D10	D6
	2.5P	D6	1615010156										
	4.5P	D10	1615010150										
M10 x 1.25	1.5P	D9	1615010119	90	15	35.0	9.67	7.26	11.1	9.36	9.49	D9	D5
	2.5P	D5	1615010255										
	4.5P	D9	1615010259										
M10 x 1.0	1.5P	D8	1615010118	90	15	35.0	9.67	7.26	11.1	9.49	9.59	D8	D5
	2.5P	D5	1615010015										
	4.5P	D8	1615010148										
M12 x 1.75	1.5P	D11	1615012711	110	17	49.1	9.32	6.98	11.1	11.11	11.23	D11	D6
	2.5P	D6	1615012756										
	4.5P	D11	1615010751										
M12 x 1.5	1.5P	D6	1615012111	100	17	49.1	9.32	6.98	11.1	11.24	11.39	D11	D6
	2.5P	D6	1615012156										
	4.5P	D11	1615012151										
M12 x 1.25	1.5P	D10	1615012210	100	17	49.1	9.32	6.98	11.1	11.36	11.49	D10	D6
	2.5P	D6	1615012256										
	4.5P	D10	1615012250										
M12 x 1.0	1.5P	D10	1615012110	100	17	49.1	9.32	6.98	11.1	11.49	11.59	D10	D6
	2.5P	D6	1615012106										
	4.5P	D10	1615012100										

Packed: 1 pc.
Available V coating only.





List 16150 (Continued)



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit						
			V	L	Lc	Ln	d	k	lk	Min	Max	2B	3B					
M14 x 2.0	1.5P	D12	1615014212	110	20	50.1	10.89	8.18	12.7	12.98	13.18	D12	D7					
	2.5P	D7	1615014027															
	4.5P	D12	1615014022															
M14 x 1.5	1.5P	D11	1615014242	100						1615014511	1615014156	1615014151	1615014541	1615016212	13.24	13.39	D11	D6
	2.5P	D6	1615016207															
	4.5P	D11	1615016202															
M16 x 2.0	1.5P	D12	1615016222	110						1615016111	1615016152	1615016151	1615016141	1615016202	14.98	15.18	D12	D7
	2.5P	D7	1615016207															
	4.5P	D12	1615016242															
M16 x 1.5	1.5P	D11	1615016111	100						1615018212	1615018257	1615018252	1615018242	1615018111	15.24	15.39	D11	D6
	2.5P	D6	1615018156															
	4.5P	D11	1615018151															
M18 x 2.5	1.5P	D12	1615018141	125	25	55.0	13.76	10.31	15.9	16.73	16.98	D12	D7					
	2.5P	D7	1615018257															
	4.5P	D12	1615018252															
M18 x 1.5	1.5P	D11	1615018111	110						1615018156	1615018151	1615018141	1615020212	1615020257	17.24	17.39	D11	D6
	2.5P	D6	1615020252															
	4.5P	D11	1615020242															
M20 x 2.5	1.5P	D12	1615020111	140						1615020156	1615020151	1615020141	1615022512	1615022257	18.73	18.98	D12	D7
	2.5P	D7	1615022252															
	4.5P	D12	1615022542															
M20 x 1.5	1.5P	D11	1615020156	125						1615022212	1615022207	1615022202	1615022242	1615022212	19.24	19.39	D11	D6
	2.5P	D6	1615022207															
	4.5P	D11	1615022242															
M22 x 2.5	1.5P	D12	1615022111	140	1615022202	1615022242	1615022212	1615022207	1615022202	20.73	20.98	D12	D7					
	2.5P	D7	1615022207															
	4.5P	D12	1615022242															
M22 x 2.0	1.5P	D11	1615022111	125	1615022156	1615022151	1615022141	1615022111	1615022156	20.98	21.18	D11	D6					
	2.5P	D6	1615022151															
	4.5P	D11	1615022141															

Packed: 1 pc.
Available V coating only.

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Work Material																		
List No.	P					M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
16150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	75-130	75-130	65-100	65-100	20-65	20-50	20-45	15-40		80-130	75-110	8-10	8-10	50-100	8-20			

*For Stainless Steel, please use non-water-soluble coolant.

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List 16150 (Continued)



OIL-S-XPF, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit		
			V	L	Lc	Ln	d	k	lk	Min	Max	2B	3B	
M24 x 3.0	1.5P	D15	1615024315	160	30	68.4	19.30	14.48	19.1	22.47	22.78	D15	D9	
	2.5P	D9	1615024309											
		D15	1615024305											
	4.5P	D9	1615024349											
		D15	1615024345											
M24 x 2.0	1.5P	D13	1615024223	140	25	68.4	19.30	14.48	19.1	22.98	23.18	D13	D7	
	2.5P	D7	1615024207											
		D13	1615024203											
	4.5P	D13	1615024243											
M24 x 1.5	1.5P	D11	1615024111	140	25	68.4	19.30	14.48	19.1	23.24	23.39	D11	D6	
	2.5P	D6	1615024156											
		D11	1615024151											
	4.5P	D11	1615024141											
M27 x 3.0	2.5P	D15	1615027309	160	18	64.00	22.75	17.07	22.2	25.47	25.78	D15	-	
M30 x 3.5				1615030350	180	21	72.00	25.93	19.46	25.4	28.22	28.57	D16	-
M33 x 3.5		D16	1615033350	180	21	72.00	25.93	19.46	25.4	28.22	28.57	D16	-	
M36 x 4.0		D17		1615036411	200	24	80.00	31.31	23.50	28.6	33.96	34.37	D17	-
M42 x 4.5				1615042451	220	27	88.00	36.32	27.23	31.8	39.71	40.16	D17	-
M45 x 4.5				1615045451	220	27	88.00	38.58	28.93	31.8	42.71	43.16	D17	-

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM	75-130	75-130	65-100	65-100	20-65	20-50	20-45	15-40		80-130	75-110	8-10	8-10	50-100	8-20		

*For Stainless Steel, please use non-water-soluble coolant.

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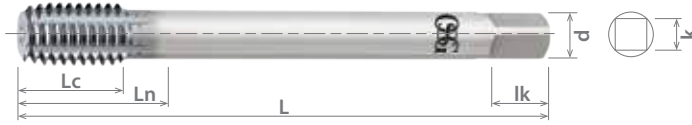




List 16250

HSS-Co **V**

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				V	Lc	Ln				d	k	lk	Min
0 - 80 UNF	1.5P	H3	1625008013	1.57	0.324	0.363	0.140	0.109	0.188	0.0536	0.0549	H3	H2
	2.5P	H2	162500802		0.321	0.360							
			162500803										
1 - 64 UNC	4.5P	H3	1625008043		0.315	0.354							
	1.5P		1625016413		0.329	0.369							
	2.5P	H2	1625001642		0.326	0.365							
1 - 72 UNF			1625001643		0.315	0.354							
	4.5P	H3	1625016443		0.315	0.354							
	1.5P	H2	1625017213		0.327	0.366							
2 - 56 UNC			1625001722	1.77	0.324	0.363							
	2.5P	H2	1625001723		0.323	0.363							
	4.5P	H3	1625017243		0.315	0.354							
2 - 64 UNF	1.5P		1625025613		0.389	0.428							
	2.5P	H2	1625002562		0.385	0.424							
	4.5P	H3	1625002563		0.384	0.424							
3 - 48 UNC			1625025643		0.374	0.413							
	1.5P		1625026413		0.385	0.424							
	2.5P	H2	1625002642		0.381	0.421							
3 - 56 UNF			1625002643		0.374	0.413							
	4.5P	H3	1625026443		0.374	0.413							
	1.5P	H2	1625034813		0.390	0.429							
4 - 40 UNC			1625034813	1.97	0.390	0.429							
	2.5P	H2	1625003482			0.385				0.424			
	4.5P	H3	1625003483			0.370				0.409			
4 - 48 UNF			1625034843		0.370	0.409							
	1.5P		1625035613		0.385	0.425							
	2.5P	H2	1625003562		0.381	0.421							
5 - 40 UNC			1625003563		0.370	0.409							
	4.5P	H3	1625035643		0.370	0.409							
	1.5P	H5	1625044015		0.317	0.727							
5 - 48 UNF			1625044015	2.20	0.312	0.721							
	2.5P	H3	1625004403			0.311	0.721						
	4.5P	H5	1625004405			0.295	0.705						
5 - 40 UNC			1625044045		0.315	0.724							
	1.5P		1625044815		0.315	0.724							
	2.5P	H3	1625004483		0.311	0.720							
5 - 48 UNF			1625004485		0.310	0.720							
	4.5P	H5	1625044845		0.299	0.709							
	1.5P		1625054015		0.318	0.728							
5 - 40 UNC			1625054015		0.318	0.728							
	2.5P	H3	1625005403		0.313	0.722							
	4.5P	H5	1625005405		0.312	0.722							

Packed: 1 pc.
Available V coating only.

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List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
16250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25				

*For Stainless Steel, please use non-water-soluble coolant.

good best



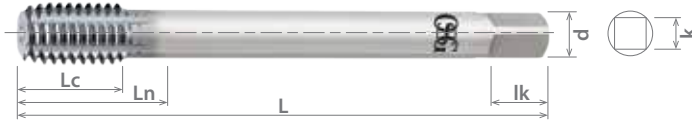


List 16250 (Continued)

HSS-Co

V

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				L						Lc	Ln	d	k
5 - 40 UNC	4.5P	H5	1625054045	2.20	0.299	0.709	0.140	0.109	0.188	0.1123	0.1148	H5	H3
	1.5P		1625054415		0.315	0.724							
5 - 44 UNF	2.5P	H3	1625005443		0.310	0.719				0.1134	0.1157		
	4.5P	H5	1625005445		0.309								
6 - 32 UNC	1.5P	H3	1625063215		0.299	0.709				0.1221	0.1252		
	2.5P		1625006323		0.399	0.812							
	4.5P	H5	1625006325		0.392	0.805							
		1.5P	1625063245		0.391	0.805							
6 - 40 UNF	1.5P	H3	1625064015		0.370	0.783				0.1253	0.1278		
	2.5P		1625006403		0.394	0.807							
	4.5P	H5	1625006405		0.388	0.802							
8 - 32 UNC	1.5P	H3	1625064045		0.374	0.787				0.1481	0.1512		
	2.5P		1625083215	0.400	0.853								
	4.5P	H5	1625008323	0.393	0.846								
		1.5P	162508325	0.374	0.827								
8 - 36 UNF	1.5P	H3	1625083615	0.395	0.848	0.1498	0.1526						
	2.5P		1625008363	0.389	0.842								
	4.5P	H5	1625008365	0.374	0.827								
10 - 24 UNC	1.5P	H6	1625010216	0.530	0.975	0.1688	0.1729						
	2.5P	H4	1625010244	0.521	0.966								
		H6	1625010246	0.520	0.965								
	4.5P	H6	1625010249	0.492	0.937								
10 - 32 UNF	1.5P	H4	1625010316	0.523	0.968	0.1741	0.1772						
	2.5P		1625010324	0.516	0.961								
	4.5P	H6	1625010326	0.500	0.945								
		1.5P	1625010346	0.500	0.945								
12 - 24 UNC	1.5P	H7	1625012417	0.532	1.134	0.1948	0.1989						
	2.5P	H5	1625012245	0.522	1.124								
		H7	1625012247	0.496	1.098								
	4.5P	H7	1625012447	0.523	1.130								
12 - 28 UNF	1.5P	H5	1625012817	0.519	1.121	0.1978	0.2014						
	2.5P		1625012285	0.500	1.102								
	4.5P	H7	1625012287	0.500	1.102								
		1.5P	1625012847	0.538	1.219								
1/4 - 20 UNC	1.5P	H6	1625014216	0.526	1.207	0.2245	0.2295						
	2.5P	H4	1625014204	0.496	1.374								
		H6	1625014206	0.517	1.198								
	4.5P	H6	1625014246	0.509	1.190								
1/4 - 28 UNF	1.5P	H4	1625014816	0.508	1.189	0.2318	0.2354						
	2.5P		1625014284	0.496	1.177								
	4.5P	H6	1625014284	0.509	1.190								
		1.5P	1625014846	0.496	1.177								
5/16 - 18 UNC	1.5P	H7	1625051617	0.555	1.378	0.317	0.238	0.374	0.2842	0.2898	H7	H5	
	2.5P	H5	1625056185										
	4.5P	H7	1625056187										
			1625051647										

Packed: 1 pc.
Available V coating only.





List 16250 (Continued)

HSS-Co **V**

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
			V	L	Lc	Ln	d	k	lk	Min	Max	2B	3B
5/16 - 24 UNF	1.5P	H7	1625056217	3.54	0.555	1.378	0.317	0.238	0.374	0.2912	0.2955		
	2.5P	H5	1625056245										
	4.5P	H7	1625056247										
3/8 - 16 UNC	1.5P	H7	1625056249	3.94	0.625	1.575	0.380	0.285	0.437	0.3431	0.3495	H7	
	2.5P	H5	1625038117										
	4.5P	H7	1625038165										
3/8 - 24 UNF	1.5P	H7	1625038167	3.94	0.712	1.693	0.322	0.242	0.405	0.3537	0.3580		
	2.5P	H5	1625038147										
	4.5P	H7	1625038217										
7/16 - 14 UNC	1.5P	H8	1625038245	4.33	0.767	1.929	0.367	0.274	0.437	0.4011	0.4084	H5	
	2.5P	H5	1625076118										
	4.5P	H8	1625076145										
7/16 - 20 UNF	1.5P	H8	1625076148	3.94	0.909	2.126	0.480	0.359	0.562	0.4120	0.4171	H8	
	2.5P	H5	1625076149										
	4.5P	H8	1625076218										
1/2 - 13 UNC	1.5P	H8	1625076205	4.33	0.767	1.929	0.367	0.274	0.437	0.4608	0.4686	H8	
	2.5P	H5	1625076208										
	4.5P	H8	1625076248										
1/2 - 20 UNF	1.5P	H5	1625012118	3.94	0.767	1.929	0.367	0.274	0.437	0.4745	0.4796	H8	
	2.5P	H5	1625012135										
	4.5P	H8	1625012138										
9/16 - 12 UNC	1.5P	H5	1625012148	4.33	0.834	1.969	0.429	0.322	0.500	0.5200	0.5280	H10	H7
	2.5P	H7	1625091117										
	4.5P	H10	1625096127										
9/16 - 18 UNF	1.5P	H7	1625096120	3.94	0.834	1.969	0.429	0.322	0.500	0.5342	0.5398	H10	H7
	2.5P	H7	1625091147										
	4.5P	H10	1625091810										
5/8 - 11 UNC	1.5P	H7	1625091810	4.33	0.909	2.126	0.480	0.359	0.562	0.5787	0.5879	H10	H7
	2.5P	H7	1625096187										
	4.5P	H10	1625096180										
5/8 - 18 UNF	1.5P	H7	1625091840	3.94	0.909	2.126	0.480	0.359	0.562	0.5967	0.6023	H10	H7
	2.5P	H7	1625058410										
	4.5P	H10	1625058117										
5/8 - 18 UNF	1.5P	H7	1625058110	3.94	0.909	2.126	0.480	0.359	0.562	0.5967	0.6023	H10	H7
	2.5P	H7	1625058140										
	4.5P	H10	1625058810										
5/8 - 18 UNF	1.5P	H7	1625058810	3.94	0.909	2.126	0.480	0.359	0.562	0.5967	0.6023	H10	H7
	2.5P	H7	1625058187										
	4.5P	H10	1625058180										
5/8 - 18 UNF	1.5P	H7	1625058180	3.94	0.909	2.126	0.480	0.359	0.562	0.5967	0.6023	H10	H7
	2.5P	H7	1625058840										
	4.5P	H10	1625058840										

Packed: 1 pc.
Available V coating only.

continued on next page



Work Material																	
List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels				Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25		

*For Stainless Steel, please use non-water-soluble coolant.

good best



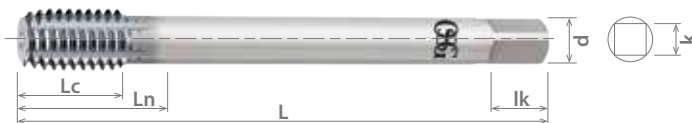


List 16250 (Continued)

HSS-Co

V

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit				
				L	Lc	Ln	d	k	lk	Min	Max	2B	3B			
3/4 - 10 UNC	1.5P	H10	1625034110	4.92	1.00	2.441	0.590	0.442	0.688	0.6990	0.7092	H10	H7			
	2.5P	H7	1625034107													
	4.5P	H10	1625034100													
3/4 - 16 UNF	1.5P	H10	1625034140	4.33	1.00	2.441	0.590	0.442	0.688	0.7181	0.7245	H10	H7			
	2.5P	H7	1625034610													
	4.5P	H10	1625034160													
7/8 - 9 UNC	1.5P	H11	1625078911	5.51	1.110	2.638	0.697	0.522	0.751	0.8183	0.8297	H11	H8			
	2.5P	H8	1625078908													
	4.5P	H11	1625078901													
7/8 - 14 UNF	1.5P	H11	1625078941	4.92	1.110	2.638	0.697	0.522	0.751	0.8386	0.8459	H11	H8			
	2.5P	H8	1625078111													
	4.5P	H11	1625078148													
1 - 8 UNC	1.5P	H11	1625078141	6.30	1.251	2.992	0.800	0.600	0.811	0.9363	0.9490	H11	H8			
	2.5P	H8	1625018111													
	4.5P	H11	1625001088													
1 - 12 UNF	1.5P	H11	1625001081	5.51	1.251	2.992	0.800	0.600	0.811	0.9575	0.9660	H11	H8			
	2.5P	H8	1625018411													
	4.5P	H11	1625011211													
1, 1/8 - 7 UNC	2.5P	H13	1625011212	7.08	0.858	2.834	0.896	0.672	0.874	1.0521	1.0667	H13	-			
1, 1/8 - 8 UNS		H11	1625011878							1.0613	1.0740	H11	-			
1, 1/8 - 12 UNF		H11	1625011888							1.0825	1.0910	H11	-			
1, 1/4 - 7 UNC		H13	1625011826							5.90	0.835	2.362	1.1771	1.1917	H13	-
1, 1/4 - 8 UNS		H11	1625012578							7.08	0.858	2.834	1.1863	1.1990	H11	-
1, 1/4 - 12 UNF		H11	1625012588							5.90	0.835	2.362	1.2075	1.2160	H11	-
1, 3/8 - 6 UNC		H14	1625012526							7.87	1.000	3.149	1.2900	1.3070	H14	-
1, 3/8 - 8 UNS		H13	1625013768							6.69	0.835	2.677	1.3113	1.3240	H13	-
1, 3/8 - 12 UNF		H11	1625013788							6.69	0.835	2.677	1.3325	1.3410	H11	-
1, 1/2 - 6 UNC		H15	1625013126							7.87	1.000	3.149	1.4150	1.4320	H15	-
1, 1/2 - 8 UNS		H13	1625011268							7.87	1.000	3.149	1.4363	1.4490	H13	-
1, 1/2 - 12 UNF		H11	1625011288							6.69	0.835	2.677	1.4575	1.4660	H11	-
1, 5/8 - 8 UNS		H13	1625012126							7.87	1.000	3.149	1.5613	1.5740	H13	-
1, 3/4 - 5 UNC		H16	1625016288							8.66	1.201	3.464	1.6480	1.6684	H16	-
1, 3/4 - 8 UNS		H13	1625017558							7.87	1.201	3.149	1.6863	1.6990	H13	-

Packed: 1 pc.
Available V coating only.



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
16250	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25			

*For Stainless Steel, please use non-water-soluble coolant.

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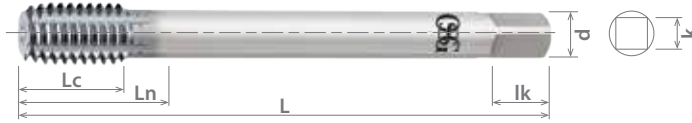




List 16350

HSS-Co **V**

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit									
				V	L	Lc				Ln	d	k	lk	Min	Max	6H	4H				
M1 x 0.25	1.5P	D5	1635012515	40	5	6.6	3.58	2.79	4.8	0.88	0.90	D5	D3								
	2.5P		1635012525																		
	4.5P		1635012545																		
M1.2 x 0.25	1.5P		1635012215		45	9				10.7	18.2			65-115	65-90	8-12	8-15	50-100	8-25		
	2.5P		1635012225																		
	4.5P		1635012245																		
M1.4 x 0.3	1.5P		1635014315		50	9				10.7	18.2			65-115	65-90	8-12	8-15	50-100	8-25		
	2.5P		1635014325																		
	4.5P		1635014345																		
M1.6 x 0.35	1.5P	1635016315	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635016353																			
	4.5P	1635016345																			
M1.7 x 0.35	1.5P	1635017315	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635017353																			
	4.5P	1635017355																			
M1.8 X 0.35	1.5P	1635018315	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635018353																			
	4.5P	1635018355																			
M2 x 0.4	1.5P	1635024155	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635002043																			
	4.5P	1635002045																			
M2.5 x 0.45	1.5P	1635025415	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635025453																			
	4.5P	1635025455																			
M2.6 x 0.45	1.5P	1635026415	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635026425																			
	4.5P	1635026445																			
M3 x 0.5	1.5P	1635030515	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635003053																			
	4.5P	1635003055																			
M3 x 0.35	1.5P	1635033515	56	6	18.1	18.1	65-115	65-90	8-12	8-15	50-100	8-25									
	2.5P	1635003353																			
	4.5P	1635003355																			
	4.5P	1635033545																			

Packed: 1 pc.
Available V coating only.

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List No.	Work Material																	
	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
16350	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25			

*For Stainless Steel, please use non-water-soluble coolant.

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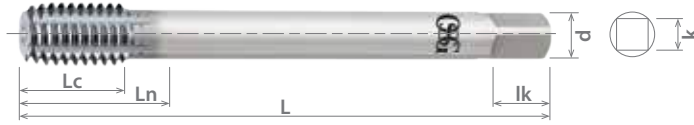




HSS-Co	V
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List 16350 (Continued)

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				V	Lc	Ln	d	k	lk	Min	Max	6H	4H
M3.5 x 0.6	1.5P	D6	1635035616	56	7	20.3	3.58	2.79	4.8	3.19	3.26		
	2.5P	D4	1635035064										
	4.5P	D6	1635035646										
M4 x 0.7	1.5P	D6	1635040716	63	8	21.3	4.26	3.33	6.4	3.64	3.71		
	2.5P	D4	1635004074										
	4.5P	D6	1635040746										
M4 x 0.5	1.5P	D6	1635040516	63	8	21.2	4.26	3.33	6.4	3.75	3.80	D6	D4
	2.5P	D4	1635004054										
	4.5P	D6	1635040546										
M4.5 x 0.75	1.5P	D6	1635045716	70	9	25.4	4.92	3.86	6.4	4.13	4.19		
	2.5P	D4	1635045754										
	4.5P	D6	1635045756										
M5 x 0.8	1.5P	D7	1635050817	70	9	25.4	4.92	3.86	6.4	4.59	4.67		
	2.5P	D4	1635005084										
	4.5P	D7	1635050847										
M5 x 0.5	1.5P	D5	1635050515	70	10	25.2	4.92	3.86	6.4	4.75	4.80	D5	D3
	2.5P	D3	1635005053										
	4.5P	D5	1635050545										
M6 x 1.0	1.5P	D8	1635060118	80	10	30.5	6.47	4.85	7.3	5.49	5.59	D8	D5
	2.5P	D5	1635006015										
	4.5P	D8	1635060148										
M6 X 0.75	1.5P	D7	1635067517	80	10	30.4	6.47	4.85	7.3	5.62	5.69	D6	D4
	2.5P	D4	1635006754										
	4.5P	D7	1635067547										
M7 x 1.0	1.5P	D8	1635070118	90	12	30.0	8.07	6.05	9.5	6.49	6.59	D8	
	2.5P	D5	1635007015										
	4.5P	D8	1635070148										
M8 x 1.25	1.5P	D9	1635081219	90	12	35.0	8.07	6.05	9.5	7.36	7.49	D9	D5
	2.5P	D5	1635008255										
	4.5P	D9	1635081249										
M8 x 1.0	1.5P	D8	1635080118	80	12	30.0	8.07	6.05	9.5	7.49	7.59	D8	
	2.5P	D5	1635008015										
	4.5P	D8	1635080148										
M8 x 0.75	1.5P	D7	1635087517	80	12	30.0	8.07	6.05	9.5	7.62	7.69	D6	D4
	2.5P	D4	1635008754										
	4.5P	D7	1635087547										

Packed: 1 pc.
Available V coating only.





List 16350 (Continued)

HSS-Co **V**

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
			V	L	Lc	Ln	d	k	lk	Min	Max	6H	4H
M10 x 1.5	1.5P	D10	1635010110	100	15	39.0	9.67	7.26	11.1	9.24	9.39	D10	D6
	2.5P	D6	1635010156										
	4.5P	D10	1635010150										
M10 x 1.25	1.5P	D9	1635010119	90	15	35.0	9.67	7.26	11.1	9.36	9.49	D9	D5
	2.5P	D5	1635010255										
	4.5P	D9	1635010259										
M10 x 1.0	1.5P	D8	1635010118	90	15	35.0	9.67	7.26	11.1	9.49	9.59	D8	D5
	2.5P	D5	1635010015										
	4.5P	D8	1635010018										
M12 x 1.75	1.5P	D11	1635012171	110	17	49.1	9.32	6.98	11.1	11.11	11.23	D11	D6
	2.5P	D6	1635012756										
	4.5P	D11	1635012751										
M12 x 1.5	1.5P	D11	1635012541	100	17	49.1	9.32	6.98	11.1	11.24	11.39	D10	D6
	2.5P	D6	1635012156										
	4.5P	D11	1635012151										
M12 x 1.25	1.5P	D10	1635012111	100	17	49.1	9.32	6.98	11.1	11.36	11.49	D10	D6
	2.5P	D10	1635012210										
	4.5P	D10	1635012220										
M12 x 1.0	1.5P	D10	1635012240	100	17	49.1	9.32	6.98	11.1	11.49	11.59	D10	D6
	2.5P	D10	1635012110										
	4.5P	D10	1635012120										
M14 x 2.0	1.5P	D12	1635012140	110	20	50.1	10.89	8.18	12.7	12.98	13.18	D12	D7
	2.5P	D7	1635014212										
	4.5P	D12	1635014027										
M14 x 1.5	1.5P	D11	1635014022	100	20	50.1	10.89	8.18	12.7	13.24	13.39	D11	D6
	2.5P	D6	1635014022										
	4.5P	D11	1635014242										
M16 x 2.0	1.5P	D12	1635014511	110	20	54.0	12.19	9.14	14.3	14.98	15.18	D12	D7
	2.5P	D7	1635014511										
	4.5P	D12	1635016212										
M16 x 1.5	1.5P	D11	1635016207	100	20	54.0	12.19	9.14	14.3	15.24	15.39	D11	D6
	2.5P	D6	1635016207										
	4.5P	D11	1635016202										
M18 x 2.5	1.5P	D12	1635016111	125	25	55.0	13.76	10.31	15.9	16.73	16.98	D12	D7
	2.5P	D7	1635016156										
	4.5P	D12	1635016151										

Packed: 1 pc.
Available V coating only.

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EP

Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16350	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25		

*For Stainless Steel, please use non-water-soluble coolant.

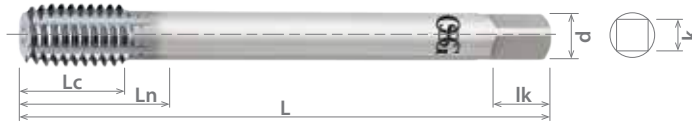
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List 16350 (Continued)

S-XPF, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
			V	L	Lc	Ln	d	k	lk	Min	Max	6H	4H
M18 x 1.5	1.5P	D11	1635018111	110	25	55.0	13.76	10.31	15.9	17.24	17.39	D11	D6
	2.5P	D6	1635018156										
	4.5P	D11	1635018151										
M20 x 2.5	1.5P	D12	1635020212	140	25	61.8	16.56	12.42	17.5	18.73	18.98	D12	D7
	2.5P	D7	1635020257										
	4.5P	D12	1635020252										
M20 x 1.5	1.5P	D11	1635020111	125	25	61.8	16.56	12.42	17.5	19.24	19.39	D11	D6
	2.5P	D6	1635020156										
	4.5P	D11	1635020151										
M22 x 2.5	1.5P	D12	1635022512	140	25	67.4	17.70	13.28	19.1	20.73	20.98	D12	-
	2.5P		1635022522										-
	4.5P		1635022542										-
M22 x 2.0	1.5P	D12	1635022212	140	25	67.4	17.70	13.28	19.1	20.98	21.18	D12	-
	2.5P		1635022222										-
	4.5P		1635022242										-
M22 x 1.5	1.5P	D11	1635022111	125	25	67.4	17.70	13.28	19.1	21.24	21.39	D11	-
	2.5P		1635022121										-
	4.5P		1635022141										-
M24 x 3.0	1.5P	D15	1635024315	160	30	68.4	19.30	14.48	19.1	22.47	22.78	D15	-
	2.5P		1635024325										-
	4.5P		1635024345										-
M24 x 2.0	1.5P	D13	1635024123	140	25	68.4	19.30	14.48	19.1	22.98	23.18	D13	-
	2.5P		1635024223										-
	4.5P		1635024243										-
M24 x 1.5	1.5P	D11	1635024111	140	25	68.4	19.30	14.48	19.1	23.24	23.39	D11	-
	2.5P		1635024121										-
	4.5P		1635024141										-
M27 x 3.0	2.5P	D15	1635027039	160	18	6.40	22.75	17.07	22.2	22.47	22.78	D15	-
M30 x 3.5			1635030350	180	21	72.0	22.93	19.46	25.4	28.22	28.57	D15	-
M33 x 3.5		D16	1635033350	200	24	80.0	28.14	21.11	27.0	31.22	31.57	D16	-
M36 x 4.0			1635036411	200	24	80.0	31.31	23.50	28.6	33.96	34.37	D17	-
M42 x 4.5		D17	1635042451	220	27	88.0	36.32	27.23	31.8	39.71	40.16	D17	-
M45 x 4.5			1635045451	220	27	88.0	38.58	28.93	31.8	42.71	43.16	D17	-

Packed: 1 pc.
Available V coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16350	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25		

*For Stainless Steel, please use non-water-soluble coolant.

good best

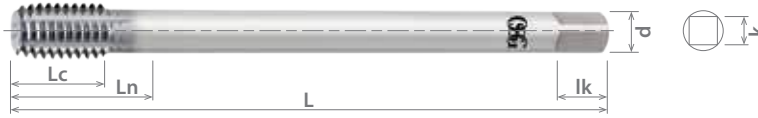




List 16255

HSS-Co **V**

LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	EDP Number		Long Overall Length	Thread Length		Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
			V	L		Lc	Ln					Min	Max	2B	3B
5 - 40 UNC	2.5P	H5	1625554025	3.15	0.312	0.722	0.141	0.110	0.189	0.1123	0.1148	H5	H3		
			1625554255	4.72										0.1134	0.1157
5 - 44 UNF			1625554425	3.15	0.391	0.805				0.1221	0.1252				
6 - 32 UNC			1625554205	4.72										0.1253	0.1278
6 - 40 UNF			1625563225	3.15	0.388	0.801				0.1481	0.1512				
8 - 32 UNC			1625564255	4.72										0.393	0.846
8 - 36 UNF			1625583225	3.15	0.389	0.841				0.1688	0.1729				
10 - 24 UNC			1625583255	4.72										0.520	0.965
10 - 32 UNF			1625510226	3.94	0.194	0.152				0.1948	0.1989				
12 - 24 UNC			1625510426	5.91										0.516	0.961
12 - 28 UNF		1625510326	3.94	0.220	0.165	0.2245	0.2295								
1/4 - 20 UNC		1625512227	3.94					0.522	1.124	0.2318	0.2354				
1/4 - 28 UNF		1625512427	5.91	0.519	1.121	0.2842	0.2898								
5/16 - 18 UNC		1625512827	3.94					0.555	1.378	0.2912	0.2955				
5/16 - 24 UNF		1625512257	5.91	0.626	1.575	0.3431	0.3495								
3/8 - 16 UNC		1625514226	3.94					0.713	1.713	0.4011	0.4084				
3/8 - 24 UNF		1625514026	5.91	0.768	1.933	0.4120	0.4171								
7/16 - 14 UNC		1625514826	3.94					0.768	1.933	0.4608	0.4686				
7/16 - 20 UNF		1625514256	5.91	0.768	1.933	0.4608	0.4686								
1/2 - 13 UNC		1625511127	4.33					0.713	1.713	0.4608	0.4686				
	1625556127	5.91	0.713	1.713	0.4608	0.4686									
	1625551227	4.33					0.713	1.713	0.4608	0.4686					
	1625551427	5.91	0.713	1.713	0.4608	0.4686									
	1625538127	4.72					0.713	1.713	0.4608	0.4686					
	1625538627	5.91	0.713	1.713	0.4608	0.4686									
	1625538227	4.72					0.713	1.713	0.4608	0.4686					
	1625538427	5.91	0.713	1.713	0.4608	0.4686									
	1625571128	4.72					0.713	1.713	0.4608	0.4686					
	1625576128	5.91	0.713	1.713	0.4608	0.4686									
	1625571228	4.72					0.713	1.713	0.4608	0.4686					
	1625576228	5.91	0.713	1.713	0.4608	0.4686									
	1625512128	5.91					0.768	1.933	0.4608	0.4686					
	1625512328	7.09	0.768	1.933	0.4608	0.4686									

Packed: 1 pc.
Available V coating only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16255	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25		

*For Stainless Steel, please use non-water-soluble coolant.

good best



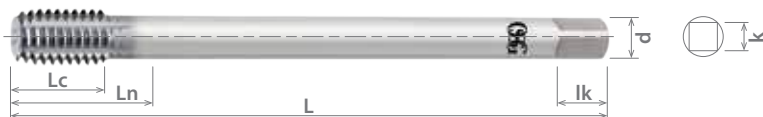


List 16255 (Continued)

HSS-Co

V

LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	EDP Number		Long Overall Length		Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
			V	L	Lc	Ln						d	k	lk	Min
1/2 - 20 UNF		H8	1625512228	5.91	0.768	1.933						0.4745	0.4796	H8	H5
			1625512028	7.09											
9/16 - 12 UNC			1625591127	5.91	0.835	1.972						0.5200	0.5285		
			1625591227	7.09											
9/16 - 18 UNF			1625591827	5.91	1.000	2.433						0.5342	0.5398		
			1625596827	7.09											
5/8 - 11 UNC			1625558127	5.91	0.909	2.126						0.5787	0.5879	H10	H7
			1625558257	7.09											
5/8 - 18 UNF			1625558827	5.91	1.110	2.654						0.5967	0.6023		
			1625551827	7.09											
3/4 - 10 UNC			1625534127	7.09	1.252	3.012						0.6990	0.7092		
			1625534027	8.66											
3/4 - 16 UNF			1625534627	7.09	1.252	3.012						0.7181	0.7245		
			1625531627	8.66											
7/8 - 9 UNC			1625579828	7.09	1.110	2.654						0.8183	0.8297		
			1625575258	8.66											
7/8 - 14 UNF			1625578128	7.09	1.252	3.012						0.8386	0.8459		
			1625578428	8.66											
1 - 8 UNC			1625518208	7.09	1.252	3.012						0.9363	0.9490		
			1625518258	8.66											
1 - 12 UNF			1625511428	7.09	1.252	3.012						0.9575	0.9660		
			1625514208	8.66											

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
16255	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25				

*For Stainless Steel, please use non-water-soluble coolant.

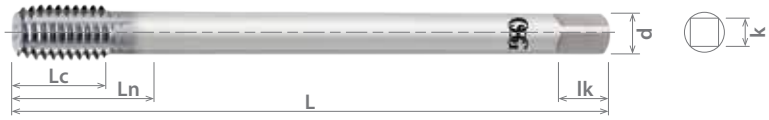
good best



List 16355

HSS-Co  V














LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	EDP Number	Long Overall Length		Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit				
				V	L						Lc	Ln	d	k	lk	Min	Max
M3 x 0.5	2.5P	D5	1635530525	80	6	18.1	3.58	2.70	4.8	6.4	2.75	2.80	D5	D3			
			1635535025	120											2.83	2.89	
M3 x 0.35			1635530325	80													
			1635533525	120													
M3.5 x 0.6		D6	1635535226	80	7	20.3	4.26	3.30	6.4	3.19	3.26	D6	D4				
			1635540726	80												3.64	3.71
M4 x 0.7			1635547256	120	8	21.2	4.92	3.80	7.3	3.75	3.80						
M4 x 0.5			1635540526	80												4.13	4.19
			1635545256	120												4.59	4.67
M4.5 x 0.75			1635545726	90						9	25.2			6.47	4.80	7.3	4.75
		1635545526	120					5.49	5.59								
M5 x 0.8		D7	1635550827	100	10	30.4	8.07	6.00	9.5	5.62	5.69	D7	D4				
		1635550257	150												7.36	7.49	
M5 x 0.5		D5	1635550525	100	9	30.0	9.32	6.90	11.1	7.49	7.59	D5	D3				
		1635550255	150												7.62	7.69	
M6 x 1.0		D8	1635561028	100	10	39.0	9.67	7.20	11.1	9.24	9.39	D8	D5				
		1635561258	150												9.36	9.49	
M6 x 0.75		D7	1635560727	100	12	35.0	9.32	6.90	11.1	9.49	9.59	D7	D4				
		1635567527	150												11.11	11.23	
M7 x 1.0		D8	1635571258	100	15	35.0	9.32	6.90	11.1	11.24	11.39	D8	D6				
		1635571028	150														
M8 x 1.25		D9	1635581229	110	17	49.1	9.32	6.90	11.1	11.24	11.39	D9	D5				
		1635582529	150														
M8 x 1.0		D8	1635581258	110	17	49.1	9.32	6.90	11.1	11.24	11.39	D8	D4				
	1635581028	150															
M8 x 0.75	D7	1635580727	110	17	49.1	9.32	6.90	11.1	11.24	11.39	D7	D4					
	1635587527	150															
M10 x 1.5	D10	1635510120	120	15	39.0	9.67	7.20	11.1	9.24	9.39	D10	D6					
	1635510520	150															
M10 x 1.25	D9	1635510129	120	15	39.0	9.67	7.20	11.1	9.36	9.49	D9	D5					
	1635510229	150															
M10 x 1.0	D8	1635510128	120	15	39.0	9.67	7.20	11.1	9.49	9.59	D8	D5					
	1635510258	150															
M12 x 1.75	D11	1635512721	180	17	49.1	9.32	6.90	11.1	11.11	11.23	D11	D6					
		1635512751	180														
M12 x 1.5		1635512121	150														
		1635512251	180														

Packed: 1 pc.
Available V coating only.

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List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16355																	
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25		

*For Stainless Steel, please use non-water-soluble coolant.

 good  best



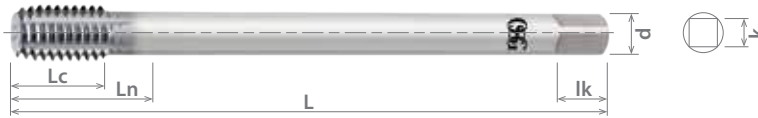


List 16355 (Continued)

HSS-Co

V

LT-S-XPF, Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	EDP Number		Long Overall Length		Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
			V	L	Lc	Ln	d	k	lk	Min	Max	2B	3B		
M12 x 1.25	2.5P	D10	1635512520	150	17	49.1	9.32	6.90	11.1	11.41	11.49	D10	D6		
			1635512250	180											
M12 x 1.0			1635512120	150											
			1635512210	180											
M14 x 2.0		D12	1635514222	150	20	51.1	10.89	8.10	12.7	12.98	13.18	D11	D7		
			1635514252	180											
M14 x 1.5		D11	1635514121	150	20	54.0	12.19	9.10	14.3	14.98	15.18	D12	D7		
			1635514521	180											
M16 x 2.0		D12	1635516222	150	25	55.0	13.76	10.30	15.9	16.73	16.98	D12	D7		
			1635516252	180											
M16 x 1.5		D11	1635516121	150	25	61.8	16.56	12.40	17.5	17.24	17.39	D11	D6		
			1635516521	180											
M18 x 2.5		D12	1635518252	150	25	61.8	16.56	12.40	17.5	18.73	18.98	D12	D7		
			1635518552	180											
M18 x 1.5		D11	1635518121	150	25	61.8	16.56	12.40	17.5	19.24	19.39	D11	D6		
			1635518521	180											
M20 x 2.5	D12	1635520252	220	25	61.8	16.56	12.40	17.5	19.24	19.39	D11	D6			
		1635520222	220												
M20 x 1.5	D11	1635520121	180	25	61.8	16.56	12.40	17.5	19.24	19.39	D11	D6			
		1635520521	220												

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			Cast Iron	N		Nickel Alloy	Titanium	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum				Inconel	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting				6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
16355	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	8-25			

*For Stainless Steel, please use non-water-soluble coolant.

good best

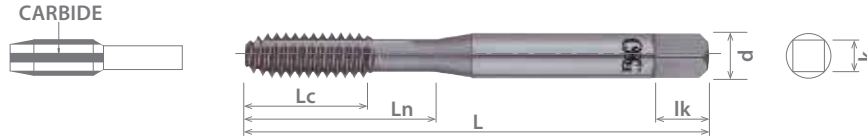




List 14153

CARBIDE
BR

OTC-NRT, JIS, Carbide Inlaid, DIN/DIN, Bottom (1.5P - 2P)



Tap Size	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		Bottom (1.5P-2P)						
		Bright	L	Lc	Ln	d	k	lk
M6 x 1.0	RH7	1415310100	80	12	30	6	4.9	8
M8 x 1.25		1415310200	90	15	35	8	6.2	9
M10 x 1.5		1415310400	100	18	39	10	8.0	11
M10 x 1.25		1415310300						

Packed: 1 pc.
Available Bright finish only.
See page 674 for tap drill recommendations.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
14153	1010	1035	1065	4140														
SFM	1018	1045		4340						65-150	50-120							

good best

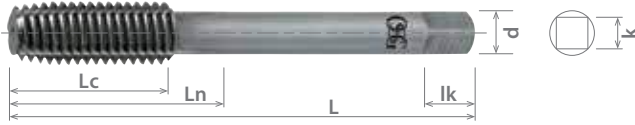




List 369

CARBIDE BR

OT-NRT, JIS, Plug (4P - 4.5P), Bottom (1.5P - 2P)



Tap Size	Thread Limit	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
		Plug	Bottom							
		Bright	Bright							
M3 x 0.5	RH5	8315054	-	46	12	20.2	4.0	3.2	6	
		-	8315055		10	18.8				
M4 x 0.7	RH6	8315060	-	52	14	22.7	5.0	4.0	7	
M5 x 0.8		-	8315061		13	21.0				
		8315066	-	8315067	18	26.1				
M6 x 1.0	RH7	-	8315072	62	19	29.0	6.0	5.0	8	
M8 x 1.25		8315084	8315085	70	22	-	6.2			
M10 x 1.5		8315096	8315097	75	24	-	7.0	5.5		
M10x 1.25	8315102	8315103	-			-				
M12 x 1.75	RH8	8315114	8315115	82	29	-	8.5	6.5	9	
M12 x 1.5	RH7	8315120	8315121			-				-
M12 x 1.25		8315126	8315127			-				-

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 See page 674 for tap drill recommendations.



Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
369	1010	1035	1065	4140															
SFM	1018	1045	1065	4340						65-150	50-120								

good best

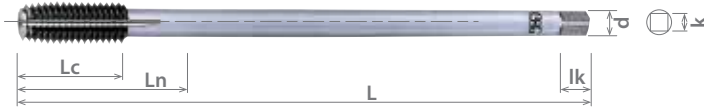




List 357

CARBIDE BR

OT-LT-NRT, JIS, Long Shank, Bottom (1.5P - 2P)



Tap Size	Thread Limit	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		Bottom (1.5P-2P)						
		Bright	L	Lc	Ln	d	k	lk
M6 x 1.0	RH7	8315633	100	19	29	6.0	4.5	7
M8 x 1.25		8315639		22	-	6.2	5.0	
M10 x 1.5		8315645		24	-	7.0	5.5	8
M10 x 1.25		8315649		-	-			
M12 x 1.75	RH8	8315653	150	-	-	8.5	6.5	9
M12 x 1.5	RH7	8315657		29	-			
M12 x 1.25	RH8	8315661		-	-			

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 See page 674 for tap drill recommendations.



Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
357	1010	1035	1065	4140															
SFM	1018	1045		4340						65-150	50-120								

good best



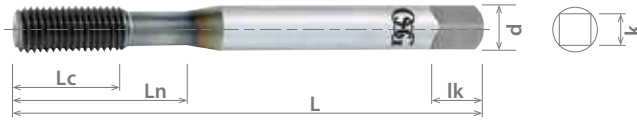


VC10

V

List 14050

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit												
										V	L	Lc	Ln	d	k	lk	Min	Max	2B	3B				
0 - 80 UNF	1.5P	H2	1405000008	1.62	0.319	0.358	0.141	0.110	0.189	0.0536	0.0549	H3	H2											
		H3	1405000108																					
	2.5P	H2	1405000208																					
		H3	1405000308																					
1 - 64 UNC	1.5P	H2	1405000408	1.68	0.388	0.427				0.141	0.110			0.189	0.0650	0.0666	H3	H2						
		H3	1405000508																					
	2.5P	H2	1405000608																					
		H3	1405000708																					
2 - 56 UNC	1.5P	H2	1405000808	1.75	0.451	0.491						0.141	0.110		0.189	0.0769			0.0787	H3	H2			
		H3	1405000908																					
	2.5P	H2	1405001008																					
		H3	1405001108																					
3 - 48 UNC	1.5P	H2	1405001208	1.81	0.448	0.487										0.141	0.110	0.189	0.0884			0.0905	H3	H2
		H3	1405001308																					
	2.5P	H2	1405001408																					
		H3	1405001508																					
4 - 40 UNC	1.5P	H3	1405001608	1.87	0.515	0.555	0.141	0.110	0.189										0.0993	0.1018	H5	H3		
		H4	1405001708																					
	2.5P	H2	1405001808																					
		H3	1405001908																					
5 - 40 UNC	1.5P	H3	1405002008	1.93	0.317	0.581				0.141	0.110			0.189					0.1123	0.1148			H5	H3
		H4	1405002108																					
	2.5P	H3	1405002208																					
		H4	1405002308																					
6 - 32 UNC	1.5P	H3	1405002408	2.00	0.313	0.577						0.141	0.110		0.189				0.1221	0.1253	H5	H3		
		H4	1405002508																					
	2.5P	H3	1405002608																					
		H4	1405002708																					
8 - 32 UNC	1.5P	H5	1405002808	2.12	0.318	0.645										0.168	0.131	0.252	0.1481	0.1513			H5	H3
		H3	1405002908																					
	2.5P	H3	1405003008																					
		H4	1405003108																					
8 - 32 UNC	1.5P	H3	1405003208	2.00	0.398	0.713	0.168	0.131	0.252										0.1221	0.1253	H5	H3		
		H4	1405003308																					
	2.5P	H3	1405003408																					
		H4	1405003508																					
8 - 32 UNC	1.5P	H3	1405003608	2.12	0.393	0.708				0.168	0.131			0.252					0.1481	0.1513			H5	H3
		H4	1405003708																					
	2.5P	H3	1405003808																					
		H4	1405003908																					
8 - 32 UNC	1.5P	H3	1405004008	2.12	0.400	0.778						0.168	0.131		0.252				0.1481	0.1513	H5	H3		
		H4	1405004108																					
	2.5P	H3	1405004208																					
		H4	1405004308																					
8 - 32 UNC	1.5P	H5	1405004408	2.12	0.395	0.773										0.168	0.131	0.252	0.1481	0.1513			H5	H3
		H3	1405004508																					
	2.5P	H4	1405004608																					
		H5	1405004708																					

Packed: 1 pc.
Available V coating only.





List 14050 (Continued)

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



VC10	V
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Tap Size	Lead	Thread Limit	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit			
										V	L	Lc	Ln	d	k
10 - 24 UNC	1.5P	H3	1405004808	2.37	0.531	0.905	0.194	0.152	0.252	0.1688	0.1730	H6	H4		
		H4	1405004908												
		H5	1405005008												
	H6	1405005108													
	2.5P	H3	1405005208												
		H4	1405005308												
H5		1405005408													
10 - 32 UNF	1.5P	H3	1405005608		0.516	0.890				0.511	0.885	0.1741	0.1773	H6	H4
		H4	1405005708												
		H5	1405005808												
	2.5P	H6	1405005908												
		H3	1405006008												
		H4	1405006108												
12 - 24 UNC	1.5P	H5	1405006408	2.50	0.636	1.038	0.255	0.191	0.311	0.2245	0.2296	H6	H4		
		H7	1405006508												
		H5	1405006608												
	2.5P	H7	1405006708												
		H5	1405006808												
		H6	1405006908												
1/4 - 20 UNC	1.5P	H7	1405007008	0.628	1.030	0.616	1.017	0.2318	0.2354	H6	H4				
		H8	1405007108												
		H5	1405007208												
	2.5P	H6	1405007308												
		H7	1405007408												
		H8	1405007508												
1/4 - 28 UNF	1.5P	H4	1405007608	2.72	0.665	1.126	0.318	0.238	0.374	0.2842	0.2898	H7	H5		
		H5	1405007708												
		H6	1405007808												
	2.5P	H7	1405007908												
		H4	1405008008												
		H5	1405008108												
5/16 - 18 UNC	1.5P	H6	1405008208	H7	1405008308	H8	1405008408	H9	1405008508	H7	1405008608	H8	1405008708	H9	1405008808

Packed: 1 pc.
Available V coating only.

continued on next page

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
14050	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>				
SFM	35-130	20-50	15-30	15-30	15-20	15-50	15-50	15-40		65-150	65-130			10-15				

good best





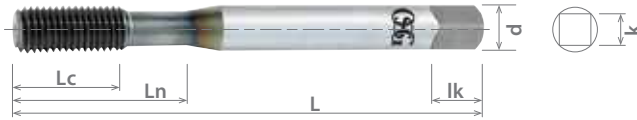
List 14050 (Continued)

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



VC10

V



Tap Size	Lead	Thread Limit	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
										V	L	Lc	Ln
5/16 - 18 UNC	2.5P	H5	1405008908	2.72	0.665	1.126	0.318	0.238	0.374	0.2842	0.2898	H7	H5
		H6	1405009008										
		H7	1405009108										
		H8	1405009208										
		H9	1405009308										
5/16 - 24 UNF	1.5P	H4	1405009408										
		H5	1405009508										
		H6	1405009608										
		H7	1405009708										
	2.5P	H8	1405009808										
		H4	1405009908										
		H5	1405010008										
		H6	1405010108										
3/8 - 16 UNC	1.5P	H7	1405010608										
		H8	1405010708										
		H9	1405010808										
		H5	1405010908										
		H6	1405011008										
	2.5P	H7	1405011108										
		H8	1405011208										
		H9	1405011308										
		H4	1405011408										
3/8 - 24 UNF	1.5P	H5	1405011508										
		H6	1405011608										
		H7	1405011708										
		H8	1405011808										
		H4	1405011908										
		H5	1405012008										
	2.5P	H6	1405012108										
		H7	1405012208										
		H8	1405012308										
		H4	1405011908										
		H5	1405012008										
		H6	1405012108										

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14050	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>				
SFM	35-130	20-50	15-30	15-30	15-20	15-50	15-50	15-40		65-150	65-130		10-15				

good best



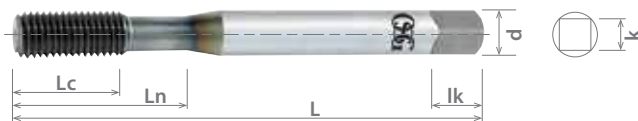


List 14150

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



VC10	V
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Tap Size	Lead	Thread Limit	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit																										
										V	L	Lc	Ln	d	k	lk	Min	Max	2B	3B																		
M1.6 x 0.35	2.5P	D3	141500008	41	8	9.0	3.58	2.79	4.8	1.42	1.46	D5	D3																									
		D5	1415000108																																			
M1.7 x 0.35	2.5P	D3	1415000208	42	9	10.7				3.58	2.79			4.8	1.52	1.56	D5	D3																				
		D5	1415000308																																			
M2 x 0.4	2.5P	D3	1415000408	44	11	12.3									3.58	2.79			4.8	1.80	1.84	D5	D3															
		D5	1415000508																																			
M2.5 x 0.45	2.5P	D3	1415000608	46	13	14.0														3.58	2.79			4.8	2.27	2.32	D5	D3										
		D5	1415000708																																			
M2.6 x 0.45	2.5P	D3	1415000808	47	13	13.9																			3.58	2.79			4.8	2.37	2.42	D5	D3					
		D5	1415000908																																			
M3 x 0.5	1.5P	D3	1415001008	49	6	16.2						3.58	2.79																	4.8	2.75			2.80	D5	D3		
		D5	1415001108																																			
	2.5P	D3	1415001208																																			
		D5	1415001308																																			
M3.5 x 0.6	1.5P	D4	1415001408	50	8	17.9											3.58	2.79				4.8	3.19								3.26			D6			D4	
		D6	1415001508			17.8																																
	2.5P	D4	1415001608																																			
		D6	1415001708																																			
M4 x 0.7	1.5P	D4	1415001808	54	8	19.6																	3.58				2.79	4.8			3.64	3.71	D6					D4
		D6	1415001908			19.5																																
	2.5P	D4	1415002008																																			
		D6	1415002108																																			
M5 x 0.8	1.5P	D4	1415002208	60	10	22.8	3.58	2.79	4.8	4.59	4.67			D7																	D4							
		D7	1415002308			22.6																																
	2.5P	D4	1415002408																																			
		D7	1415002508																																			
M6 x 1.0	1.5P	D5	1415002608	63	12	26.1				3.58	2.79				4.8	5.49			5.59	D8	D5																	
		D8	1415002708			26.0																																
	2.5P	D5	1415002808																																			
		D8	1415002908																																			
M8 x 1.25	1.5P	D5	1415003008	69	15	28.6						3.58	2.79			4.8			7.36					7.49	D9	D5												
		D9	1415003108																																			
	2.5P	D5	1415003208																																			
		D9	1415003308																																			
M10 x 1.5	1.5P	D6	1415003808	74	18	31.8								3.58			2.79	4.8	9.24			9.39		D10					D6									
		D10	1415003908																																			
	2.5P	D6	1415004008																																			
		D10	1415004108																																			

Packed: 1 pc.
Available V coating only.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
SFM	35-130	20-50	15-30	15-30	15-20	15-50	15-50	15-40		65-150	65-130			10-15			

good best





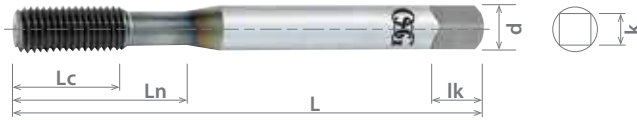
List 14150 (Continued)

VP-NRT, Bottom (2P-2.5P), Short Bottom (1P-1.5P)



VC10

V



Tap Size	Lead	Thread Limit	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
										V	L	Lc	Ln
M10 x 1.25	1.5P	D5	1415004608	74	18	31.8	9.67	7.26	11.0	9.36	9.49	D9	D5
		D9	1415004708										
	2.5P	D5	1415004808										
		D9	1415004908										
M10 x 1.0	1.5P	D5	1415003408	85	21	49.0	9.32	6.98		9.49	9.59	D11	D6
		D9	1415003508										
	2.5P	D5	1415003608										
		D9	1415003708										
M12 x 1.75	1.5P	D6	1415004208	85	21	49.0	9.32	6.98	11.11	11.29	D11	D6	
		D11	1415004308										
	2.5P	D6	1415004408										
		D11	1415004508										

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14150	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>				
SFM	35-130	20-50	15-30	15-30	15-20	15-50	15-50	15-40		65-150	65-130		10-15				

good best



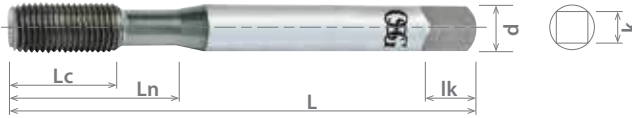


List 14001



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
0 - 80 UNF	1.5P	H2	14001000	00	01	05	08	1.62	0.319	0.359	0.141	0.110	0.189	0.0536	0.0549	H3	H2
		H3	14001001	00	01	05	08										
		H2	14001002	00	01	05	08										
	2.5P	H3	14001003	00	01	05	08										
		H4	14001004	00	01	05	08										
		H5	14001005	00	01	05	08										
		H6	14001006	00	01	-	08										
1 - 64 UNC	2.5P	H7	14001007	00	01	-	08										
		H2	14001008	00	01	05	08										
		H3	14001009	00	01	05	08										
		H4	14001010	00	01	05	08										
		H5	14001011	00	01	05	08										
1 - 72 UNF	1.5P	H6	14001012	00	01	-	08	1.68	0.374	0.413	0.141	0.110	0.189	0.0659	0.0673	H3	H2
		H7	14001013	00	01	-	08										
		H2	14001014	00	01	05	08										
	2.5P	H3	14001015	00	01	05	08										
		H2	14001016	00	01	05	08										
		H3	14001017	00	01	05	08										
		H4	14001018	00	01	05	08										
2 - 56 UNC	1.5P	H5	14001019	00	01	05	08	1.75	0.437	0.476	0.141	0.110	0.189	0.0769	0.0787	H3	H2
		H6	14001020	00	01	05	08										
		H7	14001021	00	01	-	08										
	2.5P	H2	14001022	00	01	05	08										
		H3	14001023	00	01	05	08										
		H4	14001024	00	01	05	08										
		H2	14001025	00	01	05	08										
		H3	14001026	00	01	05	08										
		H4	14001027	00	01	05	08										
2 - 64 UNF	2.5P	H5	14001028	00	01	05	08										
		H6	14001029	00	01	05	08										
		H7	14001030	00	01	05	08										
		H8	14001578	-	-	-	08										
		H9	14001579	-	-	-	08										
		H2	14001031	00	01	05	08										
2 - 64 UNF	2.5P	H3	14001032	00	01	05	08	1.75	0.437	0.476	0.141	0.110	0.189	0.0780	0.0796	H3	H2
		H4	14001033	00	01	05	08										
		H5	14001034	00	01	-	08										
		H6	14001035	00	01	-	08										
		H7	14001036	00	01	-	08										

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

Work Material																	
List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

good best



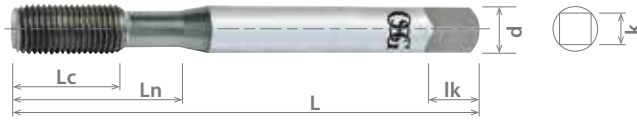


List 14001 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
3 - 48 UNC	2.5P	H2	14001037	00	01	05	08	1.81	0.500	0.539				0.0884	0.0905		
		H3	14001038	00	01	05	08										
		H4	14001039	00	01	05	08										
		H5	14001040	00	01	-	08										
		H6	14001041	00	01	-	08										
H7	14001042	00	01	-	08												
3 - 56 UNF	2.5P	H2	14001043	00	01	05	08	1.81	0.508	0.547				0.0899	0.0917	H3	H2
		H3	14001044	00	01	05	08										
		H4	14001045	00	01	05	08										
		H5	14001046	00	01	05	08										
		H6	14001047	00	01	05	08										
H7	14001048	00	01	-	08												
4 - 40 UNC	1.5P	H3	14001049	00	01	05	08	1.87	0.299	0.563	0.141	0.110	0.189	0.0993	0.1018		
		H4	14001050	00	01	05	08										
		H5	14001051	00	01	05	08										
		H6	14001573	00	01	05	08										
		H7	14001574	00	01	05	08										
	2.5P	H2	14001052	00	01	05	08										
		H3	14001053	00	01	05	08										
		H4	14001054	00	01	05	08										
		H5	14001055	00	01	05	08										
		H6	14001056	00	01	05	08										
	H7	14001057	00	01	05	08											
	H8	14001580	-	-	-	08											
	H9	14001581	-	-	-	08											
	H10	14001582	-	-	-	08											
H14	14001598	-	-	-	08												
4.5P	H2	14001058	00	01	05	08											
	H3	14001059	00	01	05	08											
	H4	14001060	00	01	05	08											
	H5	14001061	00	01	05	08											
	H6	14001062	00	01	05	08											
H7	14001063	00	01	05	08												
4 - 48 UNF	2.5P	H2	14001064	00	01	05	08	1.93	0.314	0.641				0.1014	0.1035		
		H3	14001065	00	01	05	08										
		H4	14001066	00	01	05	08										
		H5	14001067	00	01	05	08										
		H6	14001068	00	01	-	08										
	H7	14001069	00	01	-	08											
	4.5P	H2	14001070	00	01	05	08										
H3		14001071	00	01	05	08											
5 - 40 UNC	2.5P	H4	14001072	00	01	-	08	1.93	0.314	0.641				0.1123	0.1148		
		H5	14001073	00	01	-	08										
		H6	14001074	00	01	-	08										
		H7	14001075	00	01	-	08										
		H2	14001076	00	01	-	08										
H3	14001077	00	01	05	08												
H4	14001078	00	01	-	08												
H5	14001079	00	01	05	08												
H6	14001080	00	01	05	08												

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
5 - 40 UNC	2.5P	H7	14001081	00	01	05	08	1.93	0.314	0.641	0.141	0.110	0.189	0.1123	0.1148	H5	H3
		H2	14001082	00	01	05	08										
	4.5P	H3	14001083	00	01	05	08		0.350	0.677							
		H4	14001084	00	01	05	08										
		H5	14001085	00	01	05	08										
		H6	14001086	00	01	05	08										
		H7	14001087	00	01	05	08										
5 - 44 UNF	2.5P	H2	14001088	00	01	05	08	2.00	0.311	0.638	0.1221	0.1253					
		H3	14001089	00	01	05	08										
		H4	14001090	00	01	05	08										
		H5	14001091	00	01	05	08										
		H6	14001092	00	01	05	08										
		H7	14001093	00	01	05	08										
		4.5P	H2	14001094	00	01	05						08	0.350	0.677		
	H3		14001095	00	01	05	08										
	H4		14001096	00	01	05	08										
	H5		14001097	00	01	05	08										
	H6		14001098	00	01	05	08										
	H7		14001099	00	01	05	08										
	6 - 32 UNC		1.5P	H3	14001100	00	01		05	08			0.398			0.713	0.429
		H4		14001101	00	01	05		08								
H5		14001102		00	01	05	08										
H6		14001575		00	01	-	-										
H7		14001576		00	01	-	-										
H8		14001577		00	01	-	-										
2.5P		H2	14001103	00	01	05	08	0.393	0.708								
		H3	14001104	00	01	05	08										
		H4	14001105	00	01	05	08										
		H5	14001106	00	01	05	08										
		H6	14001107	00	01	05	08										
		H7	14001108	00	01	05	08										
		H8	14001109	00	01	05	08										
		H9	14001110	00	01	05	08										
		H10	14001111	00	01	05	08										
		H11	14001583	-	-	-	08										
		H12	14001584	-	-	-	08										
		H14	14001599	-	-	-	08										
		4.5P	H2	14001112	00	01	05			08	0.429	0.744					
			H3	14001113	00	01	05			08							
			H4	14001114	00	01	05			08							
H5	14001115		00	01	05	08											
H6	14001116		00	01	05	08											
H7	14001117		00	01	05	08											
H8	14001118		00	01	05	08											
H9	14001119		00	01	05	08											

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page **HYT**

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>				
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100		10-15				

good best

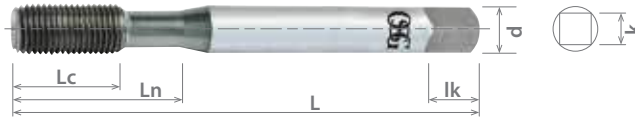




List 14001 (Continued)



NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit		
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B	
6 - 32 UNC	4.5P	H10	14001120	00	01	05	08	2.00	0.429	0.744	0.141	0.110	0.189	0.1221	0.1253	H5	H3	
		H2	14001121	00	01	05	08											
		H3	14001122	00	01	05	08											
		H4	14001123	00	01	05	08											
		H5	14001124	00	01	05	08											
		H6	14001125	00	01	05	08											
		H7	14001126	00	01	05	08											
		H8	14001127	00	01	05	08											
		H9	14001128	00	01	05	08											
		H10	14001129	00	01	05	08											
	6 - 40 UNF	4.5P	H2	14001130	00	01	05	08	2.00	0.429	0.744	0.141	0.110	0.189	0.1253			0.1278
			H3	14001131	00	01	05	08										
			H4	14001132	00	01	05	08										
			H5	14001133	00	01	05	08										
			H6	14001134	00	01	05	08										
			H7	14001135	00	01	05	08										
			H8	14001136	00	01	05	08										
			H9	14001137	00	01	05	08										
			H10	14001138	00	01	05	08										
			8 - 32 UNC	1.5P	H3	14001139	00	01										
H4	14001140	00			01	05	08											
H5	14001141	00			01	05	08											
H2	14001142	00			01	05	08											
H3	14001143	00			01	05	08											
H4	14001144	00			01	05	08											
2.5P	H5	14001145		00	01	05	08	0.395	0.773									
	H6	14001146		00	01	05	08											
	H7	14001147		00	01	05	08											
	H8	14001148		00	01	05	08											
	H9	14001149		00	01	05	08											
	H10	14001150		00	01	05	08											
	H11	14001585		-	-	-	08											
	H12	14001586		-	-	-	08											
4.5P	H14	14001600		-	-	-	08	0.445	0.823									
	H2	14001151		00	01	05	08											
	H3	14001152		00	01	05	08											
	H4	14001153		00	01	05	08											
	H5	14001154		00	01	05	08											
	H6	14001155		00	01	05	08											
8 - 36 UNF	2.5P	H7	14001156	00	01	05	08	0.391	0.769	0.1498	0.1527							
		H8	14001157	00	01	05	08											
		H9	14001158	00	01	05	08											
		H10	14001159	00	01	05	08											
		H2	14001160	00	01	05	08											
		H3	14001161	00	01	05	08											
		H4	14001162	00	01	05	08											
		H5	14001163	00	01	05	08											
H6	14001164	00	01	05	08													
H7	14001165	00	01	05	08													
H8	14001166	00	01	05	08													

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							L	Lc	Ln	d
8 - 36 UNF	2.5P	H9	14001167	00	01	05	08	2.12	0.391	0.769	0.168	0.131	0.252	0.1498	0.1527	H5	H3
		H10	14001168	00	01	05	08										
	4.5P	H2	14001169	00	01	05	08										
		H3	14001170	00	01	05	08										
		H4	14001171	00	01	05	08										
		H5	14001172	00	01	05	08										
		H6	14001173	00	01	05	08										
		H7	14001174	00	01	05	08										
		H8	14001175	00	01	05	08										
		H9	14001176	00	01	05	08										
H10	14001177	00	01	05	08												
10 - 24 UNC	1.5P	H3	14001178	00	01	05	08	2.37	0.531	0.905	0.194	0.152	0.252	0.1688	0.1730	H6	H4
		H4	14001179	00	01	05	08										
		H5	14001180	00	01	05	08										
		H6	14001571	00	01	05	08										
	2.5P	H2	14001181	00	01	05	08										
		H3	14001182	00	01	05	08										
		H4	14001183	00	01	05	08										
		H5	14001184	00	01	05	08										
		H6	14001185	00	01	05	08										
		H7	14001186	00	01	05	08										
		H8	14001187	00	01	05	08										
		H9	14001188	00	01	05	08										
		H10	14001189	00	01	05	08										
		4.5P	H2	14001190	00	01	05		08								
	H3		14001191	00	01	05	08										
	H4		14001192	00	01	05	08										
	H5		14001193	00	01	05	08										
	H6		14001194	00	01	05	08										
H7	14001195		00	01	05	08											
H8	14001196		00	01	05	08											
H9	14001197		00	01	05	08											
H10	14001198		00	01	05	08											
10 - 32 UNF	1.5P		H3	14001199	00	01	05	08	2.37	0.516	0.890	0.194	0.152	0.252	0.1741	0.1776	H6
		H4	14001200	00	01	05	08										
		H5	14001201	00	01	05	08										
		H6	14001572	00	01	05	08										
	2.5P	H2	14001202	00	01	05	08										
		H3	14001203	00	01	05	08										
		H4	14001204	00	01	05	08										
		H5	14001205	00	01	05	08										
		H6	14001206	00	01	05	08										
		H7	14001207	00	01	05	08										
		H8	14001208	00	01	05	08										
		H9	14001209	00	01	05	08										

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

Work Material																	
List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

good best

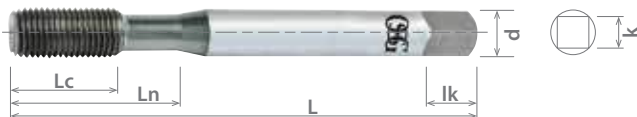




List 14001 (Continued)



NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
10 - 32 UNF	2.5P	H10	14001210	00	01	05	08	2.37	0.511	0.885	0.194	0.152	0.252	0.1741	0.1776	H6	H4
		H11	14001587	-	-	-	08										
		H12	14001588	-	-	-	08										
		H14	14001601	-	-	-	08										
	4.5P	H2	14001211	00	01	05	08										
		H3	14001212	00	01	05	08										
		H4	14001213	00	01	05	08										
		H5	14001214	00	01	05	08										
		H6	14001215	00	01	05	08										
		H7	14001216	00	01	05	08										
12 - 24 UNC	2.5P	H2	14001220	00	01	05	08	2.37	0.526	0.963	0.220	0.165	0.280	0.1948	0.1990	H7	H5
		H3	14001221	00	01	05	08										
		H4	14001222	00	01	05	08										
		H5	14001223	00	01	05	08										
		H6	14001224	00	01	05	08										
		H7	14001225	00	01	05	08										
	4.5P	H8	14001226	00	01	05	08										
		H9	14001227	00	01	05	08										
		H10	14001228	00	01	05	08										
		H2	14001229	00	01	05	08										
12 - 28 UNF	2.5P	H3	14001230	00	01	05	08	2.37	0.518	0.955	0.220	0.165	0.280	0.1978	0.2014	H7	H5
		H4	14001231	00	01	05	08										
		H5	14001232	00	01	05	08										
		H6	14001233	00	01	05	08										
		H7	14001234	00	01	05	08										
		H8	14001235	00	01	05	08										
	4.5P	H9	14001236	00	01	05	08										
		H10	14001237	00	01	05	08										
		H2	14001238	00	01	05	08										
		H3	14001239	00	01	05	08										
1/4 - 20 UNC	2.5P	H4	14001240	00	01	05	08	2.50	0.636	1.038	0.255	0.191	0.287	0.2245	0.2296	H6	H4
		H5	14001241	00	01	05	08										
		H6	14001242	00	01	05	08										
		H7	14001243	00	01	05	08										
		H8	14001244	00	01	05	08										
		H9	14001245	00	01	05	08										
	4.5P	H10	14001246	00	01	05	08										
		H2	14001247	00	01	05	08										
		H3	14001248	00	01	05	08										
		H4	14001249	00	01	05	08										
4.5P	H5	14001250	00	01	05	08											
	H6	14001251	00	01	05	08											
	H7	14001252	00	01	05	08											
	H8	14001253	00	01	05	08											
	H9	14001254	00	01	05	08											
	H10	14001255	00	01	05	08											

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
1/4 - 20 UNC	1.5P	H6	14001257	00	01	05	08	2.50	0.636	1.038	0.255	0.191	0.287	0.2245	0.2296	H6	H4
		H7	14001258	00	01	05	08										
		H8	14001259	00	01	05	08										
	2.5P	H2	14001260	00	01	05	08										
		H3	14001261	00	01	05	08										
		H4	14001262	00	01	05	08										
		H5	14001263	00	01	05	08										
		H6	14001264	00	01	05	08										
		H7	14001265	00	01	05	08										
		H8	14001266	00	01	05	08										
		H9	14001267	00	01	05	08										
		H10	14001268	00	01	05	08										
		H11	14001589	-	-	-	08										
	H12	14001590	-	-	-	08											
	H13	14001591	-	-	-	08											
	4.5P	H2	14001269	00	01	05	08										
		H3	14001270	00	01	05	08										
		H4	14001271	00	01	05	08										
		H5	14001272	00	01	05	08										
		H6	14001273	00	01	05	08										
H7		14001274	00	01	05	08											
H8		14001275	00	01	05	08											
H9		14001276	00	01	05	08											
H10		14001277	00	01	05	08											
1/4 - 28 UNF		1.5P	H4	14001278	00	01	05	08	0.616	1.017	0.255	0.191	0.287	0.2318	0.2354	H6	H4
	H5		14001279	00	01	05	08										
	H6		14001280	00	01	05	08										
	H7		14001281	00	01	05	08										
	2.5P	H2	14001282	00	01	05	08										
		H3	14001283	00	01	05	08										
		H4	14001284	00	01	05	08										
		H5	14001285	00	01	05	08										
		H6	14001286	00	01	05	08										
		H7	14001287	00	01	05	08										
		H8	14001288	00	01	05	08										
		H9	14001289	00	01	05	08										
		H10	14001290	00	01	05	08										
		H11	14001592	-	-	-	08										
	4.5P	H2	14001291	00	01	05	08										
		H3	14001292	00	01	05	08										
		H4	14001293	00	01	05	08										
		H5	14001294	00	01	05	08										
		H6	14001295	00	01	05	08										
		H7	14001296	00	01	05	08										
H8		14001297	00	01	05	08											

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

[continued on next page](#)

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>				
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100		10-15				

good best

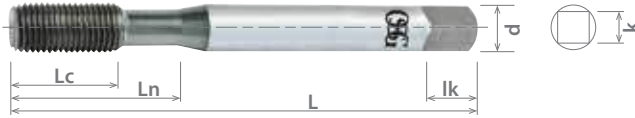




List 14001 (Continued)



NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN	L	Lc	Ln	d	k	lk	Min	Max	2B	3B
1/4 - 28 UNF	4.5P	H9	14001298	00	01	05	08	2.50	0.701	1.102	0.255	0.191	0.287	0.2318	0.2354	H6	H4
		H10	14001299	00	01	05	08										
5/16 - 18 UNC	1.5P	H6	14001300	00	01	05	08	2.72	0.665	1.126	0.318	0.238	0.374	0.2842	0.2898	H7	H5
		H7	14001301	00	01	05	08										
		H8	14001302	00	01	05	08										
		H9	14001303	00	01	05	08										
		H2	14001304	00	01	05	08										
	2.5P	H3	14001305	00	01	05	08										
		H4	14001306	00	01	05	08										
		H5	14001307	00	01	05	08										
		H6	14001308	00	01	05	08										
		H7	14001309	00	01	05	08										
		H8	14001310	00	01	05	08										
	4.5P	H9	14001311	00	01	05	08										
		H10	14001312	00	01	05	08										
		H11	14001593	-	-	-	08										
		H2	14001313	00	01	05	08										
		H3	14001314	00	01	05	08										
		H4	14001315	00	01	05	08										
		H5	14001316	00	01	05	08										
		H6	14001317	00	01	05	08										
		H7	14001318	00	01	05	08										
5/16 - 24 UNF	1.5P	H8	14001319	00	01	05	08										
		H9	14001320	00	01	05	08										
		H10	14001321	00	01	05	08										
		H4	14001322	00	01	05	08										
	2.5P	H5	14001323	00	01	05	08										
		H6	14001324	00	01	05	08										
		H7	14001325	00	01	05	08										
		H8	14001326	00	01	05	08										
		H2	14001327	00	01	05	08										
		H3	14001328	00	01	05	08										
	4.5P	H4	14001329	00	01	05	08										
		H5	14001330	00	01	05	08										
H6		14001331	00	01	05	08											
H7		14001332	00	01	05	08											
H8		14001333	00	01	05	08											
H9		14001334	00	01	05	08											
H10		14001335	00	01	05	08											
H2		14001336	00	01	05	08											
H3	14001337	00	01	05	08												
4.5P	H4	14001338	00	01	05	08											
	H5	14001339	00	01	05	08											
	H6	14001340	00	01	05	08											
	H7	14001341	00	01	05	08											
	H8	14001342	00	01	05	08											
	H9	14001343	00	01	05	08											
H10	14001344	00	01	05	08												
H11	14001594	-	-	-	08												

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit										
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B									
3/8 - 16 UNC	1.5P	H5	14001345	00	01	05	08	2.93	0.752	1.252	0.381	0.286	0.437	0.3431	0.3495	H7	H5									
		H6	14001346	00	01	05	08																			
		H7	14001347	00	01	05	08																			
		H8	14001348	00	01	05	08																			
		H9	14001349	00	01	05	08																			
	2.5P	H4	14001350	00	01	05	08																			
		H5	14001351	00	01	05	08																			
		H6	14001352	00	01	05	08																			
		H7	14001353	00	01	05	08																			
		H8	14001354	00	01	05	08																			
		H9	14001355	00	01	05	08																			
		H10	14001356	00	01	05	08																			
	4.5P	H11	14001357	00	01	05	08																			
		H12	14001358	00	01	05	08																			
		H4	14001359	00	01	05	08																			
		H5	14001360	00	01	05	08																			
		H6	14001361	00	01	05	08																			
		H7	14001362	00	01	05	08																			
		H8	14001363	00	01	05	08																			
	3/8 - 24 UNF	1.5P	H9	14001364	00	01	05							08	2.93			0.752	1.252	0.381	0.286	0.437	0.3538	0.358	H7	H5
			H10	14001365	00	01	05							08												
			H11	14001366	00	01	05							08												
			H12	14001367	00	01	05							08												
			2.5P	H4	14001368	00	01							05												
H5		14001369		00	01	05	08																			
H6		14001370		00	01	05	08																			
H7		14001371		00	01	05	08																			
H8		14001372		00	01	05	08																			
H4		14001373		00	01	05	08																			
H5		14001374		00	01	05	08																			
4.5P		H6	14001375	00	01	05	08																			
		H7	14001376	00	01	05	08																			
		H8	14001377	00	01	05	08																			
		H9	14001378	00	01	05	08																			
		H10	14001379	00	01	05	08																			
		H11	14001380	00	01	05	08																			
		H12	14001381	00	01	05	08																			
4.5P		H4	14001382	00	01	05	08																			
		H5	14001383	00	01	05	08																			
		H6	14001384	00	01	05	08																			
		H7	14001385	00	01	05	08																			
		H8	14001386	00	01	05	08																			
		H9	14001387	00	01	05	08																			
	H10	14001388	00	01	05	08																				
H11	14001389	00	01	05	08																					

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>				
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100		10-15				

good best

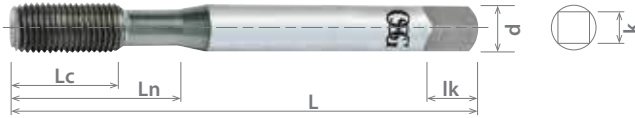




List 14001 (Continued)



NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
3/8 - 24 UNF	4.5P	H12	14001390	00	01	05	08	2.93	0.752	1.252	0.381	0.286	0.437	0.3538	0.358	H7	
		H13	14001595	-	-	-	08										
7/16 - 14 UNC	2.5P	H4	14001391	00	01	05	08	3.15	0.858	1.713	0.323	0.242	0.406	0.4011	0.4084	H8	H5
		H5	14001392	00	01	05	08										
		H6	14001393	00	01	05	08										
		H7	14001394	00	01	05	08										
		H8	14001395	00	01	05	08										
		H9	14001396	00	01	05	08										
	H10	14001397	00	01	05	08											
	H11	14001398	00	01	05	08											
	H12	14001399	00	01	05	08											
	4.5P	H4	14001400	00	01	05	08										
		H5	14001401	00	01	05	08										
		H6	14001402	00	01	05	08										
H7		14001403	00	01	05	08											
H8		14001404	00	01	05	08											
H9		14001405	00	01	05	08											
H10	14001406	00	01	05	08												
H11	14001407	00	01	05	08												
H12	14001408	00	01	05	08												
7/16 - 20 UNF	2.5P	H4	14001409	00	01	05	08										
		H5	14001410	00	01	05	08										
		H6	14001411	00	01	05	08										
		H7	14001412	00	01	05	08										
		H8	14001413	00	01	05	08										
		H9	14001414	00	01	05	08										
	H10	14001415	00	01	05	08											
	H11	14001416	00	01	05	08											
	H12	14001417	00	01	05	08											
	4.5P	H4	14001418	00	01	05	08										
		H5	14001419	00	01	05	08										
		H6	14001420	00	01	05	08										
H7		14001421	00	01	05	08											
H8		14001422	00	01	05	08											
H9		14001423	00	01	05	08											
H10	14001424	00	01	05	08												
H11	14001425	00	01	05	08												
H12	14001426	00	01	05	08												
1/2 - 13 UNC	2.5P	H4	14001427	00	01	05	08	3.37	0.921	1.933	0.367	0.275	0.437	0.4608	0.4686		
		H5	14001428	00	01	05	08										
		H6	14001429	00	01	05	08										
		H7	14001430	00	01	05	08										
		H8	14001431	00	01	05	08										
		H9	14001432	00	01	05	08										
	H10	14001433	00	01	05	08											
	H11	14001434	00	01	05	08											
	H12	14001435	00	01	05	08											
	4.5P	H4	14001436	00	01	05	08										
		H5	14001437	00	01	05	08										
		H6	14001438	00	01	05	08										

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
1/2 - 13 UNC	4.5P	H7	14001439	00	01	05	08							0.4608	0.4686		
		H8	14001440	00	01	05	08										
		H9	14001441	00	01	05	08										
		H10	14001442	00	01	05	08										
		H11	14001443	00	01	05	08										
		H12	14001444	00	01	05	08										
1/2 - 20 UNF	2.5P	H4	14001445	00	01	05	08	3.37	0.921	1.933	0.367	0.275	0.437			H8	H5
		H5	14001446	00	01	05	08										
		H6	14001447	00	01	05	08										
		H7	14001448	00	01	05	08										
		H8	14001449	00	01	05	08										
		H9	14001450	00	01	05	08										
	H10	14001451	00	01	05	08											
	H11	14001452	00	01	05	08											
	H12	14001453	00	01	05	08											
	4.5P	H4	14001454	00	01	05	08										
		H5	14001455	00	01	05	08										
		H6	14001456	00	01	05	08										
		H7	14001457	00	01	05	08										
		H8	14001458	00	01	05	08										
		H9	14001459	00	01	05	08										
	H10	14001460	00	01	05	08											
	H11	14001461	00	01	05	08											
	H12	14001462	00	01	05	08											
H13	14001596	-	-	-	08												
H14	14001597	-	-	-	08												
9/16 - 12 UNC	2.5P	H4	14001463	00	01	05	08	3.59	1.000	1.972	0.429	0.322	0.500	0.5200	0.5285	H10	H7
		H5	14001464	00	01	05	08										
		H6	14001465	00	01	05	08										
		H7	14001466	00	01	05	08										
		H8	14001467	00	01	05	08										
		H9	14001468	00	01	05	08										
	H10	14001469	00	01	05	08											
	H11	14001470	00	01	05	08											
	H12	14001471	00	01	05	08											
	4.5P	H4	14001472	00	01	05	08										
		H5	14001473	00	01	05	08										
		H6	14001474	00	01	05	08										
		H7	14001475	00	01	05	08										
		H8	14001476	00	01	05	08										
		H9	14001477	00	01	05	08										
	H10	14001478	00	01	05	08											
	H11	14001479	00	01	05	08											
	H12	14001480	00	01	05	08											
9/16 - 18 UNF	2.5P	H4	14001481	00	01	05	08							0.5342	0.5398		

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

continued on next page **HYT**

Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340		Stainless Steels				Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

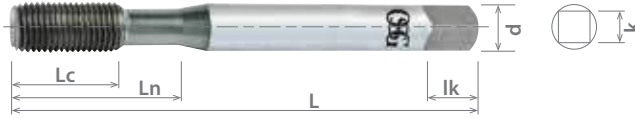
good best





List 14001 (Continued)

NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
9/16 - 18 UNF	2.5P	H5	14001482	00	01	05	08	3.59	1.000	1.972	0.429	0.322	0.500	0.5342	0.5398		
		H6	14001483	00	01	05	08										
		H7	14001484	00	01	05	08										
		H8	14001485	00	01	05	08										
		H9	14001486	00	01	05	08										
		H10	14001487	00	01	05	08										
	H11	14001488	00	01	05	08											
	H12	14001489	00	01	05	08											
	4.5P	H4	14001490	00	01	05	08										
		H5	14001491	00	01	05	08										
		H6	14001492	00	01	05	08										
		H7	14001493	00	01	05	08										
H8		14001494	00	01	05	08											
H9		14001495	00	01	05	08											
H10	14001496	00	01	05	08												
H11	14001497	00	01	05	08												
H12	14001498	00	01	05	08												
5/8 - 11 UNC	2.5P	H4	14001499	00	01	05	08	3.81	1.091	2.126	0.480	0.360	0.563	0.5786	0.5879	H10	H7
		H5	14001500	00	01	05	08										
		H6	14001501	00	01	05	08										
		H7	14001502	00	01	05	08										
		H8	14001503	00	01	05	08										
		H9	14001504	00	01	05	08										
	H10	14001505	00	01	05	08											
	H11	14001506	00	01	05	08											
	H12	14001507	00	01	05	08											
	4.5P	H4	14001508	00	01	05	08										
		H5	14001509	00	01	05	08										
		H6	14001510	00	01	05	08										
H7		14001511	00	01	05	08											
H8		14001512	00	01	05	08											
H9		14001513	00	01	05	08											
H10	14001514	00	01	05	08												
H11	14001515	00	01	05	08												
H12	14001516	00	01	05	08												
5/8 - 18 UNF	2.5P	H4	14001517	00	01	05	08	3.81	1.091	2.126	0.480	0.360	0.563	0.5967	0.6023		
		H5	14001518	00	01	05	08										
		H6	14001519	00	01	05	08										
		H7	14001520	00	01	05	08										
		H8	14001521	00	01	05	08										
		H9	14001522	00	01	05	08										
	H10	14001523	00	01	05	08											
	H11	14001524	00	01	05	08											
	H12	14001525	00	01	05	08											
	4.5P	H4	14001526	00	01	05	08										
		H5	14001527	00	01	05	08										
		H6	14001528	00	01	05	08										
H7		14001529	00	01	05	08											
H8		14001530	00	01	05	08											
H9		14001531	00	01	05	08											

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14001 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	2B	3B
5/8 - 18 UNF	4.5P	H10	14001532	00	01	05	08	3.81	1.091	2.126	0.480	0.360	0.563	0.5967	0.6023		
		H11	14001533	00	01	05	08										
		H12	14001534	00	01	05	08										
3/4 - 10 UNC	2.5P	H6	14001535	00	01	05	08	4.25	1.201	2.433	0.590	0.442	0.689	0.6990	0.7092	H10	H7
		H7	14001536	00	01	05	08										
		H8	14001537	00	01	05	08										
		H9	14001538	00	01	05	08										
		H10	14001539	00	01	05	08										
		H11	14001540	00	01	05	08										
		H12	14001541	00	01	05	08										
	H13	14001542	00	01	05	08											
	H14	14001543	00	01	05	08											
	4.5P	H6	14001544	00	01	05	08										
		H7	14001545	00	01	05	08										
		H8	14001546	00	01	05	08										
		H9	14001547	00	01	05	08										
		H10	14001548	00	01	05	08										
H11		14001549	00	01	05	08											
H12		14001550	00	01	05	08											
H13	14001551	00	01	05	08												
H14	14001552	00	01	05	08												
3/4 - 16 UNF	2.5P	H6	14001553	00	01	05	08	4.25	1.201	2.433	0.590	0.442	0.689	0.7181	0.7245	H10	H7
		H7	14001554	00	01	05	08										
		H8	14001555	00	01	05	08										
		H9	14001556	00	01	05	08										
		H10	14001557	00	01	05	08										
		H11	14001558	00	01	05	08										
		H12	14001559	00	01	05	08										
	H13	14001560	00	01	05	08											
	H14	14001561	00	01	05	08											
	4.5P	H6	14001562	00	01	05	08										
		H7	14001563	00	01	05	08										
		H8	14001564	00	01	05	08										
		H9	14001565	00	01	05	08										
		H10	14001566	00	01	05	08										
H11		14001567	00	01	05	08											
H12		14001568	00	01	05	08											
H13	14001569	00	01	05	08												
H14	14001570	00	01	05	08												

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																	
List No.	P					M			K Cast Iron	N		S Nickel Alloy Inconel	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels				Aluminum			Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14001	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>					
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25					10-15				

good best



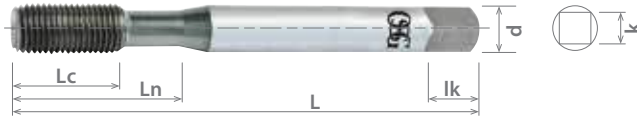


List 14101



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit															
				Bright	S/O	TiN	TiCN							Min	Max	6H	4H														
M1.6 x 0.35	2.5P	D3	14101000	00	01	05	08	41	8	9.0	3.58	2.79	4.8	1.42	1.46	D5	D3														
		D5	14101001	00	01	05	08							1.52	1.56																
M1.7 x 0.35	2.5P	D3	14101002	00	01	05	08	42	9	10.7				46	13			2.27	2.32	13.9	12	16.0									
		D5	14101003	00	01	05	-																2.75	2.80							
M2 x 0.4	1.5P	D3	14101004	00	01	05	08	44	11	12.3				49	6			16.2	2.75	2.80	17.9	17.8									
		D5	14101005	00	01	05	08																12.2								
		D3	14101006	00	01	05	08																								
		D4	14101061	-	-	-	08																								
	2.5P	D5	14101007	00	01	05	08			13.9																					
		D6	14101062	-	-	-	08																								
		D7	14101063	-	-	-	08																								
		D8	14101064	-	-	-	08																								
M2.5 x 0.45	1.5P	D3	14101008	00	01	05	08	46	13	14.0	49	6	16.2	2.75	2.80	17.9	17.8														
		D5	14101009	00	01	05	08											13.9													
		D3	14101010	00	01	05	08																								
		D4	14101065	-	-	-	08																								
	2.5P	D5	14101011	00	01	05	08			12																					
		D6	14101066	-	-	-	08																								
		D7	14101067	-	-	-	08																								
		D8	14101068	-	-	-	08																								
M2.6 x 0.45	2.5P	D3	14101012	00	01	05	-	49	6	16.2	49	6	16.2	2.75	2.80	17.9	17.8														
		D5	14101013	00	01	05	-											16.0													
	1.5P	D3	14101014	00	01	05	08											50	7	17.8	54	8	19.6	3.64	3.71	19.5	4.26	3.33	6.4	3.64	3.71
		D5	14101015	00	01	05	08																								
		D6	14101060	00	-	-	-																								
		D3	14101016	00	01	05	08																								
		D4	14101069	-	-	-	08																								
		D5	14101017	00	01	05	08																								
		D6	14101070	-	-	-	08																								
		D7	14101071	-	-	-	08																								
		D8	14101072	-	-	-	08																								
D9	14101073	-	-	-	08																										
D10	14101074	-	-	-	08																										
D11	14101075	-	-	-	08																										
4.5P	D5	14101107	00	-	-	-	16.0																								
M3.5 x 0.6	1.5P	D4	14101018	00	01	05	08	50	7	17.8	54	8	19.6	3.64	3.71	19.5	4.26	3.33	6.4	3.64	3.71										
		D6	14101019	00	01	05	08															17.5									
		D4	14101020	00	01	05	08																								
		D5	14101076	-	-	-	08																								
	2.5P	D6	14101021	00	01	05	08			17.5																					
		D7	14101077	-	-	-	08																								
		D8	14101078	-	-	-	08																								
		D4	14101022	00	01	05	08																								
4.5P	D6	14101023	00	01	05	08	17.5																								
M4 x 0.7	1.5P	D4	14101024	00	01	05	08	54	8	19.6	54	8	19.5	4.26	3.33	6.4	3.64	3.71													
		D6	14101025	00	01	05	08																								
		D4	14101026	00	01	05	08																								
	2.5P	D5	14101079	-	-	-	08																								
		D6	14101027	00	01	05	08																								
		D7	14101080	-	-	-	08																								

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 14101 (Continued)



HSS-Co	TiCN	TiN	S/O	BR
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NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit			
				Bright	S/O	TiN	TiCN							Min	Max	6H	4H		
M4 x 0.7	2.5P	D8	14101081	-	-	-	08	54	8	19.5	4.26	3.33	3.64	3.71	D6				
		D9	14101082	-	-	-	08												
		D10	14101083	-	-	-	08												
		D11	14101084	-	-	-	08												
	4.5P	D4	14101028	00	01	05	08			19.1									
		D6	14101029	00	01	05	08												
M5 x 0.8	1.5P	D4	14101030	00	01	05	08	60	10	22.8	4.92	3.86	4.59	4.67	D7				
		D7	14101031	00	01	05	08												
		D4	14101032	00	01	05	08												
		D5	14101085	-	-	-	08												
	2.5P	D6	14101086	-	-	-	08			6.4									
		D7	14101033	00	01	05	08												
		D8	14101087	-	-	-	08												
		D9	14101088	-	-	-	08												
		D10	14101089	-	-	-	08												
		D11	14101090	-	-	-	08												
		D14	14101105	-	-	-	08												
		4.5P	D4	14101034	00	01	05											08	22.2
	D7		14101035	00	01	05	08												
	M6 x 1.0	1.5P	D5	14101036	00	01	05			08								63	12
D8			14101037	00	01	05	08												
D5			14101038	00	01	05	08												
D6			14101091	-	-	-	08												
2.5P		D7	14101092	-	-	-	08	26.0											
		D8	14101039	00	01	05	08												
		D9	14101093	-	-	-	08												
		D10	14101094	-	-	-	08												
		D11	14101095	-	-	-	08												
		D12	14101096	-	-	-	08												
		D13	14101097	-	-	-	08												
		D14	14101106	-	-	-	08												
4.5P		D5	14101040	00	01	05	08	25.4											
		D8	14101041	00	01	05	08												
M8 x 1.25	1.5P	D5	14101042	00	01	05	08	69	15	28.6	8.07	6.05	9.5	7.36	7.49	D9			
		D9	14101043	00	01	05	08												
	2.5P	D5	14101044	00	01	05	08												
		D9	14101045	00	01	05	08												
	4.5P	D5	14101046	00	01	05	08												
		D9	14101047	00	01	05	08												
M10 x 1.5	1.5P	D6	14101048	00	01	05	08	74	18	31.8	9.67	7.26	11.0	9.24	9.39	D10	D6		
		D10	14101049	00	01	05	08												
		D6	14101050	00	01	05	08												
	2.5P	D7	14101098	-	-	-	08												
		D8	14101099	-	-	-	08												
		D9	14101100	-	-	-	08												

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

[continued on next page](#)

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
14101	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

good best

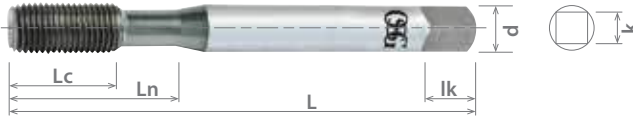




List 14101 (Continued)



NRT, Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Coating Suffix				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Tap Drill Size		Class of Fit	
				Bright	S/O	TiN	TiCN							Min	Max	6H	4H
M10 x 1.5	2.5P	D10	14101051	00	01	05	08	74	18	31.8	9.67	7.26	11.0	9.24	9.39	D10	D6
		D11	14101101	-	-	-	08										
		D12	14101102	-	-	-	08										
	D13	14101103	-	-	-	08											
	4.5P	D6	14101052	00	01	05	08										
D10		14101053	00	01	05	08											
M12 x 1.75	1.5P	D6	14101054	00	01	05	08	85	21	49.1	9.32	6.98	11.11	11.29	D11	D6	
		D11	14101055	00	01	05	08										
	2.5P	D6	14101056	00	01	05	08										
		D11	14101057	00	01	05	08										
	4.5P	D6	14101058	00	01	05	08										
		D11	14101059	00	01	05	08										

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels		
	Low	Med.	High			300	400	17-4 PH	6061 7075		Casting	Inconel			6Al4V (30 HRC)	~35 HRC	35-45 HRC
14101	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

good best



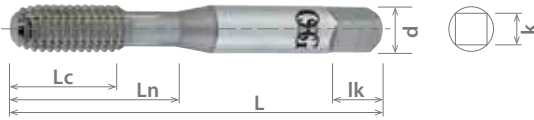


List 285

NRT, Bottom (1.5P-2P)



HSS	TiCN	TiN	BR
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Tap Size	Class of Fit	EDP Number	Coating Suffix			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P-2P)								
			Bright	TiN	TiCN						
0 - 80 UNF	2B	28642	00	05	08	1.62	0.311	0.350	0.140	0.109	0.188
2 - 56 UNC		28644	00	05	08	1.75	0.437	0.476			
3 - 48 UNC		28646	00	05	08	1.81	0.496	0.535			
4 - 40 UNC		28648	00	05	08	1.87	0.295	0.559			
6 - 32 UNC		28650	00	05	08	2.00	0.370	0.685			
8 - 32 UNC		28652	00	05	08	2.12	0.374	0.751			
10 - 24 UNC		28654	00	05	08	2.37	0.492	0.866	0.167	0.131	0.251
10 - 32 UNF		28656	00	05	08						
1/4 - 20 UNC		28658	00	05	08	2.50	0.594	0.996	0.255	0.190	0.287
1/4 - 28 UNF		28660	00	05	08		0.609	1.011			
5/16 - 18 UNC		28662	00	05	08	2.72	0.665	1.125	0.317	0.238	0.374
5/16 - 24 UNF		28664	00	05	08		0.680	1.140			
3/8 - 16 UNC		28666	00	05	08	2.93	0.751	1.251	0.380	0.285	0.437
3/8 - 24 UNF		28668	00	05	08		0.767	1.267			
7/16 - 14 UNC		28670	00	05	08						
7/16 - 20 UNF		28672	00	05	08	3.15	0.858	1.712	0.322	0.242	0.405
1/2 - 13 UNC		28674	00	05	08	3.37	0.921	1.933	0.367	0.274	0.437
1/2 - 20 UNF		28676	00	05	08						

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

See page 672 for tap drill recommendations.



List 286

NRT, Bottom (1.5P-2P)



HSS	TiCN	TiN	BR
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Tap Size	Class of Fit	EDP Number	Coating Suffix			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P-2P)								
			Bright	TiN	TiCN						
M3 x 0.5	6H	28681	00	05	08	50	6	16.0	3.58	2.79	4.8
M4 x 0.7		28683	00	05	08	55	8	19.1	4.26	3.33	6.4
M5 x 0.8		28685	00	05	08	62	9	22.2	4.92	3.86	
M6 x 1.0		28687	00	05	08	65	12	25.4	6.47	4.85	7.3
M8 x 1.25		28689	00	05	08	75	18	32.1	8.07	6.05	8.7
M10 x 1.5		28691	00	05	08	82	22	36.3	9.67	7.26	10.1
M12 x 1.75		28693	00	05	08	85	21	49.1	9.32	6.98	11.1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

See page 674 for tap drill recommendations.



Work Material

List No.	P														M	K	N		S		H			
	Carbon Steels					Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy			Titanium	Hardened Steels						
	Low	Med.	High	4140 4340	300			400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC				
	1010 1018	1035 1045	1065																					
285	<input checked="" type="checkbox"/>	<input type="checkbox"/>									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>												
286	<input checked="" type="checkbox"/>	<input type="checkbox"/>									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>												
SFM	35-100	20-50									45-100	45-100												

good best

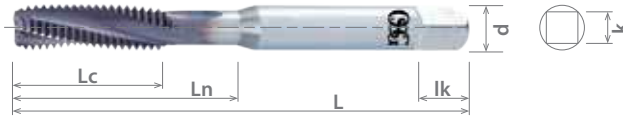




List 16605

NEW CARBIDE

A-CSF, Coolant - Through, DIN Overall Length, Modified Bottom (2.5P -), Bottom (1.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			Bright	Bright						
1/4 - 20 UNC	H5	3	1660500100	1660500000	3.14	0.598	1.181	0.255	0.191	0.313
1/4 - 28 UNF	H4		1660500300	1660500200						
5/16 - 18 UNC	H5		1660500500	1660500400	3.54	0.665	1.377	0.317	0.238	0.375
3/8 - 16 UNC			1660500700	1660500600	3.93	0.751		0.380	0.286	0.438
7/16 - 14 UNC			1660500900	1660500800		0.858	-	0.322	0.242	0.406
1/2 - 13 UNC			1660501100	1660501000	4.33	0.921	-	0.367	0.275	0.438

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 Note: Reduce SFM 50% - 70% while using external coolant.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
16605									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
SFM									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								

good best

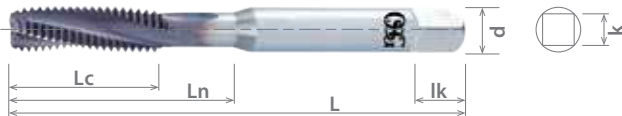




List 16600

NEW CARBIDE

A-CSF, Coolant - Through, DIN Overall Length, Modified Bottom (2.5P -), Bottom (1.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			Bright	Bright						
M5 x 0.8	D4	3	1660000000	1660000100	70	10	25.0	4.92	3.86	6.3
M6 x 1.0	D5		1660000200	1660000300	80	12	31.0	6.47	4.85	7.9
M8 x 1.25			1660000400	1660000500	90	15	35.0	8.07	6.04	9.5
M10 x 1.5	D6		1660000600	1660000700	100	18	39.0	9.67	7.26	11.1
M10 x 1.25	D5		1660000800	1660000900						
M12 x 1.75	D6		1660001000	1660001100	110	21	-	9.32	6.98	

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 Note: Reduce SFM 50% - 70% while using external coolant.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
16600									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
SFM									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

good best

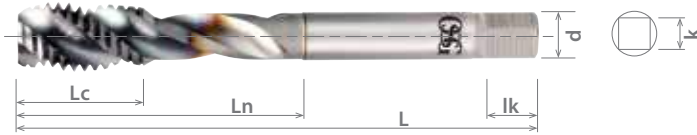




List 16505

NEW SIZES	VC10	V	Var.°
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A-SFT, DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			V	V						
4 - 40 UNC	H2	2	1650508908	1650500108	2.20	0.196	0.704	0.140	0.109	0.188
4 - 48 UNF			1650509008	1650500208						
5 - 40 UNC			1650509108	1650500308						
5 - 44 UNF			1650509208	1650500408						
6 - 32 UNC	H3	3	1650509308	1650513108	2.48	0.248	0.783	0.167	0.131	0.251
	H2	2	-	1650500608						
	H3	2	1650513208	1650500508						
6 - 40 UNF	H2	3	1650509508	-	2.75	0.326	1.059	0.194	0.151	0.279
		2	-	1650500708						
8 - 32 UNC	H3	3	1650509608	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	1650509708	-						
		2	-	1650500908						
8 - 36 UNF	H2	3	1650509808	-	3.54	0.444	1.377	0.317	0.238	0.374
		2	-	1650501008						
10 - 24 UNC	H3	3	1650509908	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	-	1650501108						
10 - 32 UNF	H2	3	1650510008	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	-	1650501308						
		2	-	1650501208						
12 - 24 UNC	H3	3	1650510208	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	-	1650501408						
12 - 28 UNF	H3	3	1650510308	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	-	1650501508						
12 - 32 UNEF	H3	3	1650510408	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	-	1650505608						
1/4 - 20 UNC	H5	3	1650510608	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	1650510708	-						
		2	-	1650501708						
1/4 - 28 UNF	H3	3	1650510908	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	-	1650501908						
1/4 - 32 UNEF	H3	3	1650510808	-	3.14	0.397	1.177	0.255	0.190	0.287
		2	-	1650501808						
5/16 - 18 UNC	H5	3	1650510508	1650505708	3.54	0.444	1.377	0.317	0.238	0.374
		2	1650511008	-						
5/16 - 24 UNF	H3	3	1650511108	1650502108	3.14	0.444	1.377	0.317	0.238	0.374
		2	1650511208	1650502008						
5/16 - 32 UNEF	H3	3	1650511308	1650502308	3.14	0.444	1.377	0.317	0.238	0.374
		2	1650511408	1650502208						
3/8 - 16 UNC	H5	3	1650511508	1650505808	3.93	0.500	1.535	0.380	0.285	0.437
		2	1650511608	1650502508						
3/8 - 24 UNF	H3	3	1650511708	1650502408	3.54	0.500	1.377	0.380	0.285	0.437
		2	1650511808	1650502708						
3/8 - 32 UNEF	H4	3	1650511908	1650502608	3.54	0.500	1.377	0.380	0.285	0.437
		2	1650512008	-						
	H3	3	-	1650505908						

Packed: 1 pc.
Available V coating only.



List 16505 (Continued)

NEW SIZES

VC10

V

Var.[°]

A-SFT, DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)

Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			V	V						
7/16 - 14 UNC	H3	3	1650512108	1650502908	3.93	0.570	1.712	0.322	0.242	0.405
	H5		1650512208	1650502808						
7/16 - 20 UNF	H3		1650512308	1650503108						
	H5		1650512408	1650503008						
7/16 - 28 UNEF	H4		1650512508	1650506008	3.54					
1/2 - 13 UNC	H3		1650512608	1650503308	4.33	0.614	1.933	0.367	0.274	0.437
	H5		1650512708	1650503208						
1/2 - 20 UNF	H3		1650512808	1650503508						
	H5		1650512908	1650503408						
1/2 - 28 UNEF	H4		1650513008	1650506108	3.93					
9/16 - 12 UNC	H3		-	1650503708	4.33	0.665	1.972	0.429	0.322	0.500
	H5		-	1650503608						
9/16 - 18 UNF	H3		-	1650503908						
	H5		-	1650503808						
9/16 - 24 UNEF	H4		-	1650506208	3.93					
5/8-11 UNC	H3		-	1650504108	4.33	0.728	2.125	0.480	0.359	0.562
	H5		-	1650504008						
5/8 - 18 UNF	H3		-	1650504308						
	H5		-	1650504208						
5/8 - 24 UNEF	H4		-	1650506308	3.93					
11/16 - 24 UNEF	H4	-	1650506408	4.33	0.909	2.165	0.542	0.405	0.625	
3/4 - 10 UNC	H3	-	1650504508	4.92	1.000	2.433	0.590	0.442	0.688	
	H5	-	1650504408							
3/4 - 16 UNF	H3	-	1650504708							
	H5	-	1650504608							
3/4 - 20 UNEF	H5	-	1650506508	4.33						
13/16 - 20 UNEF	H4	-	1650506608	4.92			0.652	0.488		
7/8 - 9 UNC	H4	-	1650504908	5.51	1.110	2.653	0.697	0.522	0.751	
	H6	-	1650504808							
7/8 - 14 UNF	H4	-	1650505108							
	H6	-	1650505008							
7/8 - 20 UNEF	H5	-	1650506708	4.92						
15/16 - 20 UNEF	H5	-	1650506808	5.51		2.692	0.760	0.570		
1 - 8 UNC	H4	-	1650505308	6.29	1.251	3.011	0.800	0.600	0.811	
	H6	-	1650505208							
	H8	-	1650507008							
1 - 12 UNF	H6	-	1650505408	5.51						
	H4	-	1650505508	6.29						
1 - 14 UNS	H6	-	1650513308	5.51						
1 - 20 UNEF	H5	-	1650506908	5.51						
1,1/8 - 7 UNC	H9	-	1650507108	7.08	0.944	3.818	0.895	0.672	0.874	
1,1/8 - 8 UN		-	1650507208		0.826					
1,1/8 - 12 UNF	H8	-	1650507308	5.90		3.070				
1,1/4 - 7 UNC	H10	-	1650507408	7.08	0.944	3.937	1.020	0.766	1.000	
1,1/4 - 8 UN		-	1650507508		0.826					

Packed: 1 pc.
Available V coating only.

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Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16505	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	35-50	20-40	15-35	15-35	15-25	50-80	70-120	70-120			30-55				

good best





List 16505 (Continued)

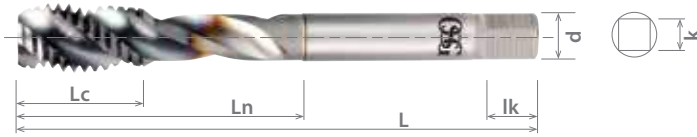
NEW SIZES

VC10

V

Var.°

A-SFT, DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			V	V						
1,1/4 - 12 UNF	H8	4	-	1650507608	5.90	0.826	3.070	1.020	0.766	1.000
1,3/8 - 6 UNC	H10		-	1650507708	7.87	1.102	4.527	1.107	0.831	1.062
1,3/8 - 8 UN	H9		-	1650507808						
1,3/8 - 12 UNF	H8		-	1650507908	6.69	0.826	3.582	1.232	0.925	1.125
1,1/2 - 6 UNC	H10		-	1650508008	7.87	1.102	4.527			
1,1/2 - 8 UN	H9		-	1650508108		6.69	0.826	3.582		
1,1/2 - 12 UNF	H8		-	1650508208	7.87		4.330	1.305	0.979	
1,5/8 - 8 UN	H10		-	1650508308	8.66	1.299	4.724	1.430	1.072	1.251
1,3/4 - 5 UNC	H11		-	1650508408	7.87	0.826	3.976	1.519	1.138	
1,3/4 - 8 UN	H10		-	1650508508	8.85	4.921	1.519	1.138	1.374	
1,7/8 - 8 UN			-	1650508608	9.84	1.456	5.511	1.644		
2 - 4,1/2 UNC	H12		-	1650508708	8.85	0.826	4.803	1.644	1.233	
2 - 8 UN	H10		-	1650508808	8.85	0.826	4.803	1.644	1.233	

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16505	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	35-50	20-40	15-35	15-35	15-25	50-80	70-120	70-120		30-55				

good best

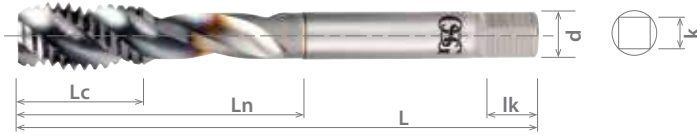




List 16500

NEW SIZES	VC10	V	Var.°
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A-SFT, DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			V	V						
M1.4 x 0.3	D2	2	-	1650003008	40	6	11.5	3.58	2.79	4.8
M1.6 x 0.35	D3		-	1650003108						
M1.7 x 0.35			-	1650003208						
M2 x 0.4	D2		-	1650003408	45	3	10.0			
M2 x 0.25			-	1650003308						
M2.2 x 0.45			-	1650003608						
M2.2 x 0.25	D2		-	1650003508	50	11.9	13.0			
M2.3 x 0.4	D3		-	1650003708						
M2.5 x 0.45			-	1650003908						
M2.5 x 0.35			-	1650003808						
M2.6 x 0.45	D2	-	1650004008	56	4	18.0				
M3 x 0.5		1650009808	1650000108							
M3 x 0.35	D3	-	-	63	5	20.9	4.26	3.33		
M3.5 x 0.6		1650010008	1650004308							
M3.5 x 0.35		1650009908	1650004208							
M4 x 0.7	D4	1650010208	1650000308	70	6	25.1	4.92	3.86		
M4 x 0.5	D3	1650010108	1650000208							
M4.5 x 0.75	D4	1650010408	1650004508							
M4.5 x 0.5	D3	1650010308	1650004408	80	7	30.1	5.58	4.19	7.1	
M5 x 0.8	D4	1650010608	1650000508							
M5 x 0.5	D3	1650010508	1650000408							
M5.5 x 0.5	D5	1650010708	1650004608	90	8	33.0	6.47	4.85	7.3	
M6 x 1.0		D5	1650011008							1650000808
M6 x 0.75		D4	1650010908							1650000708
M6 x 0.5	D3	1650010808	1650000608	90	10	35.0	8.07	6.05	9.5	
M7 x 1.0	D5	1650011208	1650004808							
M7 x 0.75	D4	1650011108	1650004708							
M8 x 1.25	D5	1650011508	1650001008	80	8	39.0	9.67	7.26	11.1	
M8 x 1.0		1650011408	1650000908							
M8 x 0.75	D4	1650011308	1650004908	100	12	35.0	9.67	7.26	11.1	
M9 x 1.25	D5	1650011808	1650005208							
M9 x 1.0		1650011708	1650005108							
M9 x 0.75	D4	1650011608	1650005008	90	10	35.0	8.07	6.05	9.5	
M10 x 1.5	D6	1650012208	1650001308							
M10 x 1.25	D5	1650012108	1650001208							
M10 x 1.0		1650012008	1650001108							
M10 X 0.75	D4	1650011908	1650005308	90	10	35.0	8.07	6.05	9.5	

Packed: 1 pc.
Available V coating only.

[continued on next page](#) **ATP**

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	35-50	20-40	15-35	15-35	15-25	50-80	70-120	70-120			30-55			

good best





List 16500 (Continued)

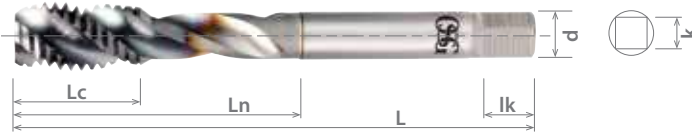
NEW SIZES

VC10

V

Var.°

A-SFT, DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			V	V						
M11 x 1.5	D6	3	1650012608	1650005608	100	12	43.5	8.20	6.15	10.3
M11 x 1.25	D5		1650012508	-						
M11 X 1.0	D5		1650012408	1650005508	90	8				
M11 x 0.75	D4		1650012308	1650005408	110	14	49.1	9.32	6.98	11.1
M12 x 1.75	D6		1650013008	1650001708		12				
M12 x 1.5			1650012908	1650001608	100	12				
M12 x 1.25			1650012808	1650001508						
M12 x 1.0	D5		1650012708	1650001408	110	16	50.1	10.89	8.18	12.7
M14 x 2.0	D7		-	1650001908						
M14 x 1.5	D5		-	1650001808	100	12				
M14 x 1.25	D6		-	1650005808						
M14 x 1.0	D5		-	1650005708	110	16	54.0	12.19	9.14	14.3
M15 x 1.25	D6		-	1650013208						
M15 X 1.5	D6		-	1650006008	100	12				
M15 x 2	D7		-	1650013108						
M15 x 1.0	D5		-	1650005908	100	12				
M16 x 2.0	D7		-	1650002108	110	16				
M16 x 1.25	D6		-	1650013308	100	12				
M16 x 1.5	D6		-	1650002008						
M16 x 1.0	D5		-	1650006108	100	16				
M17 x 1.5	D6	-	1650006208							
M17 x 1.25	D6	-	1650013408	100	12					
M17 x 1.0	D5	-	1650006308							
M18 x 2.5	D7	-	1650002308	125	25	55.0	13.76	10.31	15.9	
M18 x 2.0	D7	-	1650006508							
M18 x 1.5	D6	-	1650002208	110	16	13.76	10.31	15.9		
M18 x 1.25	D6	-	1650013508							
M18 x 1.0	D5	-	1650006408	100	16					
M20 x 2.5	D7	-	1650002508	140	25	61.8	16.56	12.42	17.5	
M20 x 2.0	D7	-	1650006708							
M20 x 1.5	D6	-	1650002408	125	16	67.4	17.70	13.28	19.1	
M20 x 1.0	D5	-	1650006608							
M22 x 2.5	D7	-	1650002708	140	25	67.4	17.70	13.28	19.1	
M22 x 2.0	D7	-	1650006908							
M22 x 1.5	D6	-	1650002608	125	16	68.4	19.30	14.48	22.2	
M22 x 1.0	D5	-	1650006808							
M24 x 3.0	D8	-	1650002908	160	30	80.0	22.75	17.07	22.2	
M24 x 2.0	D7	-	1650007108							
M24 x 1.5	D6	-	1650002808	140	16	80.0	22.75	17.07	22.2	
M24 x 1.0	D5	-	1650007008							
M27 x 3.0	D10	-	1650007408	160	36	80.0	22.75	17.07	22.2	
M27 x 2.0	D8	-	1650007308							
M27 x 1.5	D8	-	1650007208	140	24	80.0	22.75	17.07	22.2	
M30 x 3.5	D11	-	1650007708	180	42					100.0
M30 x 2.0	D9	-	1650007608							
M30 x 1.5	D8	-	1650007508	150	36	100.0	25.93	19.46	25.4	
M33 x 3.5	D11	-	1650008008	180	42					100.0
M33 x 2.0	D9	-	1650007908	160	36	100.0	25.93	19.46	25.4	
M33 x 1.5	D8	-	1650007808	160	36					75.0

Packed: 1 pc.
Available V coating only.





List 16500 (Continued)

NEW SIZES

VC10

V

Var.°

A-SFT, DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)

Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Mod Bottom (2.5P)						
			V	V						
M36 x 4.0	D11	4	-	1650008408	200	48	115.0	31.31	23.50	28.6
M36 X 3.0	D10		-	1650008308						
M36 x 2.0	D9		-	1650008208	170	36	85.0			
M36 x 1.5	D8		-	1650008108						
M39 x 4.0	D11		-	1650008508	200	48	110.0	33.14	24.87	
M42 x 3.0	D10		-	1650008808						
M42 x 2.0	D9		-	1650008708	170	54	100.0	36.32	27.23	31.8
M42 x 4.5	D12		-	1650008908						
M42 x 1.5	D8		-	1650008608	170	48	70.0			
M45 x 4.5	D12		-	1650009108						
M45 x 3.0	D10		-	1650009008	200	48	100.0	38.58	28.93	
M48 x 5.0	D13		-	1650009508						
M48 x 3.0	D11		-	1650009408	225	48	115.0	41.75	31.32	34.9
M48 x 2.0	D9		-	1650009308						
M48 x 1.5	D8		-	1650009208	190	60	140.0			
M56 x 5.5	D14		-	1650009608						

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16500	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	35-50	20-40	15-35	15-35	15-25	50-80	70-120	70-120		30-55				

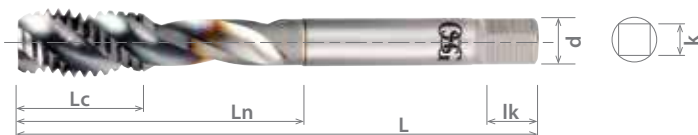
good best





List 16545

A-OIL-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length				
			Mod Bottom (2.5P)										
			V										
1/4 - 20 UNC	H5	3	1654500108	3.14	0.401	1.181	0.255	0.190	0.311				
1/4 - 28 UNF	H4		1654500208										
5/16 - 18 UNC	H5		1654500308										
5/16 - 24 UNF	H4		1654500408	3.54	0.444	1.377	0.317	0.238	0.374				
3/8 - 16 UNC	H5		1654500508										
3/8 - 24 UNF	H4		1654500608	3.93	0.500	1.535	0.380	0.285	0.437				
7/16 - 14 UNC	H5		1654500708										
7/16 - 20 UNF			1654500808										
1/2 - 13 UNC			1654500908	4.33	0.614	1.933	0.367	0.274	0.437				
1/2 - 20 UNF			1654501008										
9/16 - 12 UNC			1654501108	4.33	0.665	1.972	0.429	0.322	0.500				
9/16 - 18 UNF			1654501208										
5/8 - 11 UNC		H6	1654501308	4.33	0.728	2.125	0.480	0.359	0.562				
5/8 - 18 UNF			1654501408										
3/4 - 10 UNC			1654501508	4.92	1.000	2.433	0.590	0.442	0.688				
3/4 - 16 UNF			1654501608										
7/8 - 9 UNC			H8	1654501708	5.51	1.110	2.653	0.697	0.522	0.751			
7/8 - 14 UNF				1654501808									
1 - 8 UNC	H6			1654501908	6.29	1.251	3.011	0.800	0.600	0.811			
1 - 12 UNF				1654502008									
1,1/8 - 7 UNC				H9	1654502108	5.51	7.08	1.732	3.818	0.895	0.672	0.874	
1,1/8 - 8 UN					1654502208								
1,1/8 - 12 UNF					H8	1654502308	7.08	1.496	3.070	1.020	0.766	1.000	
1,1/4 - 7 UNC						1654502408							
1,1/4 - 8 UN		H9				1654502508	7.08	1.732	3.937	1.232	0.925	1.125	
1,1/4 - 12 UNF						1654502608							
1,3/8 - 6 UNC						H10	1654502708	5.90	1.496	3.070	1.107	0.831	1.062
1,3/8 - 8 UN							1654502808						
1,3/8 - 12 UNF			H8				1654502908	7.87	2.007	4.527	1.305	0.979	1.251
1,1/2 - 6 UNC							1654503008						
1,1/2 - 8 UN	H10						1654503108	6.69	1.496	3.582	1.430	1.072	1.251
1,1/2 - 12 UNF							1654503208						
1,5/8 - 8 UN				H11			1654503308	7.87	2.007	4.527	1.519	1.138	1.374
1,3/4 - 5 UNC							1654503408						
1,3/4 - 8 UN					H10		1654503508	8.66	2.401	4.724	1.644	1.233	1.374
1,7/8 - 8 UN							1654503608						
2 - 4,1/2 UNC		H12					1654503708	8.85	2.677	5.511	1.644	1.233	1.374
2 - 8 UN							1654503808						
							1654503908	8.85	2.007	4.803			

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16545	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>				
SFM	100-200	100-200	100-200	50-100	40-80	25-70	25-70	25-50	60-150	90-220	90-220			50-100			

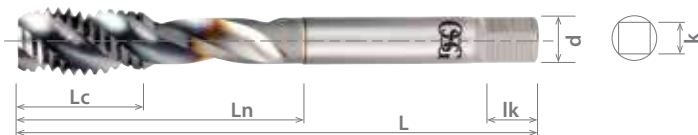
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List 16540

A-OIL-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Mod Bottom (2.5P)	L	Lc	Ln	d	k	lk	
			V	L	Lc	Ln	d	k	lk	
M6 x 1.0	D5	3	1654000208	80	8	30.0	6.47	4.85	7.9	
M6 x 0.75	D4		1654000108							
M7 x 1.0	D5		1654000308	90	10	35.0	8.07	6.05	9.5	
M8 x 1.25			1654000608							
M8 x 1.0	1654000508									
M8 X 0.75	D4		1654000408	80	8	33.0	9.67	7.26	11.1	
M9 x 1.25	D5		1654000708	90	10	35.0				
M10 x 1.5	D6		1654001008	100	12	39.0	8.20	6.15	10.3	
M10 x 1.25	D5		1654000908							
M10 x 1.0	D6		1654000808	90	10	35.0	49.1	9.32	6.98	11.1
M11 x 1.5			1654001108	100	12	43.5				
M12 x 1.75	D6		1654001508	110	14	49.1	9.32	6.98	11.1	
M12 x 1.5			1654001408							
M12 x 1.25	D5		1654001308	100	12	50.1	10.89	8.18	12.7	
M12 x 1.0			1654001208							
M14 x 2.0	D7		1654001708	110	16	54.0	12.19	9.14	14.3	
M14 x 1.5	D6		1654001608	100						
M15 x 1.5	D7		1654001808	110	16	55.0	13.76	10.31	15.9	
M16 x 2.0			1654002008							
M16 x 1.5	D6		1654001908	100	16	61.8	16.56	12.42	17.5	
M17 x 1.5	1654002108									
M18 x 2.5	D7	1654002308	125	25	67.4	17.70	13.28	19.1		
M18 x 1.5	D6	1654002208	110	16						
M20 x 2.5	D7	1654002508	140	25	68.4	19.30	14.48	22.2		
M20 x 1.5	D6	1654002408	125	16						
M22 x 2.5	D7	1654002808	140	25	80.0	22.75	17.07	22.2		
M22 x 2.0		1654002708								
M22 x 1.5	D6	1654002608	125	16	100.0	25.93	19.46	25.4		
M24 x 3.0	D8	1654003108	160	30						
M24 x 2.0	D7	1654003008	140	16	68.4	19.30	14.48	27.0		
M24 x 1.5	D6	1654002908								
M27 x 3.0	D10	1654003208	160	36	115.0	31.31	23.50	28.6		
M30 x 3.5	D11	1654003308	180	42						
M33 x 3.5		1654003408			200	48	110.0	33.14	24.87	31.8
M36 x 4.0	D12	1654003508	220	54						
M39 x 4.0		1654003608								
M42 x 4.5	D13	1654003708	250	60	120.0	38.58	28.93	34.9		
M45 x 4.5		1654003808								
M48 x 5.0	D14	1654003908	250	66	140.0	41.75	31.32	36.5		
M56 x 5.5		1654004008								

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16540	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>				
SFM	100-200	100-200	100-200	50-100	40-80	25-70	25-70	25-50	60-150	90-220	90-220			50-100			

good best





List 16525

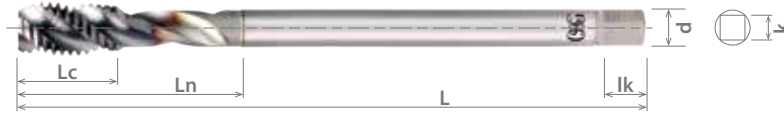
A-LT-SFT, Long Shank, Modified Bottom (2.5P)

NEW SIZES

VC10

V

Var.°



Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length							
			Mod Bottom (2.5P)													
			V													
			L	Lc	Ln	d	k	lk								
4 - 40 UNC	H2	2	1652505608	3.14	0.207	0.705	0.141	0.110	0.189							
4 - 48 UNF			1652505708													
5 - 40 UNC			1652500308													
5 - 44 UNF			1652505908													
6 - 32 UNC	H3		1652500608	4.72	0.248	0.783	0.168	0.131	0.252							
6 - 40 UNF	H2		1652500708	3.93												
8 - 32 UNC	H3		1652500908	4.72	0.252	0.826	0.194	0.152	0.280							
8 - 36 UNF	H2		1652501008	3.93												
10 - 24 UNC	H3		1652501108	4.92	0.327	0.976	0.194	0.152	0.280							
10 - 32 UNF			1652501308	5.90												
12 - 24 UNC			1652501408	4.92						0.331	1.177	0.220	0.165	0.280		
12 - 28 UNF			1652501508													
1/4 - 20 UNC	H5	1652501708		0.398	1.377	0.255	0.191	0.287								
1/4 - 28 UNF	H4	1652501908														
5/16 - 18 UNC	H5	1652502108		0.445	1.377	0.318	0.238	0.374								
5/16 - 24 UNF	H4	1652502308														
3/8 - 16 UNC	H5	1652502508		0.500	1.535	0.381	0.286	0.437								
3/8 - 24 UNF	H4	1652502708														
7/16 - 14 UNC	H5	3	1652502908	0.571	2.362	0.323	0.242	0.406								
7/16 - 20 UNF			1652503108													
1/2 - 13 UNC			1652503308													
1/2 - 20 UNF			1652503508													
9/16 - 12 UNC			1652503708						0.614	2.834	0.367	0.275	0.437			
9/16 - 18 UNF			1652503908													
5/8 - 11 UNC			1652504108						0.728	0.480	0.360	0.563				
5/8 - 18 UNF			1652504308													
3/4 - 10 UNC			1652504508						1.000	3.149	0.590	0.442	0.689			
3/4 - 16 UNF			1652504708													
7/8 - 9 UNC			H6						4	1652504908	7.87	1.110	3.149	0.697	0.523	0.752
7/8 - 14 UNF										1652505108						
1 - 8 UNC	1652505308															
1 - 12 UNF	1652505508															

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16525	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	35-50	20-40	15-35	15-35	15-25	50-80	70-120	70-120			30-55			

good best

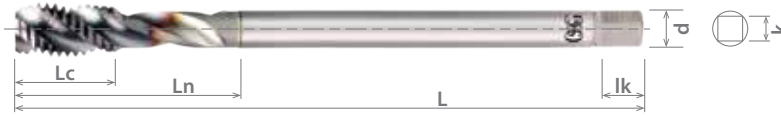




List 16520



A-LT-SFT, Long Shank, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length						
			Mod Bottom (2.5P)												
			V	L	Lc	Ln	d	k	lk						
M3 x 0.5	D3	3	1652001308	100	4	18.0	3.58	2.79	4.8						
M3 x 0.35			20.0												
M3.5 x 0.6			20.9												
M3.5 x 0.35	D4		1652001408		100	5	24.9	4.92	3.86	6.4					
M4 x 0.7			1652001708												
M4 x 0.5	D3		1652001608		125	6	25.1	5.58	4.19	7.1					
M4.5 x 0.75	D4		1652001908				7				30.1				
M4.5 x 0.5	D3		1652001808								150	29.9			
M5 x 0.8	D4		1652002108			125		7	29.9	6.47		4.85	7.3		
M5 x 0.5	D3		1652002008												
M5.5 x 0.5	D5		1652002208												
M6 x 1.0	D5		1652002708			150	10	35.0	8.07	6.05	9.5				
M6 x 0.75	D4	1652002508	8	33.0											
M6 x 0.5	D3	1652002308										12	39.0		
M8 x 1.25	D5	1652003708					150	10	35.0	9.67	7.26			11.1	
M8 x 1.0		1652003508													
M8 x 0.75	D4	1652003308	180	14								72.0	9.32		6.98
M10 x 1.5	D6	1652005108			150		16	60.0	10.89	8.18	14.3				
M10 x 1.25	D5	1652004908												160	
M10 x 1.0	D4	1652004708	160	12								64.0	13.76		10.31
M10 x 0.75	D5	1652004508			180		16	72.0	16.56	12.42	17.5				
M12 x 1.75	D6	1652006708												150	
M12 x 1.5		1652006508	160	12								64.0	12.19		9.14
M12 x 1.25	D5	1652006308			160	12	64.0	13.76	10.31	15.9					
M12 x 1.0	D7	1652006108									160			12	
M14 x 2	D6	1652007108	180	25								80.0	16.56		12.42
M14 x 1.5	D5	1652007008			180	16	72.0	13.76	10.31	15.9					
M14 x 1.25	D6	1652006908									200			25	
M14 x 1.0	D5	1652006808	180	16								72.0	13.76		10.31
M15 x 1.5	D6	1652007308			180	16	72.0	13.76	10.31	15.9					
M15 x 1.0	D5	1652007208									180			16	
M16 x 2.0	D7	1652007708	180	16								72.0	13.76		10.31
M16 x 1.5	D6	1652007508			200	25	80.0	16.56	12.42	17.5					
M16 x 1.0	D5	1652007408									180			16	
M18 x 2.5	D7	1652008308	180	16								72.0	13.76		10.31
M18 x 2.0		1652008208			200	25	80.0	16.56	12.42	17.5					
M18 x 1.5	D6	1652008108									180			16	
M18 x 1.0	D5	1652008008	180	16								72.0	13.76		10.31
M20 x 2.5	D7	1652008708			180	16	72.0	13.76	10.31	15.9					
M20 x 2.0		1652008608													

Packed: 1 pc.
Available V coating only.

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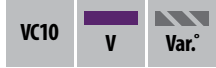
List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16520	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					
SFM	80-120	80-120	80-120	35-50	20-40	15-35	15-35	15-25	50-80	70-120	70-120				30-55		

good best

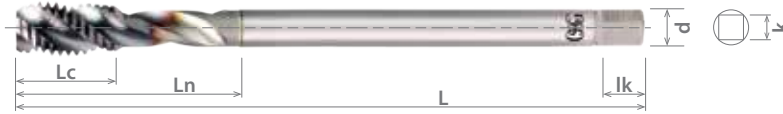




List 16520 (Continued)



A-LT-SFT, Long Shank, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length				
			Mod Bottom (2.5P)		L	Lc				Ln	d	k	lk
			V		L	Lc				Ln	d	k	lk
M20 x 1.5	D6	4	1652008508	200	16	80.0	16.56	12.42	17.5				
M20 x 1.0	D5		1652008408										
M22 x 2.5	D7		1652009108		25		17.70	13.28	19.1				
M22 x 2.0			1652009008										
M22 x 1.5	D6		1652008908		16	83.0	19.30	14.48					
M22 x 1.0	D5		1652008808										
M24 x 3.0	D8		1652009508		30		19.30	14.48					
M24 x 2.0	D7		1652009408										
M24 x 1.5	D6		1652009308		16	19.30	14.48						
M24 x 1.0	D5		1652009208										

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340	300	400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
16520	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	35-50	20-40	15-35	15-35	15-25	50-80	70-120	70-120		30-55				

good best





List 16450

HSSE	TiN	Var.°
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CC-SUS-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			TiN						
2 - 56 UNC	H2	2	1645002562	1.77	0.142	0.472	0.141	0.110	0.189
3 - 48 UNC			1645003482	1.97	0.161	0.531			
4 - 40 UNC			1645004402	2.21	0.197	0.705			
4 - 48 UNF			1645004482		0.201	0.709			
5 - 40 UNC			1645005402		0.248	0.783			
6 - 32 UNC	H3		1645006322	2.48	0.252	0.827	0.168	0.131	0.252
6 - 40 UNF	H2		1645006323						
6 - 40 UNF	H2		1645006402						
8 - 32 UNC	H3		1645008322	2.76	0.327	0.976	0.194	0.152	0.280
8 - 36 UNF	H2		1645008323						
8 - 36 UNF	H2		1645008362						
10 - 24 UNC	H3		1645010242	3.15	0.331	1.177	0.220	0.165	0.280
10 - 32 UNF	H2		1645010243						
10 - 32 UNF	H2		1645010322						
12 - 24 UNC	H3		1645010323	3.54	0.445	1.378	0.318	0.238	0.374
12 - 28 UNF		1645012243							
12 - 28 UNF	H3	1645012283	3.94	0.500	1.535	0.381	0.286	0.437	
1/4 - 20 UNC	H5	1645014203							
1/4 - 20 UNC	H3	1645014205	3.94	0.571	1.713	0.323	0.242	0.406	
1/4 - 28 UNF	H4	1645014283							
1/4 - 28 UNF	H4	1645014284	4.33	0.614	1.933	0.367	0.275	0.437	
5/16 - 18 UNC	H3	1645056183							
5/16 - 18 UNC	H5	1645056185	3.94	0.571	1.713	0.323	0.242	0.406	
5/16 - 24 UNF	H3	1645056243							
5/16 - 24 UNF	H4	1645056244	3.94	0.571	1.713	0.323	0.242	0.406	
3/8 - 16 UNC	H3	1645038163							
3/8 - 16 UNC	H5	1645038165	4.33	0.614	1.933	0.367	0.275	0.437	
3/8 - 24 UNF	H3	1645038243							
3/8 - 24 UNF	H4	1645038244	3.94	0.571	1.713	0.323	0.242	0.406	
7/16 - 14 UNC	H3	1645076143							
7/16 - 14 UNC	H5	1645076145	3.94	0.571	1.713	0.323	0.242	0.406	
7/16 - 20 UNF	H3	1645076203							
7/16 - 20 UNF	H5	1645076205	4.33	0.614	1.933	0.367	0.275	0.437	
1/2 - 13 UNC	H3	1645012133							
1/2 - 13 UNC	H5	1645012135	3.94	0.571	1.713	0.323	0.242	0.406	
1/2 - 20 UNF	H3	1645012203							
1/2 - 20 UNF	H5	1645012205							

Packed: 1 pc.
Available TiN coating only.
*Tap drill size is 65%-70% of thread.
*Recommended drill is EX-SUS-GOLD drills for stainless steel.

continued on next page

List No.	Work Material																	
	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
16450	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	50-80	50-80	30-80	50-100		20-35	20-35	15-25										

good best





List 16450 (Continued)



CC-SUS-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length					
			Modified Bottom (2.5P-3P)											
			TiN											
			L	Lc	Ln	d	k	lk						
9/16 - 12 UNC	H3	3	1645096123	4.33	0.665	1.972	0.429	0.322	0.500					
	H5		1645096125											
9/16 - 18 UNF	H3		1645096183	3.94										
	H5		1645096185											
5/8 - 11 UNC	H3		1645058113	4.33						0.728	2.126	0.480	0.360	0.563
	H5		1645058115											
5/8 - 18 UNF	H3	1645058183	3.94											
	H5	1645058185												
3/4 - 10 UNC	H3	1645034103	4.92	1.000	2.433	0.590	0.442	0.689						
	H5	1645034105	4.33											
3/4 - 16 UNF	H3	1645034163							4.33					
	H5	1645034165												
7/8 - 9 UNC	H4	1645078094	5.51						1.110	2.654	0.697	0.523	0.752	
	H6	1645078096	4.92											
7/8 - 14 UNF	H4	1645078144		4.92										
	H6	1645078146												
1 - 8 UNC	H4	1645010084	6.30	1.252	3.012	0.800	0.600	0.811						
	H6	1645010086												
1 - 12 UNF	H4	1645010124	5.51											
	H6	1645010126												

Packed: 1 pc.

Available TiN coating only.

*Tap drill size is 65%-70% of thread.

*Recommended drill is EX-SUS-GOLD drills for stainless steel.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16450	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	50-80	50-80	30-80	50-100		20-35	20-35	15-25									

good best





List 16455

HSSE	TiN	Var.°
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CC-SUS-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)							
			TiN	L						
M2 x 0.4	D3	2	1645502043	45	3	12.0	3.58	2.79	4.8	
M2.5 x 0.45			1645525453	50		14.3				
M2.6 x 0.45			1645526453	50		16.3				
M3 x 0.5	D4		1645503054	56	4	18.1	4.26	3.33	6.4	
M4 x 0.7			1645504074	63		21.0				
M5 x 0.8			1645505084	70		25.0				
M6 x 1	D3		1645506103	80	8	30.0	6.47	4.85	7.3	
	D5		1645506105	80		30.0	6.47	4.85	7.3	
M8 X 1.25	D4		3	1645508124	90	10	35.0	8.07	6.05	9.5
	D6	1645508126								
M10 x 1.5	D4	1645510154		100	12	39.0	9.67	7.26	11.1	
	D6	1645510156								
M12 x 1.75	D4	1645512174		110	14	49.1	9.32	6.98	12.7	
	D6	1645512176								
M14 x 2	D5	1645514205			16	50.1	10.89	8.18	14.3	
	D7	1645514207								
M16 x 2	D5	1645516205			25	54.0	12.19	9.14	15.9	
	D7	1645516207								
M18 x 2.5	D8	1645518257	125	25	55.0	13.76	10.31	15.9		
M20 x 2.5		1645520258	140		61.8	16.56	12.42	17.5		
M24 x 3		D9	1645524309		160	30	68.4	19.30	14.48	19.1

Packed: 1 pc.
Available TiN coating only.
*Tap drill size is 65%-70% of thread.
*Recommended drill is Ex-SUS-Gold drills for stainless steel.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
16455	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	50-80	50-80	30-80	50-100		20-35	20-35	15-25										

good best





List 335Ni



WHR-Ni-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			HR						
			L	Lc	Ln	d	k	lk	
2 - 56 UNC	H2	2	3350002562	1.77	0.437	0.476	0.140	0.109	0.188
4 - 40 UNC			H3		3350004402	0.563			
6 - 32 UNC	H2	3	3350006322	2.20	0.689	-	0.167	0.131	0.251
	H3		3350006323			-			
8 - 32 UNC	H2	3	3350008322	2.48	0.748	-	0.194	0.151	0.287
	H3		3350008323			-			
10 - 24 UNC	H2	3	3350010243	2.76	0.870	-	0.255	0.190	0.287
	H5		3350010245			-			
10 - 32 UNF	H2	3	3350010322	3.14	1.000	-	0.317	0.238	0.374
	H3		3350010323			-			
1/4 - 20 UNC	H3	3	3350014203	3.54	0.665	1.377	0.380	0.285	0.437
	H5		3350014205						
1/4 - 28 UNF	H3	3	3350014283	3.94	0.752	1.535	0.322	0.242	0.405
	H4		3350014284						
5/16 - 18 UNC	H3	3	3350516183	3.94	0.858	1.712	0.367	0.274	0.437
	H5		3350516185						
5/16 - 24 UNF	H3	3	3350516243	3.94	0.921	1.933	0.429	0.322	0.500
	H5		3350516245						
3/8 - 16 UNC	H3	3	3350038163	4.33	1.090	2.125	0.480	0.359	0.562
	H5		3350038165						
3/8 - 24 UNF	H3	3	3350038243	4.33	1.200	2.433	0.590	0.442	0.688
	H4		3350038244						
7/16 - 14 UNC	H3	3	3350716143	4.92	1.334	2.653	0.697	0.522	0.751
	H5		3350716145						
7/16 - 20 UNF	H3	3	3350716203	5.51	1.334	2.653	0.697	0.522	0.751
	H5		3350716205						
1/2 - 13 UNC	H3	3	3350012133	4.92	1.200	2.433	0.590	0.442	0.688
	H5		3350012135						
1/2 - 20 UNF	H3	3	3350012203	4.92	1.200	2.433	0.590	0.442	0.688
	H5		3350012205						
9/16 - 18 UNF	H3	3	3350096183	5.51	1.334	2.653	0.697	0.522	0.751
	H5		3350096185						
5/8 - 11 UNC	H3	3	3350058113	4.92	1.200	2.433	0.590	0.442	0.688
	H5		3350058115						
5/8 - 18 UNF	H3	3	3350058183	4.92	1.200	2.433	0.590	0.442	0.688
	H5		3350058185						
3/4 - 10 UNC	H3	3	3350034103	5.51	1.334	2.653	0.697	0.522	0.751
	H5		3350034105						
3/4 - 16 UNF	H3	3	3350034163	5.51	1.334	2.653	0.697	0.522	0.751
	H5		3350034165						
7/8 - 9 UNC	H3	3	3350078093	4.92	1.200	2.433	0.590	0.442	0.688
	H5		3350078095						
7/8 - 14 UNF	H3	3	3350078143	4.92	1.200	2.433	0.590	0.442	0.688
	H5		3350078145						

Packed: 1 pc.
Available HR coating only.





List 335Ni (Continued)

VC10	HR	11°
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WHR-Ni-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)

Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			HR	L	Lc	Ln	d	k	lk
1 - 8 UNC	H3	4	3350001083	6.30	1.500	3.011	0.800	0.600	0.811
	H5		3350001085						
1 - 12 UNF	H3		3350001123	5.51					
	H5		3350001125						

Packed: 1 pc.
Available HR coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H					
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
335Ni																			
SFM								8-20				8-15							8-12

good best





List 336Ni



WHR-Ni-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			HR						
			L	Lc	Ln	d	k	lk	
M2.5 x 0.45	D3	3	3360250453	50	12	13.7	3.58	2.79	4.8
M3 x 0.5			3360003053	56	15	20.9			
M4 x 0.7			3360004074	63	19	25.4			
M5 x 0.8	3360005084		70	22	-	4.92	3.86		
M6 x 1.0	3360006105		80	3360006755	25	33.9	6.47	4.85	7.3
M6 x 0.75	3360008255								
M8 x 1.25	3360008105			90	15	35.0			
M8 x 1.0	D5		3360010156	100	18	39.0	9.67	7.26	11.1
M10 x 1.5			3360010255						
M10 x 1.25			3360012756						
M12 x 1.75	3360012156		100						
M12 x 1.5	3360014207		110	24	50.1	10.89	8.18	12.7	
M14 x 2.0	3360014156		100						
M14 x 1.5	3360016207		110						
M16 x 2.0	3360016156		100			54.0	13.76	10.31	15.9
M16 x 1.5	3360018257		125						
M18 x 2.5	3360018156		110						
M18 x 1.5	D6		3360020258	140	30	61.8	16.56	12.42	17.5
M20 x 2.5			3360020156	125					
M20 x 1.5			3360022258	140					
M22 x 2.5	D8		3360022156	125	36	68.4	19.30	14.48	19.1
M22 x 1.5			3360024308	160					
M24 x 3.0			3360024156	140					
M24 x 1.5	D6								

Packed: 1 pc.
Available HR coating only.



Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
336Ni																		
SFM							8-20					8-15						8-12

good best





List 389



OT-SFT, JIS, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)						
			Bright	Bright						
M3 x 0.5	OH3	3	8315255	8315254	45	10	18.9	4.00	3.20	6.0
M4 x 0.7			8315261	8315260	51	13	21.0	5.00	4.00	7.0
M5 x 0.8			8315267	8315266	59	15	23.9	5.50	4.50	
M6 x 1.0			8315273	8315272	62	18	29.0	6.00		
M8 x 1.25	OH4		8315285	8315284	70	21	-	6.20	5.00	8.0
M10 x 1.5			8315297	8315296	75	24	-	7.00	5.50	
M10 x 1.25			8315303	8315302	75	24	-			
M12 x 1.75			8315315	8315314	81	29	-	8.50	6.50	9.0

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



Work Material																	
List No.	P					Die Steels	M			K Cast Iron	N		S Nickel Alloy Inconel	H			
	Carbon Steels			Alloy Steels	Titanium		Stainless Steels				Aluminum			Hardened Steels			
	Low	Med.	High				300	400	17-4 PH		6061 7075	Casting	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
389									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
SFM									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best





List 313Ti

V-Ti-SFT, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Modified Bottom (2.5P-3P)							
			V							
			L	Lc	Ln	d	k	lk		
2 - 56 UNC	H2	3	1305710108	1.81	0.437	0.476	0.140	0.109	0.188	
4 - 40 UNC			1305710208	1.92	0.559	0.598				
6 - 32 UNC	H3		1305710408	2.05	0.685	-				
6 - 40 UNF	H2		1305710508			-				
8 - 32 UNC	H3		1305710608	2.19	0.751	-	0.167	0.131	0.251	
8 - 36 UNF	H2		1305710708			-				
10 - 24 UNC	H3		1305710808			-				
10 - 32 UNF	H2		1305710908	2.44	0.866	-	0.194	0.151	0.287	
1/4 - 20 UNC	H3		1305711008			-				
	H2		1305711108			-				
	H3		1305711208	2.57	0.996	-	0.255	0.190	0.287	
1/4 - 28 UNF	H3		1305711308			-				
	H4		1305711408			-				
	H5		1305711508	2.72	0.444	1.125	0.317	0.238	0.374	
5/16 - 18 UNC	H3		1305711608							-
	H5		1305711708							-
5/16 - 24 UNF	H3		1305711808	2.93	0.500	1.251	0.380	0.285	0.437	
	H3		1305711908							-
	H4		1305712008							-
3/8 - 16 UNC	H3		1305712108	3.15	0.570	1.712	0.322	0.242	0.405	
	H5	1305712208	-							
	H3	1305712308	-							
3/8 - 24 UNF	H3	1305712408	3.37	0.614	1.933	0.367	0.274	0.437		
	H5	1305712508							-	
	H5	1305712608							-	
7/16 - 14 UNC	H3	1305712708	3.59	0.665	1.972	0.429	0.322	0.500		
	H5	1305712808							-	
	H3	1305712908							-	
7/16 - 20 UNF	H3	1305713008	3.81	0.728	2.125	0.480	0.359	0.562		
	H5	1305713108							-	
	H5	1305713208							-	
1/2 - 13 UNC	H3	1305713308	4.25	0.799	2.433	0.590	0.442	0.688		
	H5	1305713408							-	
	H3	1305713508							-	
1/2 - 20 UNF	H3	1305713608	4.25	0.799	2.433	0.590	0.442	0.688		
	H5	1305713708							-	
	H5	1305713808							-	
9/16 - 18 UNF	H3	1305713908	4.25	0.799	2.433	0.590	0.442	0.688		
	H5	1305714008								

Packed: 1 pc.
Available V coating only.





List 313Ti (Continued)

V-Ti-SFT, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
7/8 - 9 UNC	H3	4	1305714208	4.68	0.889	2.653	0.697	0.522	0.751
	H5		1305714308						
7/8 - 14 UNF	H3		1305714408						
	H5		1305714508						
1 - 8 UNC			1305714108	5.12	1.000	3.011	0.800	0.600	0.811

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
313Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-30			8-20					8-15	8-15	15-35	10-20			

good best





EXOTAP® VC-10 Ti

Taps Designed for Titanium Alloys

List 345Ti

V-TI-SFT, Modified Bottom (2.5P-3P)



VC10

V

10°



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
				L	Lc	Ln	d	k	lk
M2.5 x 0.45	D3	3	1316210008	46	12	-	3.58	2.79	4.8
M3 x 0.5			1316210108	49	16	-			
M4 x 0.7	D4		1316210208	54	19	-	4.26	3.33	6.4
M5 x 0.8			1316210308	60	22	-	4.92	3.86	
M6 x 1.0	D5		1316210408	63	25	-	6.47	4.85	7.9
M8 x 1.25			1316210508	69	10	28.6	8.07	6.05	9.5
M10 x 1.5	D6		1316210708	74	12	31.8	9.67	7.26	11.1
M10 x 1.25	D5		1316210608						
M12 x 1.75	D6		1316210808	85	14	49.1	9.32	6.98	
M12 x 1.25	D5		1316210908						

Packed: 1 pc.

Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
345Ti				<input type="checkbox"/>				<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30			8-20				8-15	8-15	15-35	10-20			

good best





List 317Ti

VPO-Ti-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
1/4 - 28 UNF	H3	3	31721408	3.15	1.000	---	0.255	0.191	0.313
	H4		31721508						
5/16 - 24 UNF	H3		31721808	3.54	0.445	1.378	0.318	0.238	0.375
	H4		31721908						
3/8 - 24 UNF	H3		31722208	3.93	0.500	1.713	0.323	0.242	0.406
	H4		31722308						
7/16 - 20 UNF	H3		31722608	4.33	0.571	1.933	0.367	0.275	0.438
	H5		31722708						
1/2 - 20 UNF	H3		31723008	4.92	0.614	1.972	0.429	0.322	0.500
	H5		31723108						
9/16 - 18 UNF	H3		31723408	5.51	0.665	2.126	0.480	0.360	0.563
	H5		31723508						
5/8 - 18 UNF	H3	31723808	4.33	0.728	2.433	0.590	0.442	0.688	
	H5	31723908							
3/4 - 16 UNF	H3	31724208	4.92	0.799	2.654	0.697	0.523	0.750	
	H5	31724308							
7/8 - 14 UNF	H4	31724608	5.51	0.890	3.012	0.800	0.600	0.813	
	H6	31724708							
1 - 12 UNF	H4	31725008	5.51	1.000	3.012	0.800	0.600	0.813	
	H6	31725108							

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
317Ti				○			○				⊗	⊗	○	○			
SFM				15-30			8-20				8-15	8-15	15-35	10-20			

○ good ⊗ best





EXOTAP® VC-10 Ti

Coolant-Through Taps Designed for Titanium Alloys

List 348Ti

VPO-Ti-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)							
			V	L						
M8 x 1.0	D5	3	34820608	90	10	35.0	8.07	6.04	9.5	
M10 x 1.25			34820808	100	12	39.0	9.67	7.26	11.1	
M12 x 1.25			34821008		14	49.1	9.32	6.98		
M12 x 1.5	34821108		16		50.1	10.89	8.17	12.7		
M14 x 1.5	34821308			54.0	12.19	9.14	14.2			
M16 x 1.5	34821508			55.0	13.76	10.31	15.8			
M18 x 1.5	D6	4	34821708	110	20	61.8	16.56	12.42	17.4	
M20 x 1.5			34821908	125	67.4	17.70	13.28	19.1		
M22 x 1.5			34822108		68.4	19.30	14.47			
M24 x 1.5			34822308		140	24	68.4		19.30	14.47

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
348Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-30			8-20					8-15	8-15	15-35	10-20		

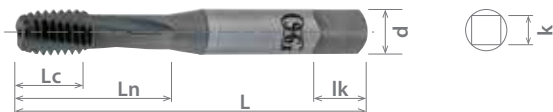
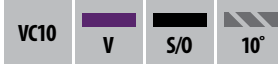
good best





List 313Ni

Ni-SFT, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix S/O	EDP Number	Coating Suffix							
						S/O	V						
2 - 56 UNC	H2	2	-	-	17707	01	-	1.81	0.437	0.476	0.140	0.109	0.188
4 - 40 UNC			H3	17705	01	17190	01	08	1.92	0.559			
6 - 32 UNC	H2			01401	01	17207	01	-					
	H3		17700	01	17091	01	08	-					
	H5		-	-	17092	01	-	-					
	H7		-	-	17701	01	-	-					
8 - 32 UNC	H2		01402	01	-	-	-	2.19	0.751	-	0.167	0.131	0.251
	H3		-	-	17093	01	08			-			
	H5		-	-	17094	01	-			-			
10 - 24 UNC	H3		-	-	17195	01	08	2.44	0.866	-	0.194	0.151	
	H5		-	-	17196	01	-						
10 - 32 UNF	H2		01403	01	17702	01	-	2.44	0.866	-	0.194	0.151	
	H3	17703	01	17095	01	08							
	H4	-	-	17704	01	-							
	H5	-	-	17096	01	-							
1/4 - 20 UNC	H3	01404	01	17197	01	08	2.57	0.996	-	0.255	0.190	0.287	
	H5	-	-	17198	01	-							
	H7	-	-	17714	01	-							
1/4 - 28 UNF	H3	01405	01	17097	01	08	2.57	0.996	-	0.255	0.190	0.287	
	H4	01406	01	-	-	-							
	H5	-	-	17098	01	-							
5/16 - 18 UNC	H3	-	-	17199	01	08	2.72	0.444	1.125	0.317	0.238	0.374	
	H5	-	-	17200	01	-							
	H7	-	-	17712	01	-							
5/16 - 24 UNF	H3	01407	01	17099	01	08	2.72	0.444	1.125	0.317	0.238	0.374	
	H4	-	-	01408	01	-							
	H5	-	-	17100	01	-							
3/8 - 16 UNC	H3	17710	01	17201	01	08	2.93	0.500	1.251	0.380	0.285	0.437	
	H5	-	-	17202	01	-							
	H7	-	-	17711	01	-							
3/8 - 24 UNF	H3	01409	01	17101	01	08	2.93	0.500	1.251	0.380	0.285	0.437	
	H4	01410	01	-	-	-							
	H5	-	-	17102	01	-							
7/16 - 14 UNC	H3	-	-	17203	01	-	3.15	0.570	1.712	0.322	0.242	0.405	
	H5	-	-	17204	01	-							

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

[continued on next page](#) **EXT**

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			4140 4340	300	400		17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
313Ni								<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
SFM							8-20					<input checked="" type="checkbox"/>	8-15	15-35	10-20		

good best





EXOTAP® VC-10 Ni

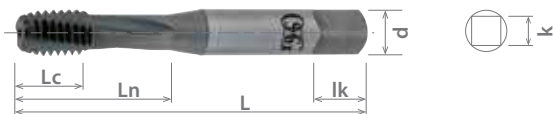
Taps Designed for Nickel Based Alloys



VC10	V	S/O	10°
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List 313Ni (Continued)

Ni-SFT, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk																																																																																																																																																															
			EDP Number	Coating Suffix S/O	EDP Number	Coating Suffix																																																																																																																																																																						
						S/O	V																																																																																																																																																																					
7/16 - 20 UNF	H3	3	01411	01	17103	01	-	3.15	0.570	1.712	0.322	0.242	0.405																																																																																																																																																															
	H5		01412	01	17104	01	-							1/2 - 13 UNC	H3	17709	01	17205	01	08	3.37	0.614	1.933	0.367	0.274	0.437	H5	-	-	17206	01	-	1/2 - 20 UNF	H3	01413	01	17105	01	08	3.59	0.665	1.972	0.429	0.322	0.500	H5	01414	01	17106	01	-	H7	-	-	17713	01	-	9/16 - 18 UNF	H3	01415	01	-	-	-	3.81	0.728	2.125	0.480	0.359	0.562	H5	01416	01	-	-	-	5/8 - 11 UNC	H3	-	-	17107	01	-	4.25	0.799	2.433	0.590	0.442	0.688	5/8 - 18 UNF	H3	-	-	17108	01	-	H5	-	-	17109	01	-	3/4 - 10 UNC	H3	-	-	17708	01	-	4.68	0.889	2.653	0.697	0.522	0.751	H5	-	-	17110	01	-	3/4 - 16 UNF	H3	-	-	17111	01	-	H5	-	-	17112	01	-	7/8 - 9 UNC	H3	-	-	17114	01	-	5.12	1.000	3.011	0.800	0.600	0.811	H5	-	-	17115	01	-	7/8 - 14 UNF	H3	-	-	17116	01	-	H5	-	-	17117	01	-	1 - 8 UNC	H5	-	-	17113	01
1/2 - 13 UNC	H3		17709	01	17205	01	08	3.37	0.614	1.933	0.367	0.274	0.437																																																																																																																																																															
	H5		-	-	17206	01	-							1/2 - 20 UNF	H3	01413	01	17105	01	08	3.59	0.665	1.972	0.429	0.322	0.500	H5	01414	01	17106	01	-		H7	-	-	17713	01	-							9/16 - 18 UNF	H3	01415	01	-	-	-	3.81	0.728	2.125	0.480	0.359	0.562	H5	01416	01	-	-	-	5/8 - 11 UNC	H3	-	-	17107	01	-	4.25	0.799	2.433	0.590	0.442	0.688	5/8 - 18 UNF	H3	-	-	17108	01							-	H5	-	-	17109	01	-	3/4 - 10 UNC	H3	-	-	17708	01	-	4.68	0.889	2.653	0.697	0.522	0.751							H5	-	-	17110	01	-	3/4 - 16 UNF	H3	-	-	17111	01	-	H5	-	-	17112	01	-	7/8 - 9 UNC	H3	-	-	17114	01	-							5.12	1.000	3.011	0.800	0.600	0.811	H5	-	-	17115	01	-	7/8 - 14 UNF	H3	-	-	17116	01	-	H5	-	-	17117	01	-
1/2 - 20 UNF	H3		01413	01	17105	01	08	3.59	0.665	1.972	0.429	0.322	0.500																																																																																																																																																															
	H5		01414	01	17106	01	-																																																																																																																																																																					
	H7		-	-	17713	01	-																																																																																																																																																																					
9/16 - 18 UNF	H3		01415	01	-	-	-	3.81	0.728	2.125	0.480	0.359	0.562																																																																																																																																																															
	H5		01416	01	-	-	-																																																																																																																																																																					
5/8 - 11 UNC	H3		-	-	17107	01	-	4.25	0.799	2.433	0.590	0.442	0.688																																																																																																																																																															
5/8 - 18 UNF	H3		-	-	17108	01	-																																																																																																																																																																					
	H5		-	-	17109	01	-																																																																																																																																																																					
3/4 - 10 UNC	H3	-	-	17708	01	-	4.68	0.889	2.653	0.697	0.522	0.751																																																																																																																																																																
	H5	-	-	17110	01	-																																																																																																																																																																						
3/4 - 16 UNF	H3	-	-	17111	01	-																																																																																																																																																																						
	H5	-	-	17112	01	-																																																																																																																																																																						
7/8 - 9 UNC	H3	-	-	17114	01	-	5.12	1.000	3.011	0.800	0.600	0.811																																																																																																																																																																
	H5	-	-	17115	01	-																																																																																																																																																																						
7/8 - 14 UNF	H3	-	-	17116	01	-																																																																																																																																																																						
	H5	-	-	17117	01	-																																																																																																																																																																						
1 - 8 UNC	H5	-	-	17113	01	-																																																																																																																																																																						

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			4140 4340	300	400		17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
313Ni											<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM							8-20				8-15	8-15	15-35	10-20			

good best





List 345Ni

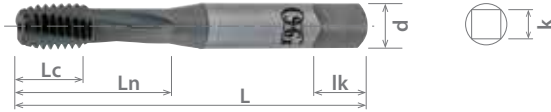
Ni-SFT, Modified Bottom (2.5P-3P)



VC10

S/O

10°



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Modified Bottom (2.5P-3P)							
			S/O							
M2.5 x 0.45	D3	3	1316110001	46	12	13.7	3.58	2.79	4.8	
M3 x 0.5			1316110101	49	16	21.0				
M4 x 0.7			1316110201	54	19	25.5				
M5 x 0.8	D4		1316110301	60	22	-	4.92	3.86	6.4	
M6 x 1.0			1316110401	63	25	33.8	6.47	4.85		7.3
M8 x 1.25	D5		1316110501	69	10	28.6	8.07	6.05	9.5	
M10 x 1.5			D6	1316110701	74	12	31.8	9.67	7.26	11.1
M10 x 1.25			D5	1316110601						
M12 x 1.75	D6		1316110801	85	14	49.1	9.32	6.98		

Packed: 1 pc.

Available Steam Oxide finish only.

EXT

Work Material

List No.	P			Alloy Steels 4140 4340	Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels					Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
345Ni								<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
SFM						8-20						8-15	8-15	15-35	10-20		

good best





List 313

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P-2P)			Modified Bottom (2.5P-3.P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk		
			EDP Number	Coating Suffix		EDP Number	Coating Suffix									
				S/O	V		S/O	V								
2 - 56 UNC	H2	2	01417	01	08	17540	01	08	1.75	0.437	0.476	0.141	0.110	0.189		
4 - 40 UNC	H3		01418	01	08	17520	01	08	1.87	0.197	0.559					
	H4		-	-	-	17541	01	08								
	-		-	-	-	17542	01	08								
5 - 40 UNC	H2		-	-	-	17521	01	08	1.93	0.201	0.634					
	-		-	-	17543	01	08									
	-		-	-	17544	01	08									
6 - 32 UNC	H3		01419	01	08	17522	01	08	2.00	0.248	0.685					
	H4		01420	01	08	17544	01	08								
	H5		-	-	-	17545	01	08								
8 - 32 UNC	H2		01421	01	08	17546	01	08	2.12	0.252	0.752				0.168	0.131
	H3		01422	01	08	17523	01	08								
	H4	01423	01	08	17547	01	08									
	H5	-	-	-	17548	01	08									
10 - 24 UNC	H3	-	-	-	17524	01	08	2.37	0.327	0.866	0.194	0.152				
	H5	-	-	-	17030	01	08									
10 - 32 UNF	H2	01424	01	08	17031	01	08	2.50	0.398	0.996	0.255	0.191	0.311			
	H3	01425	01	08	17525	01	08									
	H4	01426	01	08	17032	01	08									
	H5	-	-	-	17033	01	08									
1/4 - 20 UNC	H3	-	-	-	17526	01	08	2.72	0.445	1.126	0.318	0.238	0.374			
	H5	-	-	-	17035	01	08									
1/4 - 28 UNF	H3	01427	01	08	17527	01	08	2.93	0.500	1.252	0.381	0.286	0.437			
	H4	01428	01	08	17036	01	08									
	H5	-	-	-	17037	01	08									
	H6	-	-	-	17038	01	08									
5/16 - 18 UNC	H3	-	-	-	17528	01	08	3.15	0.571	1.713	0.323	0.242	0.406			
	H5	-	-	-	17039	01	08									
5/16 - 24 UNF	H3	01429	01	08	17529	01	08	3.37	0.614	1.933	0.367	0.275	0.437			
	H4	01430	01	08	17040	01	08									
	H5	-	-	-	17041	01	08									
	H6	-	-	-	17042	01	08									
3/8 - 16 UNC	H3	-	-	-	17530	01	08	3.15	0.571	1.713	0.323	0.242	0.406			
	H5	-	-	-	17043	01	08									
3/8 - 24 UNF	H3	01431	01	08	17531	01	08	3.37	0.614	1.933	0.367	0.275	0.437			
	H4	01432	01	08	17044	01	08									
3/8 - 24 UNF	H5	-	-	-	17045	01	08	3.15	0.571	1.713	0.323	0.242	0.406			
	H6	-	-	-	17046	01	08									
7/16 - 14 UNC	H3	-	-	-	17532	01	08	3.15	0.571	1.713	0.323	0.242	0.406			
	H5	-	-	-	17047	01	08									
7/16 - 20 UNF	H3	01433	01	08	17533	01	08	3.37	0.614	1.933	0.367	0.275	0.437			
	H5	01434	01	08	17048	01	08									
1/2 - 13 UNC	H3	-	-	-	17534	01	08	3.37	0.614	1.933	0.367	0.275	0.437			
	H5	-	-	-	17049	01	08									
1/2 - 20 UNF	H3	01435	01	08	17535	01	08	3.37	0.614	1.933	0.367	0.275	0.437			
	H5	01436	01	08	17050	01	08									

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.





List 313 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



VC10	V	S/O	15°
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Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P-2P)			Modified Bottom (2.5P-3P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix		EDP Number	Coating Suffix							
				S/O	V		S/O	V						
5/8 - 11 UNC	H3	4	-	-	-	17536	01	08	3.81	0.728	2.126	0.480	0.360	0.563
5/8 - 18 UNF	H5		-	-	-	17537	01	08						
3/4 - 10 UNC	H3		-	-	-	17538	01	08	4.25	0.799	2.433	0.590	0.442	0.689
3/4 - 16 UNF			-	-	-	17539	01	08						

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
313				<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

good best

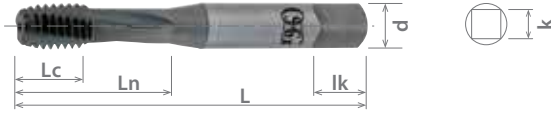




VC10	V	S/O	15°
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List 345

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P-3P)		Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	
			EDP Number	Coating Suffix							
				S/O							V
M3 x 0.5	D3	3	17055	01 08	49	4	16.0	3.58	2.79	4.8	
M4 x 0.7	D4		17056	01 08	54	5	19.1	4.26	3.33	6.4	
M5 x 0.8			17057	01 08	60	6	22.2	4.92	3.86		
M6 x 1.0			17058	01 08	63	8	25.4	6.47	4.85		7.3
M8 x 1.25	D5		17059	01 08	69	10	28.6	8.07	6.05	9.5	
M10 x 1.5	D6		17061	01 08	74	12	31.8	9.67	7.26	11.1	
M10 x 1.25	D5		17060	01 08							
M12 x 1.75	D6		17062	01 08							85

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
345				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

good best





List 317

VPO-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
			L	Lc	Ln	d	k	lk	
5/16 - 18 UNC	H3	3	31701508	3.54	0.445	1.378	0.318	0.238	0.375
	H5		31701608						
5/16 - 24 UNF	H3		31701708						
	H4		31701808						
3/8 - 16 UNC	H3		31701908	3.93	0.500	1.535	0.381	0.286	0.438
	H5		31702008						
3/8 - 24 UNF	H3		31702108	3.54		1.378			
	H4		31702208						
7/16 - 14 UNC	H3		31702308	3.93	0.571	1.713	0.323	0.242	0.406
	H5		31702408						
7/16 - 20 UNF	H3		31702508						
	H5		31702608						
1/2 - 13 UNC	H3		31702708	4.33	0.614	1.933	0.367	0.275	0.438
	H5		31702808						
1/2 - 20 UNF	H3		31702908	3.93					
	H5		31703008						
9/16 - 12 UNC	H3		31704908	4.33	0.665	1.972	0.429	0.322	0.500
	H5		31705008						
9/16 - 18 UNF	H3		31703108	3.93					
	H5		31703208						
5/8 - 11 UNC	H3		31703308	4.33	0.728	2.126	0.480	0.360	0.563
	H5		31703408						
5/8 - 18 UNF	H3		31703508	3.93					
	H5		31703608						
3/4 - 10 UNC	H3	31703708	4.92	0.799	2.433	0.590	0.442	0.688	
	H5	31703808							
3/4 - 16 UNF	H3	31703908	4.33						
	H5	31704008							
7/8 - 9 UNC	H4	31704108	5.51	0.890	2.654	0.697	0.523	0.750	
	H6	31704208							
7/8 - 14 UNF	H4	31704308	4.92						
	H6	31704408							
1 - 8 UNC	H4	31704508	6.29	1.000	3.012	0.800	0.600	0.813	
	H6	31704608							
1 - 12 UNF	H4	31704708	5.51						
	H6	31704808							

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels				Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels				
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
317				<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-30	10-25			12-45	8-20			8-15	8-15	15-35	10-20			

good best





EXOTAP® VC-10 Oil

Coolant-Through Taps Designed for Difficult to Machine Materials

List 351

VPO-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
M8 x 1.0	D5	3	35100608	90	10	35.0	8.07	6.04	9.5
M8 x 1.25			35100708						
M10 x 1.25	D6		35100808	100	12	39.0	9.67	7.26	
M10 x 1.5			35100908						
M12 x 1.25	D5		35101008						
M12 x 1.5	D6		35101108						
M12 x 1.75			35101208						
M14 x 1.5	D7		35101308	110	14	49.1	9.32	6.98	
M14 x 2.0			35101408						
M16 x 1.5	D6		35101508	100	16	50.1	10.89	8.17	
M16 x 2.0	D7	35101608							
M18 x 1.5	D6	35101708	110	20	55.0	13.76	10.31		
M18 x 2.5	D7	35101808							
M20 x 1.5	D6	35101908	125	24	61.8	16.56	12.42		
M20 x 2.5	D7	35102008							
M22 x 1.5	D6	35102108	140	20	67.4	17.70	13.28		
M22 x 2.5	D7	35102208							
M24 x 1.5	D6	35102308	140	24	68.4	19.30	14.47		
M24 x 3.0	D8	35102408							

Packed: 1 pc.
Available V coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
351				☐	☐							☐	☐				
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

☐ good ☐ best



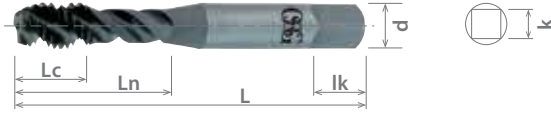


List 303

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



HSSE	V	TiN	S/O	45°
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Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Modified Bottom (2.5P - 3P)				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk			
			EDP Number	Coating Suffix		EDP Number	Coating Suffix											
				S/O	V		S/O	TiN	V									
2 - 56 UNC	H2	2	01354	01	08	17489	01	-	-	1.75	0.437	0.476	0.141	0.110	0.189			
3 - 48 UNC			01355	01	08	17487	01	-	-	1.81	0.496	0.535						
4 - 40 UNC	H3	2	-	-	-	17639	01	05	08	1.87	0.197	0.559						
			3	01356	01	08	17320	01	-							08		
	H4	2	-	-	-	17480	01	-	-									
			3	01357	01	08	17220	01	-							08		
			-	-	-	17481	01	-	-									
			-	-	-	17482	01	-	-									
4 - 48 UNF	H2	2	-	-	-	17484	01	-	-	1.93	0.201	0.626						
			-	-	-	17488	01	-	-									
5 - 40 UNC	H2	2	01358	01	08	-	-	-	-	2.00	0.248	0.685				0.102	0.131	0.252
6 - 32 UNC			01359	01	08	17321	01	-	08									
6 - 32 UNC			H3	01360	01	08	17242	01	-				08					
			H4	01361	01	08	17322	01	05				08					
			H5	17468	01	-	17222	01	-				08					
6 - 40 UNF	H7	17469	01	-	-	-	-	-	2.12	0.252	0.752	0.168	0.131	0.252				
8 - 32 UNC	H2	01362	01	08	17485	01	-	-										
	8 - 32 UNC	H3	-	-	-	17486	01	-	-									
H2		01363	01	08	17243	01	-	08										
H3		01364	01	08	17323	01	05	08										
H4		-	-	-	17470	01	-	-										
H5		17471	01	-	17223	01	-	08										
H6		-	-	-	17472	01	-	-										
8 - 36 UNF	H7	-	-	-	17473	01	-	-	2.37	0.327	0.866	0.194	0.152	0.280				
10 - 24 UNC	H3	01365	01	08	-	-	-	-										
	H2	01366	01	08	17245	01	-	08										
	H3	01367	01	08	17324	01	05	08										
	H5	17495	01	-	17494	01	-	-										
10 - 32 UNF	H7	-	-	-	17496	01	-	-										
	H2	01368	01	08	17246	01	-	08										
	H3	01369	01	08	17325	01	05	08										
	H4	-	-	-	17474	01	-	-										
	H5	17475	01	-	17225	01	-	08										
	H6	-	-	-	17476	01	-	-										
12 - 24 UNC	H3	2	-	-	-	17477	01	-	-	0.331	0.933	0.220	0.165	0.280				
12 - 28 UNF			01370	01	08	17497	01	-	-									
			-	-	-	17498	01	-	-									

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.

continued on next page **EXT**

Work Material																			
List No.	P					Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Titanium		Stainless Steels				Aluminum	Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High				300	400	17-4 PH					6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
303	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	25-80	20-50	20-45				20-45	20-45	8-20										

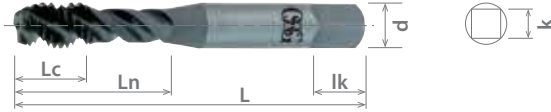
good best





List 303 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Modified Bottom (2.5P - 3P)				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix		EDP Number	Coating Suffix								
				S/O	V		S/O	TiN	V						
1/4 - 20 UNC	H2	3	-	-	-	17626	01	-	-	2.50	0.398	0.996	0.255	0.191	0.311
	H3		01371	01	08	17326	01	05	08						
	H5		01372	01	08	17226	01	-	08						
	H7		-	-	-	17627	01	-	-						
1/4 - 28 UNF	H2		-	-	-	17634	01	-	-						
	H3		01373	01	08	17327	01	05	08						
	H4		01374	01	08	17227	01	-	08						
	H5		17636	01	-	17635	01	-	-						
	H6		-	-	-	17637	01	-	-						
	H7		-	-	-	17638	01	-	-						
5/16 - 18 UNC	H3		01375	01	08	17328	01	05	08						
	H5		01376	01	08	17228	01	-	08						
	H7		-	-	-	17622	01	-	-						
5/16 - 24 UNF	H3		01377	01	08	17329	01	05	08						
	H4		01378	01	08	17229	01	-	08						
	H5		17632	01	-	17631	01	-	-						
	H7		-	-	-	17633	01	-	-						
3/8 - 16 UNC	H3		01379	01	08	17330	01	05	08						
	H5		01380	01	08	17230	01	-	08						
	H7		-	-	-	17618	01	-	-						
3/8 - 24 UNF	H3		01381	01	08	17331	01	05	08						
	H4		01382	01	08	17231	01	-	08						
	H5		17630	01	-	17629	01	-	-						
7/16 - 14 UNC	H3		01383	01	08	17332	01	05	08						
	H5		-	-	-	17232	01	-	08						
	H7		-	-	-	17617	01	-	-						
7/16 - 20 UNF	H3		01384	01	08	17333	01	05	08						
	H5		01385	01	08	17233	01	-	08						
	H7	-	-	-	17628	01	-	-							
1/2 - 13 UNC	H3	01386	01	08	17334	01	05	08							
	H5	01387	01	08	17234	01	-	08							
	H7	-	-	-	17500	01	-	-							
1/2 - 20 UNF	H3	01388	01	08	17335	01	05	08							
	H5	01389	01	08	17235	01	-	08							
	H6	-	-	-	17624	01	-	-							
	H7	-	-	-	17625	01	-	-							
9/16 - 12 UNC	H3	3	-	-	-	17499	01	05	08						
		4	01390	01	08	17260	01	-	08						
9/16 - 18 UNF	H3	3	-	-	-	17623	01	05	08						
		4	01391	01	08	17261	01	-	08						

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.





List 303 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



HSSE	V	TiN	S/O	45°
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Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Modified Bottom (2.5P - 3P)				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix		EDP Number	Coating Suffix								
				S/O	V		S/O	TiN	V						
5/8 - 11 UNC	H3	3	-	-	-	17491	01	05	08	3.81	0.728	2.126	0.480	0.360	0.563
		4	01392	01	08	17336	01	-	08						
	H5	3	-	-	-	17492	01	-	-						
		4	01393	01	08	-	-	-	-						
5/8 - 18 UNF	H3	3	-	-	-	17493	01	-	-						
		4	01394	01	08	17337	01	-	08						
	H5	3	-	-	-	17620	01	-	-						
		4	01395	01	08	-	-	-	-						
3/4 - 10 UNC	H3	4	01396	01	08	17338	01	05	08						
			01397	01	08	-	-	-	-						
3/4 - 16 UNF	H3	4	01398	01	08	17339	01	05	08						
			01399	01	08	-	-	-	-						
7/8 - 9 UNC	H4	4	-	-	-	17262	01	-	08						
7/8 - 14 UNF			01400	01	08	17263	01	-	08						
1 - 8 UNC			-	-	-	17264	01	-	08						
1 - 12 UNF			-	-	-	17490	01	-	-						

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide, V or TiN coatings as shown above.



Work Material

List No.	P				Alloy Steels 4140 4340	Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Stainless Steels			Aluminum		Nickel Alloy		Titanium	Hardened Steels						
	Low 1010 1018	Med. 1035 1045	High 1065	300			400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
303	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>												
SFM	25-80	20-50	20-45	20-45	20-45	8-20												

good best



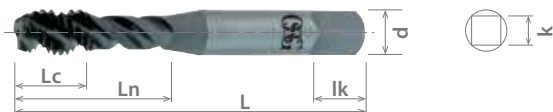


List 343

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



HSSE	V	TiN	S/O	45°
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Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk			
			EDP Number	Coating Suffix S/O	EDP Number	Coating Suffix										
						S/O	TiN							V		
M3 x 0.5	D3	3	17550	01	17551	01	-	-	49	4	16.0	3.58	2.79	4.8		
			-	-	17464	01	-	-								
M4 x 0.7	D4		17553	01	17554	01	05	08	54	5	19.1	4.26	3.33		6.4	
M5 x 0.8			17556	01	17557	01	05	08	60	6	22.2	4.92	3.86			
M6 x 1.0			17559	01	17560	01	05	08	63	8	25.4	6.47	4.85		7.9	
M8 x 1.25	D5		17562	01	17563	01	05	08	69	10	28.6	8.07	6.05	9.5	11.1	
M8 x 1.0			17465	01	17466	01	-	-								
M10 x 1.5	D6		17565	01	17566	01	05	08								
M10 X 1.25	D5		-	-	17457	01	-	-	74	12	31.8	9.67	7.26			
M12 x 1.75	D6		17568	01	17569	01	05	08								
M12 x 1.25	D5		-	-	17458	01	-	-	85	14	49.1	9.32	6.98			
M14 x 2.0	D7		17558	01	17460	01	-	-								
M14 x 1.5	D6		17561	01	17459	01	-	-	91	16	50.1	10.89	8.18	12.7		
M16 x 2.0	D7		17555	01	17462	01	-	-								
M16 x 1.5			17552	01	17461	01	-	-	96		54.0	12.19	9.14	14.3		
M18 x 1.5	D6		-	-	17463	01	-	-								
			4	-	-	17463	01	-	-	102	20	55.0	13.76	10.31		15.9

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide, V or TiN coatings as shown above.



Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
343	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

good best





List 307

OIL-V-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
1/4 - 20 UNC	H3	3	30701708	3.14	0.402	1.181	0.255	0.191	0.313
	H5		30701808						
1/4 - 28 UNF	H3		30701908	3.54	0.445	1.378	0.318	0.238	0.375
	H4		30702008						
5/16 - 18 UNC	H3		30702108	3.93	0.500	1.535	0.381	0.286	0.438
	H5		30702208						
5/16 - 24 UNF	H4		30702308	3.54	0.571	1.378	0.323	0.242	0.406
	H5		30702408						
3/8 - 16 UNC	H3		30702508	3.93	0.614	1.354	0.367	0.275	0.438
	H5		30702608						
3/8 - 24 UNF	H3		30702708	3.54	0.728	1.563	0.480	0.360	0.563
	H4		30702808						
7/16 - 14 UNC	H3	30702908	4.33	0.890	1.886	0.697	0.523	0.750	
	H5	30703008							
7/16 - 20 UNF	H3	30703108	3.93	0.920	1.886	0.728	1.563	0.563	
	H5	30703208							
1/2 - 13 UNC	H3	30703308	4.33	1.000	2.091	0.800	0.600	0.813	
	H5	30703408							
1/2 - 20 UNF	H3	30703508	3.93	0.665	1.472	0.429	0.322	0.500	
	H5	30703608							
9/16 - 12 UNC	H3	30703708	4.33	0.799	1.713	0.590	0.442	0.688	
	H5	30703808							
9/16 - 18 UNF	H3	30703908	3.93	0.890	1.886	0.697	0.523	0.750	
	H5	30704008							
5/8 - 11 UNC	H3	30704108	4.33	1.000	2.091	0.800	0.600	0.813	
	H5	30704208							
5/8 - 18 UNF	H3	30704308	3.93	0.728	1.563	0.480	0.360	0.563	
	H5	30704408							
3/4 - 10 UNC	H3	30704508	4.92	0.799	1.713	0.590	0.442	0.688	
	H5	30704608							
3/4 - 16 UNF	H3	30704708	4.33	0.890	1.886	0.697	0.523	0.750	
	H5	30704808							
7/8 - 9 UNC	H4	30704908	5.51	1.000	2.091	0.800	0.600	0.813	
	H6	30705008							
7/8 - 14 UNF	H4	30705108	4.92	0.890	1.886	0.697	0.523	0.750	
	H6	30705208							
1 - 8 UNC	H4	30705308	6.29	1.000	2.091	0.800	0.600	0.813	
	H6	30705408							
1 - 12 UNF	H4	30705508	5.51	0.890	1.886	0.697	0.523	0.750	
	H6	30705608							

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
307	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

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List 347

OIL-V-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



NEW HSSE



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	V						
			L	Lc						
M6 x 1.0	D5	3	34700508	80	8	30.0	6.47	4.85	7.9	
M8 x 1.0			34700608	90	10	35.0	8.07	6.04	9.5	
M8 x 1.25			34700708	100	12	39.0	9.67	7.26	11.1	
M10 x 1.25	34700808									
M10 x 1.5	34700908									
M12 x 1.25	D5		34701008	110	14	49.1	9.32	6.98		
M12 x 1.5	D6		34701108							
M12 x 1.75	D6		34701208							
M14 x 1.5	D7		4	34701308	100	16	50.1	10.89	8.17	12.7
M14 x 2.0		34701408		110	54.0		12.19	9.14	14.2	
M16 x 1.5		D6		34701508	100		20	55.0	13.76	10.31
M16 x 2.0	D7	34701608	110	61.8	16.56	12.42		17.4		
M18 x 1.5	D6	34701708	125	24	67.4	17.70		13.28	19.0	
M18 x 2.5	D7	34701808								
M20 x 1.5	D6	34701908								
M20 x 2.5	D7	34702008	140	24	68.4	19.30	14.47			
M22 x 1.5	D6	34702108	125							
M22 x 2.5	D7	34702208	140							
M24 x 1.5	D6	34702308	160	24	68.4	19.30	14.47			
M24 x 3.0	D8	34702408								

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
347	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

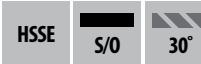
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List 398

Long Shank, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)							
			S/O	S/O							
4 - 40 UNC	H2	3	-	1766101	4	0.197	0.839	0.141	0.110	0.189	
			0143701	-	6						
6 - 32 UNC	H3		-	1766301	4	0.248	1.028	0.168	0.131	0.252	
			0143801	1766501	6						
8 - 32 UNC			-	1766701	4	0.252	1.126	0.194	0.152		
			0143901	1766901	6						
10 - 24 UNC			-	1767101	4	0.327	1.303	0.255	0.191		
			-	1767301	6						
10 - 32 UNF			-	1767501	4	0.398	1.496	0.318	0.238		
			0144001	1767701	6						
1/4 - 20 UNC			H3	-	1767901	4	0.445	1.689	0.381	0.286	0.437
				0144101	1768101	6		1.677			
1/4 - 28 UNF				0144201	1768301	6	0.500	1.874	0.323	0.242	0.406
5/16 - 18 UNC				0144301	1768501						
5/16 - 24 UNF				-	1768601	6	0.571	1.713	0.367	0.275	0.437
3/8 - 16 UNC				0144401	1768701						
3/8 - 24 UNF				0144501	1768801	6	0.614	1.933	0.480	0.360	0.563
7/16 - 14 UNC				0144601	1768901						
7/16 - 20 UNF				-	1769001	6	0.728	2.126	0.480	0.360	0.563
1/2 - 13 UNC				-	1769101						
1/2 - 20 UNF		-		1769201	6	0.728	2.126	0.480	0.360	0.563	
5/8 - 11 UNC		-		1769301							
		4		-	1769301						

Packed: 1 pc.
Available Steam Oxide finish only.
Neck length is designed for reaching 50% deeper holes than ANSI standard taps.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
398	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	25-80	20-50	20-45			20-45	20-45	8-20										

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List 220

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)							
			S/O	L		Lc	Ln	d	k	lk
4 - 40UNC	2B	3	2211401	2.20	0.196	0.704	0.140	0.109	0.188	0.251
6 - 32 UNC			2212401							
8 - 32 UNC			2217801	2.48	0.251	0.826	0.167	0.131		
10 - 24 UNC			2213401	2.75	0.326	0.976	0.194	0.151		
10 - 32 UNF			2218801							
1/4 - 20 UNC			2230001	3.14	0.397	1.177	0.255	0.190	0.311	
1/4 - 28 UNF			2230401							
5/16 - 18 UNC			2230801	3.54	0.444	1.377	0.317	0.238	0.374	
5/16 - 24 UNF			2231201							
3/8 - 16 UNC			2231601	3.93	0.500	1.712	0.380	0.285	0.437	
3/8 - 24 UNF			2231801							
7/16 - 14 UNC			2232001							
7/16 - 20 UNF			2232201							
1/2 - 13 UNC			2232401	4.33	0.614	1.933	0.367	0.274	0.437	
1/2 - 20 UNF			2232601	3.93						
5/8 - 11 UNC			2233201	4.33	0.728	2.125	0.480	0.359	0.562	
5/8 - 18 UNF			2233401	3.93						
3/4 - 10 UNC			2233601	4.92	0.799	2.433	0.590	0.442	0.688	
3/4 - 16 UNF			2233801	4.33						
7/8 - 9 UNC			2244001	5.51	0.889	2.952	0.697	0.522	0.751	
7/8 - 14 UNF		2239201	4.92	2.653						
1 - 8 UNC		2244401	6.29	1.000	3.543	0.800	0.600	0.811		
1 - 12 UNF		2239601	5.51						3.011	
1,1/8 - 7 UNC		2247201	7.08	1.141	3.937	0.895	0.672	0.874		
1,1/8 - 12 UNF		2245001	5.90						3.074	
1,1/8 - 8 UN		2247601	7.08	1.141	3.937	1.020	0.766	1.000		
1,1/4 - 7 UNC		2247701								
1,1/4 - 12 UNF		2245601	5.90	1.334	3.590	1.107	0.831	1.062		
1,1/4 - 8 UN		2247901	7.08						3.937	
1,3/8 - 6 UNC		2248001	7.87	1.334	4.527	1.232	0.925	1.125		
1,3/8 - 8 UN		2248201							7.87	3.590
1,3/8 - 12 UNF		2246201	6.69	1.598	4.724	1.430	1.072	1.251		
1,1/2 - 6 UNC		2248301	7.87						3.976	
1,1/2 - 8 UN		2248501	6.69	1.598	4.921	1.519	1.138			
1,1/2 - 12 UNF		2246801						6.69	3.590	
1,5/8 - 8 UN		2248601	7.87	1.779	5.511	1.644	1.233	1.374		
1,3/4 - 5 UNC		2248701	8.66						4.921	
1,3/4 - 8 UN		2248801	7.87	1.779	5.511	1.644	1.233	1.374		
1,7/8 - 8 UN		2248901	8.85						4.921	
2 - 4,1/2 UNC		2249001	9.84	1.779	5.511	1.644	1.233	1.374		
2 - 8 UN	2249101	8.85	4.921							

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
220	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75					15-35			

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List 229



DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	S/O						
			L	Lc	Ln	d	k	lk		
M3 x 0.5	6H	3	2290401	2.20	0.161	0.713	0.141	0.110	0.189	
M4 x 0.7			2290601	2.48	0.220	0.827	0.168	0.131	0.252	
M5 x 0.8			2290801	2.75	0.252	0.984	0.194	0.152	0.252	
M6 x 1.0			2291001	3.14	0.315	1.181	0.255	0.191	0.311	
M8 x 1.25			2291401	3.54	0.394	1.378	0.318	0.238	0.374	
M10 x 1.5			2291801	3.93	0.472	1.535	0.381	0.286	0.437	
M10 x 1.25			2291701							
M12 x 1.75			2292301	4.33	0.551	1.933	0.367	0.275		
M12 x 1.5			2292201							
M12 x 1.25			2292101	3.93	0.630	1.972	0.429	0.322		
M14 x 2.0			2292601	4.33						
M14 x 1.5			2292501	3.93	2.126	0.480	0.360	0.563		
M16 x 2.0			2292901	4.33						
M16 x 1.5			2292801	3.93	0.787	2.165	0.542	0.406	0.626	
M18 x 2.5			2293201	4.92						
M18 x 1.5			2293001	4.33						
M20 x 2.5		2293601	5.51							
M20 x 1.5		2293401	4.92	2.433	0.652	0.489	0.689			

Packed: 1 pc.
Available Steam Oxide finish only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
229	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>				
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75					15-35			

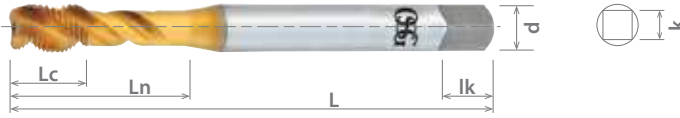
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List 230

OIL-TIN-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			TiN						
1/4 - 20 UNC	2B	3	2330005	3.14	0.402	1.181	0.255	0.191	0.311
1/4 - 28 UNF			2330405						
5/16 - 18 UNC			2330805	3.54	0.445	1.378	0.318	0.238	0.374
5/16 - 24 UNF			2331205						
3/8 - 16 UNC			2331605	3.93	0.500	1.713	0.323	0.242	0.406
3/8 - 24 UNF			2331805						
7/16 - 14 UNC			2332005						
7/16 - 20 UNF			2332205						
1/2 - 13 UNC			2332405	4.33	0.614	1.933	0.367	0.275	0.437
1/2 - 20 UNF			2332605						
9/16 - 18 UNF		2333005	3.93	0.665	1.972	0.429	0.322	0.500	
5/8 - 11 UNC		2333205							
5/8 - 18 UNF		2333405	3.93	0.728	2.126	0.480	0.360	0.563	
3/4 - 10 UNC		2333605							
3/4 - 16 UNF		2333805	4.33	0.799	2.433	0.590	0.442	0.689	
7/8 - 9 UNC		2334005							
7/8 - 14 UNF		2334205	4.92	0.890	2.654	0.697	0.523	0.752	
1 - 8 UNC		2334405							
				6.29	1.000	3.012	0.800	0.600	0.811

Packed: 1 pc.
Available TiN finish only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
230	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				
SFM	50-120	45-110	40-100	45-110	20-60	20-70	30-50	20-50	40-100	50-125	50-110			20-60			

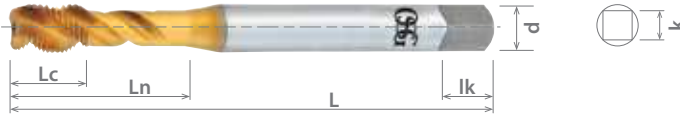
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List 239

OIL-TIN-SFT, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			TiN	L	Lc	Ln	d	k	lk
M6 x 1.0	6H	3	2391005	80	8	30.0	6.47	4.85	7.9
M8 x 1.25			2391405	90	10	35.0	8.07	6.05	9.5
M10 x 1.5			2391805	100	12	39.0	9.67	7.26	11.1
M10 x 1.25			2391705						
M12 x 1.75			2392305	110	14	49.1	9.32	6.98	
M12 x 1.5			2392205						
M12 x 1.25			2392105	100	16	50.1	10.89	8.18	12.7
M14 x 2.0			2392605	110					
M14 x 1.5			2392505	100					
M16 x 2.0			2392905	110					
M16 x 1.5			2392805	100	20	54.0	12.19	9.14	14.3
M18 x 2.5			2393205	125					
M18 x 1.5		2393005	110						
M20 x 2.5		2393605	140						
M20 x 1.5		2393405	125	61.8	16.56	12.42	17.5		

Packed: 1 pc.
Available TiN finish only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
239	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				
SFM	50-120	45-110	40-100	45-110	20-60	20-70	30-50	20-50	40-100	50-125	50-110			20-60			

good best





List 13013



OIL-V-SFT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length				
			Bottom (1.5P - 2P)											
			V	L							Lc	Ln	d	k
1/4 - 20 UNC	2B	3	1301300508	3.14	0.401	1.181	0.255	0.190	0.287					
1/4 - 28 UNF			1301300608											
5/16 - 18 UNC			1301300708	3.54						0.444	1.377	0.317	0.238	0.374
5/16 - 24 UNF			1301300808											
3/8 - 16 UNC			1301300908	3.93						0.500	1.712	0.322	0.242	0.405
3/8 - 24 UNF			1301301008											
7/16 - 14 UNC			1301301108											
7/16 - 20 UNF			1301301208											
1/2 - 13 UNC		1301301308	4.33	0.614	1.933	0.367	0.274	0.437						
1/2 - 20 UNF		1301301408	3.93											
5/8 - 11 UNC		4		1301301508	4.33	0.728	2.125	0.480	0.359	0.562				
5/8 - 18 UNF				1301301608	3.93									
3/4 - 10 UNC				1301301708	4.92									
3/4 - 16 UNF				1301301808	4.33						0.799	2.433	0.590	0.442

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
13013			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>					
SFM			40-100	45-110	20-60				40-100		50-110			20-60	15-50			

good best





List 13113

OIL-V-SFT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



HSSE

V

15°



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)							
			V	L						
M6 x 1.0	6H	3	1311300508	80	9	6	29.9	6.47	4.85	7.8
M8 x 1.25			1311300608	90		8	35.0	8.07	6.04	9.4
M10 x 1.5			1311300808	100		9	38.9	9.67	7.26	11.0
M10 x 1.25			1311300708							
M12 x 1.75			1311301108	100		10	50.0	10.89	8.17	12.7
M12 x 1.5			1311301008							
M12 x 1.25			1311300908	110		12	54.0	12.19	9.14	14.3
M14 x 2.0			1311301308							
M14 x 1.5			1311301208	110		13	54.9	13.76	10.31	15.9
M16 x 2.0			1311301508							
M16 x 1.5			1311301408	100		16	61.7	16.56	12.42	17.5
M18 x 2.5			1311301708							
M18 x 1.5		1311301608	125	16	61.7	16.56	12.42	17.5		
M20 x 2.5		1311301908								
M20 x 1.5		1311301808	125	16	61.7	16.56	12.42	17.5		

Packed: 1 pc.
Available V coating only.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
13113			<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>				
SFM			40-100	45-110	20-60				40-100		50-110			20-60	15-50			

good best





List 13014

HXL-SFT, Horizontal Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	L	Lc	Ln	d	k	lk
			S/O	L	Lc	Ln	d	k	lk
1/2 - 13 UNC	2B	4	1301402601	4.33	0.614	-	0.367	0.275	0.437
1/2 - 20 UNF			1301402701	3.93		1.000			
9/16 - 12 UNC			1301400101	4.33	-	0.429	0.322	0.500	
9/16 - 18 UNF			1301400201	3.93	1.126				
5/8 - 11 UNC			1301400301	4.33	-	0.480	0.360	0.563	
5/8 - 18 UNF			1301400401	3.93	1.252				
3/4 - 10 UNC			1301400501	4.92	-	0.590	0.442	0.689	
3/4 - 16 UNF			1301402801	4.33	1.500				
7/8 - 9 UNC			1301400601	5.51	-	0.697	0.523	0.752	
7/8 - 14 UNF			1301402901	4.92	1.752				
1 - 8 UNC			1301400701	6.29	1.000	-	0.800	0.600	0.811
1 - 12 UNF			1301403001	5.51	0.665	2.000			
1,1/8 - 7 UNC		1301400901	7.08	1.142	-	0.896	0.672	0.874	
1,1/8 - 8 UN		1301401101		1.000					
1,1/8 - 12 UNF		1301403101	5.90	0.665	2.252	1.021	0.766	1.000	
1,1/4 - 7 UNC		1301401201	1.142						
1,1/4 - 8 UN		1301401401	7.08	1.000	2.500				
1,1/4 - 12 UNF		1301403201	5.90	0.665					
1,3/8 - 6 UNC		1301401501	7.87	1.335	-	1.108	0.831	1.063	
1,3/8 - 8 UN		1301401701		1.000	2.752				
1,3/8 - 12 UNF		1301403901	6.69	1.335	-	1.233	0.925	1.126	
1,1/2 - 6 UNC		1301401801	7.87	1.000	3.000				
1,1/2 - 8 UN		1301402001	6.69	0.665	3.252	1.305	0.979	1.252	
1,1/2 - 12 UNF		1301403301		7.87					1.000
1,5/8 - 8 UN		1301402101	8.66	1.598	-	1.430	1.072	1.252	
1,3/4 - 5 UNC		1301403501	7.87	1.000	3.500				
1,3/4 - 8 UN		1301402201	8.85	1.000	3.752	1.519	1.139	1.374	
1,7/8 - 8 UN		1301402301	9.84	1.780	-	1.644	1.233		
2 - 4,1/2 UNC		1301403601	8.85	1.000	4.000			1.894	1.420
2 - 8 UN		1301402401	11.02	1.780	-	2.100	1.575		
2,1/4 - 4,1/2 UNC		1301403701	9.84	1.000	4.500				
2,1/4 - 8 UN		1301404001	12.40	2.000	-				
2,1/2 - 4 UNC		1301403801	10.82	1.000	5.000				
2,1/2 - 8 UN		1301402501							

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
13014	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input type="checkbox"/>		
SFM	25-80	20-50	20-45	20-50	15-20	20-45	20-45	15-20	25-75					15-35	8-15		

good best





List 13024

HXL-OIL-SFT, Horizontal Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	L	Lc	Ln	d	k	lk
			S/O	L	Lc	Ln	d	k	lk
1/2 - 13 UNC	2B	4	1302402601	4.33	0.614	-	0.367	0.274	0.437
1/2 - 20 UNF			1302402701	3.93		1.000			
9/16 - 12 UNC			1302400101	4.33	0.665	-	0.429	0.322	0.500
9/16 - 18 UNF			1302400201	3.93		1.125			
5/8 - 11 UNC			1302400301	4.33	0.728	-	0.480	0.359	0.562
5/8 - 18 UNF			1302400401	3.93		1.251			
3/4 - 10 UNC			1302400501	4.92	0.799	-	0.590	0.442	0.688
3/4 - 16 UNF			1302402801	4.33		1.500			
7/8 - 9 UNC			1302400601	5.51	0.889	-	0.697	0.522	0.751
7/8 - 14 UNF			1302402901	4.92		1.751			
1 - 8 UNC			1302400701	6.29	1.000	-	0.800	0.600	0.811
1 - 12 UNF			1302403001	5.51	0.665	2			
1,1/8 - 7 UNC		1302400901	-	1.141	-	0.895	0.672	0.874	
1,1/8 - 8 UN		1302401101	7.08	1.000	2.251				
1,1/8 - 12 UNF		1302403101	5.90	0.665	-	1.020	0.766	1.000	
1,1/4 - 7 UNC		1302401201	-	1.141	-				
1,1/4 - 8 UN		1302401401	7.08	1.000	2.500				
1,1/4 - 12 UNF		1302403201	5.90	0.665	-	1.107	0.831	1.062	
1,3/8 - 6 UNC		1302401501	-	1.334	-				
1,3/8 - 8 UN		1302401701	7.87	1.000	2.751				
1,3/8 - 12 UNF		1302403901	6.69	-	-	1.232	0.925	1.125	
1,1/2 - 6 UNC		1302401801	7.87	1.334	-				
1,1/2 - 8 UN		1302402001	-	1.000	3.000				
1,1/2 - 12 UNF		1302403301	6.69	0.665	-	1.305	0.979	1.251	
1,5/8 - 8 UN		1302402101	7.87	1.000	3.251				
1,3/4 - 5 UNC		1302403501	8.66	1.598	-	1.430	1.075	1.251	
1,3/4 - 8 UN		1302402201	7.87	1.000	3.500				
1,7/8 - 8 UN		1302402301	8.85	-	3.751	1.519	1.138	1.374	
2 - 4,1/2 UNC		1302403601	9.84	1.779	-	1.644	1.233		
2 - 8 UN		1302402401	8.85	1.000	4.000				
2,1/4 - 4,1/2 UNC		1302403701	11.02	1.779	-	1.894	1.420	1.437	
2,1/4 - 8 UN		1302404001	9.84	1.000	4.500				
2,1/2 - 4 UNC	1302403801	12.40	2.000	-	2.100	1.574	1.500		
2,1/2 - 8 UN	1302402501	10.82	1.000	5.000					

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
13024	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>			
SFM	50-120	45-110	40-100	45-110	20-60	30-70	30-70	20-50	40-100					20-60	15-50		

good best





List 13015



HSSE

S/O

45°

VXL-SFT, Vertical Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Modified Bottom (2.5P-3P)	S/O							
			L	Lc	Ln	lk	d	k	lk		
1/2 - 13 UNC	2B	3	1301502601	4.33	0.614	-	0.367	0.274	0.437		
1/2 - 20 UNF			1301502701	3.93		1.000					
9/16 - 12 UNC			1301500101	4.33		-					
9/16 - 18 UNF		1301500201	3.93	0.665	1.125	0.429	0.322	0.500			
5/8 - 11 UNC		1301500301	4.33	-							
5/8 - 18 UNF		1301500401	3.93	0.728	1.251				0.480	0.359	0.641
3/4 - 10 UNC		1301500501	4.92	-							
3/4 - 16 UNF		1301502801	4.33	0.799	1.500	0.590	0.442	0.688			
7/8 - 9 UNC		1301500601	5.51	-							
7/8 - 14 UNF		1301502901	4.92	0.889	1.751				0.697	0.522	0.751
1 - 8 UNC		1301500701	6.29	1.000	-	0.800	0.600	0.811			
1 - 12 UNF		1301503001	5.51	0.665	2.000						
1,1/8 - 7 UNC		1301500901	-	1.141	-				0.895	0.672	0.874
1,1/8 - 8 UN		1301501101	7.08	1.000	2.251						
1,1/8 - 12 UNF		1301503101	5.90	0.665	-	1.020	0.766	1.000			
1,1/4 - 7 UNC		1301501201	-	1.141	-						
1,1/4 - 8 UN		1301501401	7.08	1.000	2.500				1.107	0.831	1.062
1,1/4 - 12 UNF		1301503201	5.90	0.665	-						
1,3/8 - 6 UNC		1301501501	-	1.334	-	1.232	0.925	1.125			
1,3/8 - 8 UN		1301501701	7.87	1.000	2.751						
1,3/8 - 12 UNF		1301503401	6.69	1.000	-				1.305	0.979	1.251
1,1/2 - 6 UNC		1301501801	-	1.334	-						
1,1/2 - 8 UN		1301502001	7.87	1.000	3.000	1.430	1.072	1.138			
1,1/2 - 12 UNF		1301503301	6.69	0.665	-						
1,5/8 - 8 UN		1301502101	7.87	1.000	3.251				1.519	1.138	1.374
1,3/4 - 5 UNC		1301503501	8.66	1.598	-						
1,3/4 - 8 UN		1301502201	7.87	1.000	3.500	1.644	1.233	1.374			
1,7/8 - 8 UN		1301502301	8.85	1.000	3.751						
2 - 4,1/2 UNC		1301503601	9.84	1.779	-				1.894	1.420	1.437
2 - 8 UN		1301502401	8.85	1.000	4.000						
2,1/4 - 4,1/2 UNC	1301503701	11.02	1.779	-	2.100	1.574	1.500				
2,1/4 - 8 UN	1301504001	9.84	1.000	4.500							
2,1/2 - 4 UNC	1301503801	12.40	2.000	-							
2,1/2 - 8 UN	1301502501	10.82	1.000	5.000							

Packed: 1 pc.
Available Steam Oxide finish only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
13015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>				
SFM	25-80	20-50	20-45	20-50	15-20	20-45	20-45	15-20	25-75					15-35	8-15		

good best





List 13025

VXL-OIL-SFT, Vertical Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



HSSE

S/O

45°



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	S/O						
			L	Lk						
1/2 - 13 UNC	2B	3	1302502601	4.33	0.614	-	0.367	0.274	0.437	
1/2 - 20 UNF			1302502701	3.93		1.000				
9/16 - 12 UNC			1302500101	4.33		-				
9/16 - 18 UNF		1302500201	3.93	0.665	1.125	0.429	0.322	0.500		
5/8 - 11 UNC		1302500301	4.33		-					
5/8 - 18 UNF		1302500401	3.93		1.251					
3/4 - 10 UNC		1302500501	4.92	0.799	-	0.590	0.442	0.688		
3/4 - 16 UNF		1302502801	4.33		1.500					
7/8 - 9 UNC		1302500601	5.51		-					
7/8 - 14 UNF		1302502901	4.92	0.889	1.751	0.697	0.522	0.751		
1 - 8 UNC		1302500701	6.29		-					
1 - 12 UNF		1302503001	5.51		2.000					
1,1/8 - 7 UNC		1302500901	7.08	1.000	1.141	0.895	0.672	0.874		
1,1/8 - 8 UN		1302501101	7.08		-					
1,1/8 - 12 UNF		1302503101	5.90		2.251					
1,1/4 - 7 UNC		1302501201	7.08	1.000	1.141	1.020	0.766	1.000		
1,1/4 - 8 UN		1302501401	7.08		-					
1,1/4 - 12 UNF		1302503201	5.90		2.500					
1,3/8 - 6 UNC		1302501501	7.87	1.000	1.334	1.107	0.831	1.062		
1,3/8 - 8 UN		1302501701	7.87		-					
1,3/8 - 12 UNF		1302503901	6.69		2.751					
1,1/2 - 6 UNC		1302501801	7.87	1.000	1.334	1.232	0.925	1.125		
1,1/2 - 8 UN		1302502001	7.87		-					
1,1/2 - 12 UNF		1302503301	6.69		3.000					
1,5/8 - 8 UN		1302502101	7.87	1.000	1.000	1.305	0.979	1.251		
1,3/4 - 5 UNC		1302503501	8.66		1.598					
1,3/4 - 8 UN		1302502201	7.87		3.500					
1,7/8 - 8 UN		1302502301	8.85	1.000	1.000	1.519	1.138	1.374		
2 - 4,1/2 UNC		1302503601	9.84		1.779					
2 - 8 UN		1302502401	8.85		4.000					
2,1/4 - 4,1/2 UNC		1302503701	11.02	1.000	1.779	1.894	1.420	1.437		
2,1/4 - 8 UN		1302504001	9.84		4.500					
2,1/2 - 4 UNC	1302503801	12.40	-							
2,1/2 - 8 UN	1302502501	10.82	1.000	5.000	2.100	1.574	1.500			

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
13025	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	50-120	45-110	40-100	45-110	20-60	30-70	30-70	20-50	40-100					20-60	15-50		

good best





List 13116

HXL-SFT, Horizontal Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			S/O						
M16 x 2.0	D7	4	1311602501	180	16	93	12.19	9.14	14.3
			1311602401	110					
			1311602301						
M20 x 2.5	D8		1311600101	140	20	73	16.56	12.42	17.5
			1311600201	200					
			1311601601	140					
M24 x 3.0	D9		1311600401	160	24	88	19.3	14.48	19.1
			1311600501	200					
			1311601701	160					
M27 x 3.0	D9	1311600601	160	28	88	22.75	17.07	22.2	
		1311600701	200						
		1311601801	160						
M30 x 3.5	D10	1311600801	180	32	103	25.93	19.46	25.4	
		1311600901	250						
		1311601901	180						
M33 x 3.5	D10	1311601001	180	36	93	28.14	21.11	27.0	
		1311601101	250						
		1311602001	180						
M36 x 4.0	D11	1311601201	200	36	118	31.31	23.50	28.6	
		1311601301	250						
		1311602101	200						
M42 x 4.5	D11	1311601401	200	36	98	36.32	27.23	31.8	
		1311601501	300						
		1311602201	200						

Packed: 1 pc.
 Available Steam Oxide finish only.
 Note: +0.005" available for threads that will be heat treated after tapping.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
13116	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM	25-80	20-50	20-45	20-50	15-20	20-45	20-45	15-20	25-75					15-35	8-15		

good best





List 13126

HXL-OIL-SFT, Horizontal Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



HSSE

S/O

15°



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	S/O						
			L	Lc	L	Lc	Ln	d	k	lk
M16 x 2.0	D7	4	1312602401		180	16	93	12.19	9.14	14.3
	D17 (6H +0.005")		1312602501		110		58			
			1312602301							
M20 x 2.5	D8	4	1312600101		140	20	73	16.56	12.42	17.5
	D18 (6H +0.005")		1312600201		200		103			
			1312601601		140		73			
M24 x 3.0	D9	4	1312600401		160	24	88	19.30	14.48	19.1
	D19 (6H +0.005")		1312600501		200		108			
			1312601701		160		88			
M27 x 3.0	D9	4	1312600701		200	24	108	22.75	17.07	22.2
	D19 (6H +0.005")		1312601801		160		88			
			1312600801		180		103			
M30 x 3.5	D10	5	1312600901		250	28	138	25.93	19.46	25.4
	D20 (6H +0.005")		1312601901		180		103			
			1312601001		250		93			
M33 x 3.5	D10	5	1312601101		250	28	128	28.14	21.11	27.0
	D20 (6H +0.005")		1312602001		180		93			
			1312601201		200		118			
M36 x 4.0	D11	5	1312601301		250	32	143	31.31	23.50	28.6
	D21 (6H +0.005")		1312602101		200		118			
			1312601401		200		98			
M42 x 4.5	D11	6	1312601501		300	36	148	36.32	27.23	31.8
	D21 (6H +0.005")		1312602201		200		98			

Packed: 1 pc.

Available Steam Oxide finish only.

Note: +0.005" available for threads that will be heat treated after tapping.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
13126	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	50-120	45-110	40-100	45-110	20-60	30-70	30-70	20-50	40-100					20-60	15-50		

good best





List 13117



VXL-SFT, Vertical Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)							
			S/O	L						
M16 x 2.0	D7	4	1311702401	110	16	-	12.19	9.14	14.3	
	D17 (6H +0.005")		1311702501	180						
			1311702301	110						
M20 x 2.5	D8		1311700101	140	20	-	16.56	12.42	17.5	
	D18 (6H +0.005")		1311700201	200						
			1311701601	140						
M24 x 3.0	D9	5	1311700401	160	24	-	19.30	14.48	19.1	
	D19 (6H +0.005")		1311700501	200						
			1311701701	160						
M27 x 3.0	D9		1311700601	160	28	-	22.75	17.07	22.2	
	D19 (6H +0.005")		1311700701	200						
			1311701801	160						
M30 x 3.5	D10	5	1311700801	180	28	-	25.93	19.46	25.4	
	D20 (6H + 0.005)		1311700901	250						
			1311701901	180						
M33 x 3.5	D10		1311701001	180	32	-	28.14	21.11	27.0	
	D20 (6H + 0.005)		1311701101	250						
			1311702001	180						
M36 x 4.0	D11	6	1311701201	200	32	-	31.31	23.50	28.6	
	D21 (6H + 0.005)		1311701301	250						
			1311702101	200						
M42 x 4.5	D11		1311701401	200	36	-	36.32	27.23	31.8	
			1311701501	300						
			1311702201	200						

Packed: 1 pc.

Available Steam Oxide finish only.

Note: +0.005" available for threads that will be heat treated after tapping.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V	~35 HRC	35-45 HRC	45-50 HRC
	1010	1035	1045	1065	4140	4340	300	400	17-4 PH	6061	7075	Casting	Inconel	6Al4V	(30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
13117	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	25-80	20-50	20-45	20-50	15-20	20-45	20-45	15-20	25-75					15-35	8-15			

good best





List 13127

VXL-OIL-SFT, Vertical Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



HSSE



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)							
			S/O	L						
M16 x 2.0	D7	4	1312702401	110	16	-	12.19	9.14	14.3	
	D17 (6H +0.005")		1312702501	180		-				
			1312702301	110		-				
M20 x 2.5	D8		1312700101	140	19	-	16.56	12.42	17.5	
	D18 (6H +0.005")		1312700201	200		-				
			1312701601	140		-				
M24 x 3.0	D9	1312700401	160	24	-	19.30	14.47	19.1		
	D19 (6H +0.005")	1312700501	200		-					
		1312701701	160		-					
M27 x 3.0	D9	1312700601	160		27	-	22.75	17.06	22.1	
	D19 (6H +0.005")	1312700701	200			-				
		1312701801	160			-				
M30 x 3.5	D10	1312700801	180	32		-	25.93	19.45	25.4	
	D20 (6H +0.005")	1312700901	250			-				
		1312701901	180			-				
M33 x 3.5	D10	1312701001	180		35	-	28.14	21.10	27.0	
	D20 (6H +0.005")	1312701101	250			-				
		1312702001	180			-				
M36 x 4.0	D11	1312701201	199	200		-	31.31	23.49	28.6	
	D21 (6H +0.005")	1312701301	250			-				
		1312702101	200			-				
M42 x 4.5	D11	1312701401	200		35	-	36.32	27.22	31.8	
		1312701501	300			-				
		1312702201	200			-				

Packed: 1 pc.

Available Steam Oxide finish only.

Note: +0.005" available for threads that will be heat treated after tapping.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
13127	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	50-120	45-110	40-100	45-110	20-60	30-70	30-70	20-50	40-100					20-60	15-50		

good best



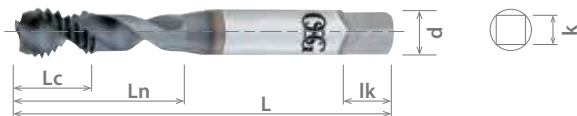
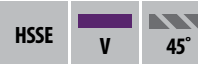


HY-PRO[®] SYNCHRO AL

High Speed Tapping of Aluminum and Aluminum Alloy

List 13058

US-AL-SFT, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			V						
6 - 32 UNC	2B	2	1305800108	2.00	0.248	0.685	0.141	0.110	0.189
8 - 32 UNC			1305800208	2.12	0.252	0.752	0.168	0.131	
10 - 24 UNC			1305800308	2.37	0.327	0.866	0.194	0.152	
10 - 32 UNF			1305800408						
1/4 - 20 UNC			1305800508	2.50	0.398	0.996	0.255	0.191	0.287
1/4 - 28 UNF			1305800608						
5/16 - 18 UNC			1305800708	2.72	0.445	1.126	0.318	0.238	0.374
5/16 - 24 UNF			1305800808						
3/8 - 16 UNC			1305800908	2.93	0.500	1.252	0.381	0.286	0.437
3/8 - 24 UNF			1305801008						
1/2 - 13 UNC			1305801108	3.37	0.614	1.933	0.367	0.275	
1/2 - 20 UNF			1305801208						

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
13058										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
SFM										300-800	200-700								

good best





List 13158

US-AL-SFT, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
M3 x 0.5	6H	2	1315800108	50	4	16.0	3.58	2.79	4.8
M4 x 0.7			1315800208	55	5	19.1	4.26	3.33	6.4
M5 x 0.8			1315800308	62	6	22.2	4.92	3.86	7.3
M6 x 1.0			1315800408	65	8	25.4	6.47	4.85	9.5
M8 x 1.25			1315800508	69	10	28.6	8.07	6.05	11.1
M10 x 1.5			1315800708	74	12	31.8	9.67	7.26	6.98
M10 x 1.25			1315800608						
M12 x 1.75			1315800908						
M12 x 1.5			1315800808						

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Titanium	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Nickel Alloy	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
13158										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
SFM										<input type="checkbox"/>	<input type="checkbox"/>						

good best





List 295

EX-AL-SFT, Modified Bottom (2.5P-3P)



HSSE

BR

50°



Tap Size	Class of Fit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			Bright						
			L	Lc	Ln	d	k	lk	
4 - 40 UNC	H2	2	2951300	1.87	0.196	0.559	0.140	0.109	0.188
	H3		2951400						
6 - 32 UNC	H2		2952500	2.00	0.248	0.685	0.167	0.131	0.251
	H3		2952600						
8 - 32 UNC	H2		2953100	2.12	0.251	0.751	0.194	0.151	0.311
	H3		2953200						
10 - 24 UNC	H3		2953800	2.37	0.326	0.866	0.255	0.190	0.374
	H2		2954300						
10 - 32 UNF	H3		2954400	2.50	0.397	0.996	0.317	0.238	0.374
	H5		2954600						
1/4 - 20 UNC	H3		2955000	2.72	0.444	1.125	0.380	0.285	0.437
	H5		2955200						
1/4 - 28 UNF	H3		2955600	2.93	0.500	1.251	0.380	0.285	0.437
	H3		2956200						
5/16 - 18 UNC	H5		2956400	2.72	0.444	1.125	0.317	0.238	0.374
	H3		2956800						
5/16 - 24 UNF	H3		2956900	2.93	0.500	1.251	0.380	0.285	0.437
	H4		2957400						
3/8 - 16 UNC	H3		2957400	2.93	0.500	1.251	0.380	0.285	0.437
	H5		2957600						
3/8 - 24 UNF	H3	2958000	2.93	0.500	1.251	0.380	0.285	0.437	

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
295										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
SFM										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best





List 296

EX-AL-SFT, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	Bright						
			L	Lc	Ln	d	k	lk		
M3 x 0.5	D3	2	2963300	50	4	16.0	3.58	2.79	4.8	
M4 x 0.7	D4		2963400	54	5	19.1	4.26	3.33	6.4	
M5 x 0.8	D5		2963500	60	6	22.2	4.92	3.86		
M6 x 1.0			2963600	63	8	25.4	6.47	4.85	7.9	
M8 x 1.25			2963800	69	10	28.6	8.07	6.05	9.5	
M10 x 1.5	D6		2964100	74	12	31.8	9.67	7.26	11.1	
M10 x 1.25	D5		2964000							

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
296										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
SFM										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best





List 13019

EX-AL-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			N	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	2	1301900103	1.77	0.437	-	0.140	0.109	0.188
4 - 40 UNC			1301900203						
6 - 32 UNC			1301900303						
8 - 32 UNC	H3		1301900403	2.48	0.251	0.826	0.167	0.131	0.251
10 - 24 UNC			1301900503						
10 - 32 UNF			1301900603						
1/4 - 20 UNC	H5	3	1301900703	3.14	0.397	1.177	0.255	0.190	0.287
1/4 - 28 UNF	H3		1301900803						
			1301900903						
5/16 - 18 UNC	H5		1301901003	3.54	0.444	1.377	0.317	0.238	0.374
			1301901103						
5/16 - 24 UNF	H3		1301901203						
3/8 - 16 UNC	H5		1301901303	3.93	0.500	1.535	0.380	0.285	0.437
3/8 - 24 UNF	H3		1301901403						
			1301901503	3.54	1.377				
7/16 - 14 UNC	H5		1301901603	3.93	0.570	1.712	0.322	0.242	0.405
			1301901703						
7/16 - 20 UNF	H3		1301901803	4.33	0.614	1.933	0.367	0.274	0.437
1/2 - 13 UNC	H5		1301901903						
			1301902003						
1/2 - 20 UNF	H3		1301902103	3.93					

Packed: 1 pc.
Available Nitride finish only.



Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
13019	1010	1035	1065	4140															
SFM	1018	1045		4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								
										40-80	40-65								

good best





List 13119



EX-AL-SFT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			N	L	Lc	Ln	d	k	lk
M3 x 0.5	D3	3	1311900103	56	5	19.3	3.58	2.79	4.8
M4 x 0.7	D4		1311900303	63					
M5 x 0.8	D5		1311900403	70	8	27.2	4.92	3.86	6.4
M6 x 1.0			1311900503	80					
M8 x 1.25	D6		1311900803	90	10	35.0	8.07	6.05	9.5
M10 x 1.5			1311901003	100					
M10 x 1.25	D5		1311900903		110	14	49.1	9.32	6.98
M12 x 1.75	D6		1311901303						
M12 x 1.5	D5		1311901203	100					
M12 x 1.25			1311901103						

Packed: 1 pc.
Available Nitride finish only.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
13119	1010	1035	1065	4140															
SFM	1018	1045	1065	4340						☐	☐								
										40-80	40-65								

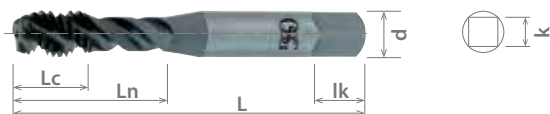
☐ good ☐ best





List 290

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P - 3P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiCN						
2 - 56 UNC	H2	2	29056	00	01	08	1.75	0.437	0.476	0.140	0.109	0.188
3 - 48 UNC			29060	00	01	08	1.81	0.496	0.535			
4 - 40 UNC	H3	3	29064	00	01	08	1.87	0.196	0.559	0.140	0.109	0.188
	H4		29114	00	01	08						
	H5		29165	00	01	08						
4 - 48 UNF	H2		29166	00	01	08	1.93	0.200	0.625			
5 - 40 UNC			29168	00	01	08						
6 - 32 UNC	H2		29070	00	01	08	2.00	0.248	0.685			
			29074	00	01	08						
			29124	00	01	08						
			29174	00	01	08						
			29175	00	01	08						
6 - 40 UNF	H2	29177	00	01	08	2.12	0.251	0.751				
		29072	00	01	08							
		29078	00	01	08							
		29128	00	01	08							
		29178	00	01	08							
8 - 32 UNC	H2	29180	00	01	08	2.37	0.326	0.866				
		29181	00	01	08							
		29134	00	01	08							
		29184	00	01	08							
10 - 24 UNC	H2	29234	00	01	08	2.50	0.397	0.996				
		29088	00	01	08							
		29138	00	01	08							
		29188	00	01	08							
10 - 32 UNF	H2	29190	00	01	08	2.72	0.444	1.125				
		29191	00	01	08							
		29236	00	01	08							
		29238	00	01	08							
12 - 24 UNC	H3	3	29280	00	01	08	2.50	0.397	0.996	0.255	0.190	0.311
12 - 28 UNF			29300	00	01	08						
1/4 - 20 UNC	H3		29400	00	01	08						
			29402	00	01	08						
			29403	00	01	08						
			29303	00	01	08						
			29304	00	01	08						
1/4 - 28 UNF	H3		29354	00	01	08						
			29404	00	01	08						
			29406	00	01	08						
		29407	00	01	08							
		29306	00	01	08							
5/16 - 18 UNC	H3	29308	00	01	08	2.72	0.444	1.125				
		29408	00	01	08							
		29410	00	01	08							
		29411	00	01	08							
		29411	00	01	08							

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



List 290 (Continued)



HSSE	TiCN	S/O	BR	45°
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Modified Bottom (2.5P-3P)

Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P-3P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiCN	L	Lc	Ln	d	k	lk
5/16 - 24 UNF	H2	3	29264	00	01	08	2.72	0.444	1.125	0.317	0.238	0.374
	H3		29312	00	01	08						
	H4		29362	00	01	08						
	H5		29412	00	01	08						
	H6		29413	00	01	08						
	H7		29414	00	01	08						
H11	29415		00	01	08							
3/8 - 16 UNC	H2		29315	00	01	08	2.93	0.500	1.251	0.380	0.285	0.437
	H3		29316	00	01	08						
	H5		29416	00	01	08						
	H7		29421	00	01	08						
3/8 - 24 UNF	H2		29268	00	01	08	2.93	0.500	1.251	0.380	0.285	0.437
	H3		29318	00	01	08						
	H4		29368	00	01	08						
	H5		29418	00	01	08						
	H7		29417	00	01	08						
	H11		29423	00	01	08						
7/16 - 14 UNC	H3		29320	00	01	08	3.15	0.570	1.712	0.322	0.242	0.405
	H5		29420	00	01	08						
	H7		29431	00	01	08						
	H11		29433	00	01	08						
7/16 - 20 UNF	H3		29322	00	01	08	3.15	0.570	1.712	0.322	0.242	0.405
	H5		29422	00	01	08						
	H7		29490	00	01	08						
	H11		29428	00	01	08						
1/2 - 13 UNC	H3		29324	00	01	08	3.37	0.614	1.933	0.367	0.274	0.437
	H5		29424	00	01	08						
	H7		29425	00	01	08						
	H11	29427	00	01	08							
1/2 - 20 UNF	H2	29276	00	01	08	3.37	0.614	1.933	0.367	0.274	0.437	
	H3	29326	00	01	08							
	H5	29426	00	01	08							
	H7	29429	00	01	08							
9/16 - 12 UNC	H3	29486	00	01	08	3.59	0.665	1.972	0.429	0.322	0.500	
		29488	00	01	08							
5/8 - 11 UNC	H5	29332	00	01	08	3.81	0.728	2.125	0.480	0.359	0.562	
		29432	00	01	08							
5/8 - 18 UNF	H3	29334	00	01	08	4.25	0.799	2.433	0.590	0.442	0.688	
		29336	00	01	08							
3/4 - 10 UNC	H5	29436	00	01	08	4.25	0.818	2.433	0.590	0.442	0.688	
		29338	00	01	08							
3/4 - 16 UNF	H3	29438	00	01	08	4.68	0.889	2.653	0.697	0.522	0.751	
		29440	00	01	08							
7/8 - 9 UNC	H5	29440	00	01	08	4.68	0.889	2.653	0.697	0.522	0.751	
7/8 - 14 UNF	H4	29392	00	01	08							

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.

[continued on next page](#) 

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
290	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

good best



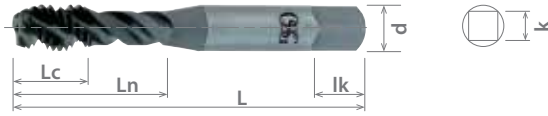


List 290 (Continued)



HSSE	TiCN	S/O	BR	45°
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Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P-3P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiCN	L	Lc	Ln	d	k	lk
1 - 8 UNC	H5	4	29444	00	01	08	5.12	1.000	3.011	0.800	0.600	0.811
1 - 12 UNF	H4		29396	00	01	08						
1,1/8 - 7 UNC	H6		29472	-	01	-	5.43	1.141	3.074	0.895	0.672	0.874
1,1/8 - 8 UNS			29476	-	01	-						
1,1/8 - 12 UNF	H5		29450	-	01	-	5.75	1.141	3.074	1.020	0.766	1.000
1,1/4 - 7 UNC	H6		29477	-	01	-						
1,1/4 - 8 UNS			29479	-	01	-						
1,1/4 - 12 UNF	H5		29456	-	01	-	6.06	1.334	3.590	1.107	0.831	1.062
1,3/8 - 6 UNC	H6		29480	-	01	-						
1,3/8 - 8 UNS			29482	-	01	-	6.37	1.334	3.590	1.232	0.925	1.125
1,3/8 - 12 UNF	H5		29462	-	01	-						
1,1/2 - 6 UNC	H6		29483	-	01	-						
1,1/2 - 8 UNS			29485	-	01	-						
1,1/2 - 12 UNF	H5		29468	-	01	-						

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

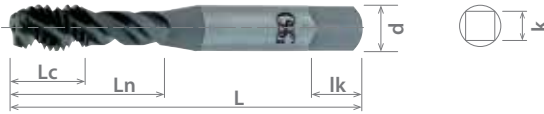
List No.	P																M	K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels												
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V	~35 HRC			35-45 HRC	45-50 HRC	50-70 HRC					
	1010	1035	1065	4140	4340	300	400	17-4 PH	6061	7075	30	30	6Al4V	(30 HRC)	~35 HRC	35-45 HRC			45-50 HRC	50-70 HRC						
290	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>												
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60												

good best



List 299

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P - 3P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiCN						
M3 x 0.5	D3	3	29904	00	01	08	49	4	16.0	3.58	2.79	4.8
	D11		29931	-	01	-						
M3.5 x 0.6	D4		29905	00	01	08	50	8	17.5	4.26	3.32	6.4
	D11		29933	-	01	-						
M4 x 0.7	D4		29906	00	01	08	54	5	19.1	4.92	3.86	7.8
	D11		29935	-	01	-						
M5 x 0.8	D4		29908	00	01	08	60	6	22.1	6.47	4.85	9.4
	D11		29937	-	01	-						
M6 x 1.0	D5		29910	00	01	08	63	10	25.4	8.07	6.04	9.4
	D11		29939	-	01	-						
M7 x 1.0	D5		29911	00	01	08	69	11	28.6	9.32	6.98	11.0
	D11		29941	-	01	-						
M8 x 1.25	D5		29914	00	01	08	74	13	31.8	10.89	8.17	12.7
	D11		29945	-	01	-						
M8 x 1.0	D5		29913	00	01	08	74	13	31.8	10.89	8.17	12.7
	D11		29943	-	01	-						
M10 x 1.5	D6		29918	00	01	08	85	16	49.0	13.76	10.31	15.9
	D11		29951	-	01	-						
M10 x 1.25	D5		29917	00	01	08	85	16	49.0	13.76	10.31	15.9
	D11		29949	-	01	-						
M10 x 1.0	D5		29916	00	01	08	91	19	50.0	13.76	10.31	15.9
	D11		29947	-	01	-						
M12 x 1.75	D6		29923	00	01	08	96	24	51.1	17.06	17.06	22.1
	D11		29957	-	01	-						
M12 x 1.5	D6		29922	00	01	08	96	24	51.1	17.06	17.06	22.1
	D11		29955	-	01	-						
M12 x 1.25	D5		29921	00	01	08	102	27	78.1	25.93	19.45	25.4
	D11		29952	-	01	-						
M14 x 2.0	D7	29926	-	01	-	91	16	50.0	10.89	8.17	12.7	
M14 x 1.5	D6	29925	-	01	-	96	16	54.0	12.19	9.14	14.3	
M16 x 2.0	D7	29929	-	01	-	102	19	54.9	13.76	10.31	15.9	
M16 x 1.5	D6	29928	-	01	-	113	19	61.7	16.56	12.42	17.5	
M18 x 2.5	D7	29932	-	01	-	119	24	67.4	17.70	13.28	19.1	
M18 x 1.5	D6	29930	-	01	-	124	24	68.4	19.30	14.47	19.1	
M20 x 2.5	D8	29936	-	01	-	130	24	76.5	22.75	17.06	22.1	
M20 x 1.5	D6	29934	-	01	-	101	27	51.1	17.06	17.06	22.1	
M22 x 2.5	D8	29940	-	01	-	138	27	78.1	25.93	19.45	25.4	
M22 x 1.5	D6	29938	-	01	-							
M24 x 3.0	D8	29944	-	01	-							
M24 x 1.5	D6	29942	-	01	-							
M27 x 3.0	D8	29948	-	01	-							
M27 x 1.5	D6	29946	-	01	-							
M30 x 3.5	D9	29953	-	01	-							
M30 x 1.5	D6	29950	-	01	-							

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
299	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

good best



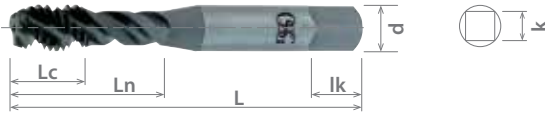


HY-PRO® SEVEN

General Purpose Class of Fit Taps

List 297

Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	Bottom (1.5P - 2P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiN	L	Lc	Ln	d	k	lk
3 - 48 UNC	2B	2	29845	00	01	05	1.81	0.496	0.535	0.140	0.109	0.188
3 - 56 UNF			29846	00	01	05						
4 - 40 UNC			29850	00	01	05						
4 - 48 UNF			29854	00	01	05						
5 - 40 UNC			29865	00	01	05						
6 - 32 UNC			29852	00	01	05						
6 - 40 UNF		29866	00	01	05							
8 - 32 UNC		29853	3	00	01	05	2.12	0.374	0.751	0.167	0.131	0.251
8 - 36 UNF		29867		00	01	05						
10 - 24 UNC		29854		00	01	05						
10 - 32 UNF		29855		00	01	05						
12 - 24 UNC		29868		00	01	05	2.37	0.492	0.866	0.194	0.151	
1/4 - 20 UNC		29856		00	01	05						
1/4 - 28 UNF		29857		00	01	05	2.50	0.594	0.996	0.255	0.190	
5/16 - 18 UNC		29858		00	01	05						
5/16 - 24 UNF		29859		00	01	05	2.72	0.665	1.125	0.317	0.238	
3/8 - 16 UNC		29860		00	01	05						
3/8 - 24 UNF		29861		00	01	05	2.93	0.751	1.251	0.380	0.285	
7/16 - 14 UNC		29869		00	01	05						
7/16 - 20 UNF		29870		00	01	05	3.15	0.858	1.712	0.322	0.242	
1/2 - 13 UNC	29862	00		01	05							
1/2 - 20 UNF	29863	00	01	05	3.37	0.921	1.933	0.367	0.274			

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
297	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>								
SFM	50-90	40-80							30-80	30-80								

good best



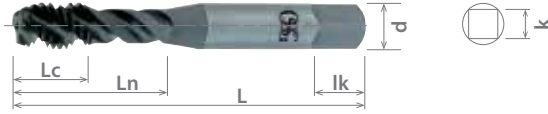


List 298

Bottom (1.5P-2P)



HSS	TiN	S/O	BR	50°
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Tap Size	Class of Fit	No. of Flutes	Bottom (1.5P - 2P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			EDP Number	Coating Suffix								
				Bright	S/O							TiN
M3 x 0.5	6H	2	29880	00	01	05	49	8	16.0	3.58	2.79	4.8
M4 x 0.7			29881	00	01	05	54	9	19.1	4.26	3.33	6.4
M5 x 0.8		3	29882	00	01	05	60	12	22.2	4.92	3.86	
M6 x 1.0			29883	00	01	05	63	15	25.4	6.47	4.85	7.9
M8 x 1.25			29884	00	01	05	69	16	28.6	8.07	6.05	9.5
M10 x 1.5			29885	00	01	05	74	19	31.8	9.67	7.26	11.1
M12 x 1.75			29886	00	01	05	85	21	49.1	9.32	6.98	

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
298	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								<input type="checkbox"/>	<input type="checkbox"/>						
SFM	50-90	40-80								30-80	30-80						

good best





GENERAL PURPOSE

List 107

Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P-2P)				Plug (4P-4.5P)				Overall Length	Thread Length	Neck Length	Shank Dia. d	Square Width k	Square Length lk		
			EDP Number	Coating Suffix			EDP Number	Coating Suffix										
				Bright	S/O	TiN		TiCN	Bright	S/O							TiN	TiCN
3 - 48 UNC	H2	2	14061	00	-	-	-	14060	00	-	-	-	1.81	0.496	0.535	0.140	0.109	0.188
4 - 40 UNC			14065	00	01	05	08	14064	00	01	05	08	1.87	0.326				
5 - 40 UNC			14071	00	-	-	08	14070	00	-	-	08	1.93	0.330				
6 - 32 UNC	H3		50015	00	-	05	08	50014	00	-	05	-	2.00	0.397	0.685			
			14125	00	01	05	08	14124	00	01	05	08						
8 - 32 UNC	H2	3	50019	00	-	-	08	50018	00	-	-	08	2.12	0.401	0.759	0.167	0.131	0.251
	H3		14129	00	01	05	08	14128	00	-	05	08						
10 - 24 UNC	H2		14133	00	01	05	08	14132	00	-	05	08						
10 - 32 UNF	H2		50027	00	-	05	08	50026	00	-	-	-	2.37	0.511	0.874	0.194	0.151	
			14135	00	01	05	08	14134	00	-	05	08						
12 - 24 UNC	H3		14137	00	01	-	08	14136	00	-	-	-	2.50	0.645	1.007	0.255	0.190	0.311
1/4 - 20 UNC	H5		14301	00	01	05	08	14300	00	01	05	08						
1/4 - 28 UNF	H3		50035	00	-	05	08	50034	00	-	05	08	2.72	0.708	1.129	0.317	0.238	0.374
			14303	00	-	05	08	14302	00	-	05	08						
5/16 - 18 UNC	H5		14305	00	01	05	08	14304	00	01	05	08	2.93	0.771	1.251	0.380	0.285	0.437
5/16 - 24 UNF	H3		50047	00	-	05	08	50046	00	-	-	08						
	H3		14307	00	-	05	08	14306	00	-	05	08						
3/8 - 16 UNC	H5	14309	00	01	05	08	14308	00	01	05	08	3.15	0.901	1.708	0.322	0.242	0.405	
3/8 - 24 UNF	H3	50055	00	-	05	08	50054	00	-	-	08							
7/16 - 14 UNC	H5	14311	00	-	05	08	14310	00	-	05	08	3.37	0.960	1.929	0.367	0.274	0.437	
		14313	00	-	05	08	14312	00	-	05	08							
7/16 - 20 UNF	H3	50062	00	-	05	-	-	-	-	-								
1/2 - 13 UNC	H5	14317	00	-	05	08	14316	00	-	05	08	3.81	1.110	2.129	0.480	0.359	0.562	
		14321	00	01	05	08	14320	00	01	05	08							
1/2 - 20 UNF	H3	50071	00	-	-	08	50070	00	-	-	08	4.25	1.240	2.429	0.590	0.442	0.688	
5/8 - 11 UNC	H3	14325	00	-	05	08	14324	00	-	05	08							
5/8 - 18 UNF		14329	00	-	05	08	14328	00	-	-	08							
3/4 - 10 UNC		14333	00	-	05	08	14332	00	-	-	08							
3/4 - 16 UNF		14337	00	-	05	08	14336	00	-	05	08							
		14341	00	-	05	08	14340	00	-	-	08							

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
107	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best

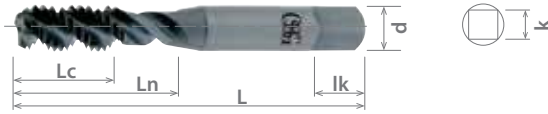




List 143

HSSE	TiCN	TiN	S/O	BR	50°
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Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)				Plug (4P - 4.5P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix			EDP Number	Coating Suffix								
				Bright	S/O	TiCN		Bright	TiN	TiCN						
M3 x 0.5	D3	2	19852	00	01	08	19851	00	05	-	49	8	15.8	3.58	2.79	4.8
M4 x 0.7	D4		19855	00	01	08	19854	00	05	08	54	10	19.3	4.26	3.33	6.4
M5 x 0.8		19858	00	01	08	19857	00	05	08	60	13	22.4	4.92	3.86		
M6 x 1.0	D5	3	19861	00	01	08	19860	00	05	08	63	16	25.7	6.47	4.85	7.9
M8 x 1.25			19864	00	01	08	19863	00	05	08	69	18	28.7	8.07	6.05	9.5
M10 x 1.5	D6		19867	00	01	08	19866	00	05	08	74	19	31.7	9.67	7.26	11.1
M12 x 1.75			19870	00	01	08	19869	00	05	08	85	24	49.0	9.32	6.98	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
143	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





GENERAL PURPOSE

List 13020

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P-2P)	Plug (3.5P-4.5P)						
			S/O	S/O						
6 - 32 UNC	H3	3	1302001401	1302000101	2.00	0.248	0.685	0.140	0.109	0.188
8 - 32 UNC			1302001501	1302000201	2.12	0.251	0.751	0.167	0.131	0.251
10 - 24 UNC			1302001601	1302000301	2.37	0.326	0.866	0.194	0.151	
10 - 32 UNF			1302001701	1302000401						
1/4 - 20 UNC			1302001801	1302000501	2.50	0.397	0.996	0.255	0.190	0.311
1/4 - 28 UNF			1302001901	1302000601						
5/16 - 18 UNC			1302002001	1302000701	2.72	0.444	1.125	0.317	0.238	0.374
5/16 - 24 UNF			1302002101	1302000801						
3/8 - 16 UNC			1302002201	1302000901	2.93	0.500	1.251	0.380	0.285	0.437
3/8 - 24 UNF			1302002301	1302001001						
1/2 - 13 UNC			1302002401	1302001101	3.37	0.614	1.933	0.367	0.274	0.562
5/8 - 11 UNC			1302002501	1302001201	3.81	0.728	2.125	0.480	0.359	
5/8 - 18 UNF		1302002601	1302001301							

Packed: 1 pc.
Available Steam Oxide only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
13020	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





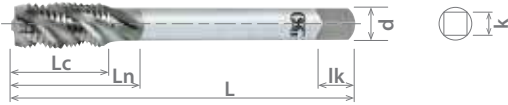
List 123

HSSE

BR

50°

EX-SFT, JIS, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)							
			Bright		L	Lc	Ln	d	k	lk
M3 x 0.5	2	3	11544		47	6	19.0	4.0	3.2	6
M4 x 0.7			11556		55	10	22.7	5.0	4.0	
M5 x 0.8			11571		64	11	26.1	5.5	4.5	
M6 x 1.0			11583		67	14	31.6	6.0		
M8 x 1.25			11601		70	15	37.0	6.2	5.0	
M10 x 1.5			11621		75	18	41.0	7.0	5.5	8
M10 x 1.25			11624							
M12 x 1.75			11650		82	21	48.0	8.5	6.5	9
M12 x 1.5			11653							
M14 x 2.0			11680		88	30	52.0	10.5	8.0	11
M14 x 1.5		11683								
M16 x 2.0		11705		95	32	52.0	12.5	10.0	13	
M16 x 1.5		11708								
M18 x 2.5		11730		100	37	55.0	14.0	11.0	14	
M18 x 1.5		11735								
M20 x 2.5		11757		105	38	58.0	15.0	12.0	15	
M20 x 1.5		11762								
M22 x 2.5		11772		115	38	63.0	17.0	13.0	16	
M24 x 3.0		11799		120	45	66.0	19.0	15.0	18	

Packed: 1 pc.

Other coatings available upon request.

Specify treatment at time of order.

Note: List 123 Taps will normally produce JIS Class II and ISO 6H Limits.

STT

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
123	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best



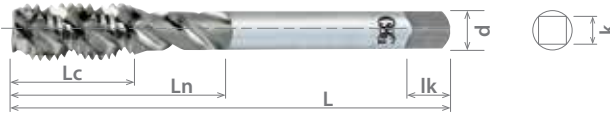


GENERAL PURPOSE LS

List 918



Long Shank, Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length																				
			Bottom (1.5P - 2P)	Plug (4P - 4.5P)																										
			Bright	Bright																										
4 - 40 UNC	H2	2	1296100	1296000	4	0.326	0.555	0.140	0.109	0.188																				
6 - 32 UNC	1296300		1296200	0.397		0.685																								
8 - 32 UNC	H3	3	1296500	1296400	6	0.401	0.759	0.167	0.131	0.251																				
			1296700	1296600			0.472				0.830																			
10 - 24 UNC	1297100		1297000	4	0.511	0.874	0.194	0.151																						
	1297300		1297200	6																										
10 - 32 UNF	1297500		1297400	4	0.645	1.007	0.255	0.190	0.311																					
	1297700		1297600	6																										
1/4 - 20 UNC	H3		3	1297900	1297800	4	0.708	1.129	0.317	0.238	0.374																			
1/4 - 28 UNF				1298100	1298000	6						0.771	1.251	0.380	0.285	0.437														
5/16 - 18 UNC				1298300	1298200												0.901	1.708	0.322	0.242	0.405									
3/8 - 16 UNC				1298500	1298400																	0.960	1.929	0.367	0.274	0.437				
7/16 - 14 UNC		1298700		1298600	1.110																						2.129	0.480	0.359	0.562
1/2 - 13 UNC		1298900		1298800																										
1/2 - 13 UNC		1299100		1299000																										
5/8 - 11 UNC		1299300		1299200																										

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
918	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best



List 16515

NEW SIZES

VC10

V

A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)						
			V	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	2	1651505608	1.77	0.437	0.476	0.140	0.109	0.188
2 - 64 UNF			1651505708		0.433	0.472			
3 - 48 UNC			1651505808	1.96	0.500	0.539			
3 - 56 UNF			1651505908						
4 - 40 UNC			1651500108	2.20	0.299	0.708			
4 - 48 UNF			1651500208		0.295	0.704			
5 - 40 UNC			1651500308		0.299	0.708			
5 - 44 UNF			1651500408						
6 - 32 UNC			H3	1651500608	0.374	0.787			
6 - 40 UNF			H2	1651500508					
		1651500708	0.370	0.783					
8 - 32 UNC	H3	1651500908	2.48	0.374	0.826	0.167	0.131	0.251	
8 - 36 UNF	H2	1651500808							
10 - 24 UNC	H3	1651501008	2.75	0.500	0.984	0.194	0.151		
10 - 32 UNF	H2	1651501108		0.492	0.976				
		1651501208	3.14	0.500	1.181	0.220	0.164	0.279	
12 - 24 UNC	H3	1651501308		0.496	1.177				
12 - 28 UNF		1651501508		0.492	1.173				
12 - 32 UNEF		1651506008							
		1651501708	0.594	1.177	0.255	0.190	0.287		
1/4 - 20 UNC	H5	1651501608							
1/4 - 28 UNF	H3	1651501908	0.590	1.173	0.317	0.238	0.342		
	H4	1651501808							
1/4 - 32 UNEF	H3	1651506108	0.586	1.169					
		1651502108	3.54	0.665	1.377	0.374	0.285	0.397	
5/16 - 18 UNC	H5	1651502008							
		1651502308	3.14	0.661	1.374	0.380	0.242	0.405	
5/16 - 24 UNF	H3	1651502208							
		1651506208	0.653	1.366					
5/16 - 32 UNEF	H3	1651502508	3.93	0.751	1.535	0.322	0.242	0.405	
3/8 - 16 UNC	H5	1651502408							
		1651502708	3.54	0.744	1.370	0.374	0.285	0.397	
3/8 - 24 UNF	H3	1651502608							
		1651506308	3.93	0.858	1.291	0.322	0.242	0.405	
3/8 - 32 UNEF	H3	1651502908							
7/16 - 14 UNC	H5	1651502808	3.93	0.858	1.291	0.322	0.242	0.405	
	H3	1651503108							
7/16 - 20 UNF	H5	1651503008							

Packed: 1 pc.
Available V coating only.

continued on next page



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16515	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	40-65	35-55	25-75	25-60	25-60	60-100	70-120	70-120			40-65			

good best





List 16515 (Continued)

NEW SIZES	VC10	V
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A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)	L	Lc	Ln	d	k	lk
			V	L	Lc	Ln	d	k	lk
7/16 - 28 UNEF	H4	3	1651506408	3.54	0.858	1.291	0.322	0.242	0.405
1/2 - 13 UNC	H3		1651503308	4.33	0.921	1.354	0.367	0.274	0.437
	H5		1651503208						
1/2 - 20 UNF	H3		1651503508	3.93	1.000	1.472	0.429	0.322	0.500
	H5		1651503408						
1/2 - 28 UNEF	H4		1651506508	4.33	1.090	1.562	0.480	0.359	0.562
9/16 - 12 UNC	H3		1651503708						
	H5		1651503608						
9/16 - 18 UNF	H3		1651503908	3.93	1.200	1.712	0.590	0.442	0.688
	H5		1651503808						
9/16 - 24 UNEF	H4		1651506608	4.33	1.334	1.885	0.697	0.522	0.751
5/8 - 11 UNC	H3		1651504108						
	H5		1651504008						
5/8 - 18 UNF	H3		1651504308	3.93	1.500	2.090	0.800	0.600	0.811
	H5		1651504208						
5/8 - 24 UNEF	H4		1651506708	4.92	0.760	0.570	0.751	0.625	0.625
11/16 - 24 UNEF	H3		1651506808						
3/4 - 10 UNC	H3		1651504508	4.33	1.200	1.712	0.590	0.442	0.688
	H5		1651504408						
3/4 - 16 UNF	H3		1651504708	4.33	1.334	1.885	0.697	0.522	0.751
	H5		1651504608						
3/4 - 20 UNEF	H3		1651506908	4.92	1.500	2.090	0.800	0.600	0.811
13/16 - 20 UNEF	H5		1651507008						
7/8 - 9 UNC	H4		1651504908	5.51	1.334	1.885	0.697	0.522	0.751
	H6		1651504808						
7/8 - 14 UNF	H4		1651505108	4.92	1.500	2.090	0.800	0.600	0.811
	H6		1651505008						
7/8 - 20 UNEF	H4		1651507108	5.51	1.334	1.885	0.697	0.522	0.751
15/16 - 20 UNEF	H5		1651507208						
1 - 8 UNC	H4		1651505308	6.29	1.500	2.090	0.800	0.600	0.811
	H6	1651505208							
1 - 14 UNS	H4	1651505508	5.51	1.334	1.885	0.697	0.522	0.751	
	H6	1651507408							
1 - 20 UNEF	H5	1651507308							

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16515	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>			
SFM	80-120	80-120	80-120	40-65	35-55	25-75	25-60	25-60	60-100	70-120	70-120			40-65			

good best





List 16510

NEW SIZES

VC10

V

A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)	L	Lc	Ln			
			V	L	Lc	Ln	d	k	lk
M1.4 x 0.3	D2	2	1651003008	40	7	8.9	3.58	2.79	4.8
M1.6 x 0.35	D3		1651003108						
M1.7 x 0.35			1651003208						
M2 x 0.4			1651003408						
M2 x 0.25	D2		1651003308	45	11	12.0			
M2.2 x 0.45	D3		1651003608						
M2.2 x 0.25	D2		1651003508						
M2.3 x 0.4	D3		1651003708						
M2.5 x 0.45			1651003908						
M2.5 x 0.35			1651003808						
M2.6 x 0.45		1651004008							
M3 x 0.5		56	1651000108	6	17.9				
M3 x 0.35			1651004108	5					
M3.5 x 0.6			1651004308	7	19.8				
M3.5 x 0.35	1651004208								
M4 x 0.7	D4	1651000308	63	8	20.8	4.26	3.33	6.4	
M4 x 0.5	D3	1651000208							
M4.5 x 0.75	D4	1651004508	70	9	24.8	4.92	3.86		
M4.5 x 0.5	D3	1651004408		8					
M5 x 0.8	D4	1651000508		9					
M5 x 0.5	D3	1651000408							
M5.5 x 0.5	D5	1651004608	80	10	29.7	5.58	4.19		7.1
M6 x 1.0		D5		1651000808					
M6 x 0.75	D4	1651000708	90	11	34.7	8.07	6.05		9.5
M6 x 0.5	D3	1651000608							
M7 x 1.0	D5	1651004808		11					
M7 x 0.75	D4	1651004708							
M8 x 1.25	D5	1651001008	80	15	30.0	9.67	7.26	11.1	
M8 x 1.0		D4		1651000908					14
M8 x 0.75	D5	1651004908	90	15	34.8				
M9 x 1.25		1651005208							
M9 x 1.0		1651005108							
M9 x 0.75		1651005008							
M10 x 1.5	D6	1651001308	100	18	38.9	8.20	6.15	10.3	
M10 x 1.25	D5	1651001208		17					
M10 x 1.0		1651001108							18
M10 x 0.75	D4	1651005308	90	17	34.8				
M11 x 1.5	D6	1651005608				100			
M11 x 1.0	D5	1651005508	90						

Packed: 1 pc.
Available V coating only.

continued on next page



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16510	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	40-65	35-55	25-75	25-60	25-60	60-100	70-120	70-120			40-65			

good best





List 16510 (Continued)

NEW SIZES

VC10

V

A-POT, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)	L	Lc	Ln	d	k	lk
			V	L	Lc	Ln	d	k	lk
M11 x 0.75	D4	3	1651005408	90	18	29.0	8.20	6.15	10.3
M12 x 1.75	D6		1651001708	110	21	32.0	9.32	6.98	11.1
M12 x 1.5			1651001608	100					
M12 x 1.25			1651001508						
M12 x 1.0	D5	1651001408	110	24					
M14 x 2.0	D7	1651001908	110						
M14 x 1.5	D6	1651001808	100						
M14 x 1.25		1651005808							
M14 x 1.0		D5	1651005708	110					
M15 x 2.0	D7	3	1651007208	110	30	43.0	13.76	10.31	15.9
M15 x 1.5	D6	4	1651006008	100					
M15 x 1.25		1651007308							
M15 x 1.0		D5	4	1651005908					
M16 x 2.0	D7	3	1651002108	110	30	44.0	17.70	13.28	19.1
M16 x 1.5	D6	4	1651002008	100					
M16 x 1.25		1651007408							
M16 x 1.0		D5	4	1651006108					
M17 x 1.5	D6	4	1651006308	125					
M17 x 1.25		1651007508							
M17 x 1.0		D5	4	1651006208	140				
M18 x 2.5	D7	3	1651002308	140					
M18 x 2.0		1651006508							
M18 x 1.25		D6	4	1651007608	125				
M18 x 1.5	1651002208								
M18 x 1.0	D5		4	1651006408	140				
M20 x 2.5	D7	3	1651002508	160					
M20 x 2.0		1651006708							
M20 x 1.5		D6	4	1651002408	140				
M20 x 1.0	D5		4	1651006608		125			
M22 x 2.5	D7		3	1651002708	160				
M22 x 2.0		1651006908							
M22 x 1.5		D6	4	1651002608	140				
M22 x 1.0	D5		4	1651006808		125			
M24 x 3.0	D8		3	1651002908	160	36	51.0	19.30	14.48
M24 x 2.0	D7	4	1651007108						
M24 x 1.5	D6	4	1651002808						
M24 x 1.0	D5	4	1651007008						

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16510	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	40-65	35-55	25-75	25-60	25-60	60-100	70-120	70-120			40-65			

good best





List 16555



A-OIL-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (3.5P - 4.5P)	L	Lc	Ln	d	k	lk	
			V	L	Lc	Ln	d	k	lk	
1/4 - 20 UNC	H5	3	1655500108	3.14	0.598	1.181	0.255	0.190	0.311	
1/4 - 28 UNF	H4		1655500208							
5/16 - 18 UNC	H5		1655500308	3.54	0.665	1.377	0.317	0.238	0.374	
5/16 - 24 UNF	H4		1655500408							
3/8 - 16 UNC	H5		1655500508	3.93	0.751	1.535	0.380	0.285	0.437	
3/8 - 24 UNF	H4		1655500608			1.377				
7/16 - 14 UNC	H5		1655500708	3.93	0.858	1.291	0.322	0.242	0.405	
7/16 - 20 UNF			1655500808							
1/2 - 13 UNC			1655500908	4.33	0.921	1.354	0.367	0.274	0.437	
1/2 - 20 UNF			1655501008							
9/16 - 12 UNC			1655501108	4.33	1.000	1.472	0.429	0.322	0.500	
9/16 - 18 UNF			1655501208							
5/8 - 11 UNC			1655501308	4.33	1.090	1.562	0.480	0.359	0.562	
5/8 - 18 UNF			1655501408							
3/4 - 10 UNC			H6	1655501508	4.92	1.200	1.712	0.590	0.442	0.688
3/4 - 16 UNF				1655501608						
7/8 - 9 UNC				1655501708	5.51	1.334	1.885	0.697	0.522	0.751
7/8 - 14 UNF				1655501808						
1 - 8 UNC	1655501908			6.29	1.500	2.090	0.800	0.600	0.811	
1 - 12 UNF	1655502008									

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16555	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	100-200	100-200	100-200	50-120	45-110	40-120	40-120	40-100	80-160	90-220	90-220			60-120			

good best





A Brand® A-OIL-POT

Advanced Performance Taps for a Variety of Materials

List 16550



A-OIL-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)	L	Lc	Ln	d	k	lk
			V	L	Lc	Ln	d	k	lk
M6 x 1.0	D5	3	1655000208	80	12	30.0	6.47	4.85	7.3
M6 x 0.75	D4		1655000108						
M7 x 1.0	D5		1655000308	90	15	35.0	8.07	6.05	9.5
M8 x 1.25			1655000608						
M8 x 1.0	D4		1655000508	80	30.0	35.0	9.67	7.26	11.1
M8 x 0.75			1655000408						
M9 x 1.25	D5		1655000708	90	18	39.0	8.20	6.15	10.3
M10 x 1.5	D6		1655001008	100	21	32.0	9.32	6.98	11.1
M10 x 1.25	D5		1655000908	90					
M10 x 1.0			1655000808	100	29.0	8.20	6.15	10.3	
M11 x 1.5	D6		1655001108	100	24	36.0	10.89	8.18	12.7
M12 x 1.75			1655001508	110					
M12 x 1.5	D5		1655001408	100	30	43.0	13.76	10.31	15.9
M12 x 1.25			1655001308						
M12 x 1.0	D7		1655001208	110	36	51.0	19.30	14.48	19.1
M14 x 2.0	D6		1655001708	110					
M14 x 1.5		1655001608	100	30	44.0	17.70	13.28	19.1	
M15 x 1.5	D7	1655001808	100						
M16 x 2.0	D6	1655002008	110	36	51.0	19.30	14.48	19.1	
M16 x 1.5	D7	1655002208	110						
M17 x 1.5	D6	1655002108	100	36	51.0	19.30	14.48	19.1	
M18 x 2.5	D7	1655002308	125						
M18 x 1.5	D6	1655002208	110	36	51.0	19.30	14.48	19.1	
M20 x 2.5	D7	1655002508	140						
M20 x 1.5	D6	1655002408	125	36	51.0	19.30	14.48	19.1	
M22 x 2.5	D7	1655002808	140						
M22 x 2.0	D7	1655002708	140	36	51.0	19.30	14.48	19.1	
M22 x 1.5		4	1655002608						125
M24 x 3.0	D8	1655003108	160	36	51.0	19.30	14.48	19.1	
M24 x 2.0	D7	1655003008	140						
M24 x 1.5	D6	1655002908	140	36	51.0	19.30	14.48	19.1	

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16550	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	100-200	100-200	100-200	50-120	45-110	40-120	40-120	40-100	80-160	90-220	90-220			60-120			

good best





List 16535

NEW SIZES

VC10

V

A-LT-POT, Long Shank, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
			Plug (3.5P - 4.5P)								
			V	L	Lc	Ln	d	k	lk		
4 - 40 UNC	H2	2	1653506008	3.14	0.342	0.751	0.140	0.109	0.188		
4 - 48 UNF			1653506108								
5 - 40 UNC			1653500708								
5 - 44 UNF			1653506308								
6 - 32 UNC	H3	3	1653501008	4.72	0.429	0.842	0.194	0.151	0.251		
6 - 40 UNF	H2		1653501108	3.93	0.433	0.846					
8 - 32 UNC	H3		1653501308	4.72	0.444	0.897					
8 - 36 UNF	H2		1653501408	3.93							
10 - 24 UNC	H3	3	1653501508	4.92	0.574	1.059	0.220	0.164	0.279		
10 - 32 UNF			1653501708	5.90	0.582	1.066					
12 - 24 UNC			1653501808	4.92	0.590	1.271					
12 - 28 UNF			1653501908								
1/4 - 20 UNC	H5	3	1653502108	5.90	0.704	1.366	0.255	0.190	0.287		
1/4 - 28 UNF	H4		1653502308								
5/16 - 18 UNC	H5		1653502508								
5/16 - 24 UNF	H4		1653502708		0.803	1.633	0.317	0.238	0.342		
3/8 - 16 UNC	H5		1653502908								
3/8 - 24 UNF	H4		1653503108								
7/16 - 14 UNC	H5		3		1653503308	7.08	0.858	2.362	0.322	0.242	0.405
7/16 - 20 UNF					1653503508						
1/2 - 13 UNC					1653503708						
1/2 - 20 UNF					1653503908		0.921	2.834	0.367	0.274	0.437
9/16 - 12 UNC					1653504108						
9/16 - 18 UNF					1653504308						
5/8 - 11 UNC	H6	3	1653504508	7.87	1.090	1.897	0.380	0.285	0.397		
5/8 - 18 UNF			1653504708								
3/4 - 10 UNC			1653504908								
3/4 - 16 UNF			1653505108		0.921	2.834	0.429	0.322	0.500		
7/8 - 9 UNC			1653505308								
7/8 - 14 UNF			1653505508								
1 - 8 UNC	H6	3	1653505708	1.200	3.149	0.590	0.442	0.688			
1 - 12 UNF			1653505908								
					1.500		0.800	0.600	0.811		

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16535	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>				
SFM	80-120	80-120	80-120	40-65	35-55	25-75	25-60	25-60	60-100	70-120	70-120			40-65			

good best





List 16530

NEW SIZES

VC10

V

A-LT-POT, Long Shank, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length			
			Plug (3.5P - 4.5P)									
			V	L	Lc	Ln	d	k	lk			
M3 x 0.5	D3	3	1653001308	100	6	20.0	3.58	2.79	4.8			
M3 x 0.35			1653001208									
M3.5 x 0.6			1653001508									
M3.5 x 0.35	1653001408											
M4 x 0.7	1653001708											
M4 x 0.5	1653001608											
M4.5 x 0.75	1653001908		125	9	30.0	4.92	3.86	6.4				
M4.5 x 0.5	1653001808											
M5 x 0.8	1653002108											
M5 x 0.5	1653002008		150	10	35.9	5.58	4.19	7.1				
M5.5 x 0.5	1653002208											
M6 x 1.0	1653002708											
M6 x 0.75	1653002508	125	11	40.0	6.47	4.85	7.8					
M6 x 0.5	1653002308											
M8 x 1.25	1653003708							150	15	51.9	8.07	6.04
M8 x 1.0	1653003508											
M8 x 0.75	1653003308											
M10 x 1.5	1653005108											
M10 x 1.25	1653004908											
M10 x 1.0	1653004708	180	21	72.0	9.32	6.98	11.0					
M10 x 0.75	1653004508											
M12 x 1.75	1653006708											
M12 x 1.5	1653006508											
M12 x 1.25	1653006308											
M12 x 1.0	1653006108							150	24	59.9	10.89	8.17
M14 x 2.0	1653007108											
M14 x 1.5	1653007008											
M14 x 1.25	1653006908											
M14 x 1.0	1653006808											
M15 x 1.5	1653007308	160	72.0	12.19	9.14	14.3						
M15 x 1.0	1653007208											
M16 x 2.0	1653007708											
M16 x 1.5	1653007508											
M16 x 1.0	1653007408											
M18 x 2.5	1653008308						180	29	72.0	13.76	10.31	15.9
M18 x 2.0	1653008208											
M18 x 1.5	1653008108											
M18 x 1.0	1653008008											
M20 x 2.5	1653008708	200	80.0	16.56	12.42	17.5						
M20 x 2.0	1653008608											
M20 x 1.5	1653008508											
M20 x 1.0	1653008408											
M22 x 2.5	1653009108											
M22 x 2.0	1653009008						4	17.70	13.28	19.1		
M22 x 1.5	1653008908											
M22 x 1.0	1653008808											

Packed: 1 pc.
Available V coating only.





List 16530 (Continued)

NEW SIZES

VC10

V

A-LT-POT, Long Shank, Plug (3.5P-4.5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)						
			V						
M24 x 3.0	D8	3	1653009508	200	35	80.0	19.30	14.47	19.1
M24 x 2.0	D7	4	1653009408						
M24 x 1.5	D6		1653009308						
M24 x 1.0	D5		1653009208						

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P										M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels								
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC			
	1010 1018	1035 1045	1065			4140 4340	25-75	25-60		25-60	70-120			70-120	6Al4V (30 HRC)	40-65						
16530	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>									
SFM	80-120	80-120	80-120	40-65	35-55	25-75	25-60	25-60	60-100	70-120	70-120		40-65									

good best





List 13063

VC10	V	LHS	21°
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V-CPM-RFT, RHC/LHS for Through Hole, Plug (4P - 4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (4P - 4.5P)							
			V	L	Lc	Ln	d	k	lk	
2 - 56 UNC	H2	2	1306300108	1.75	0.437	0.476	0.141	0.110	0.189	
4 - 40 UNC			1306300208	1.87	0.295	0.559				
6 - 32 UNC			1306300308	2.00	0.370	0.685				
8 - 32 UNC	H3	3	1306300408	2.12	0.374	0.752	0.168	0.131	0.252	
10 - 24 UNC			1306300508	2.37	0.492	0.866				
10 - 32 UNF			1306300608							
1/4 - 20 UNC	H5	3	1306300708	2.50	0.594	0.996	0.255	0.191	0.287	
1/4 - 28 UNF	H3		1306300808							
	H5		1306300908							
5/16 - 18 UNC	H3	3	1306301008	2.72	0.665	1.126	0.318	0.238	0.374	
5/16 - 24 UNF			H5							1306301108
			H3							1306301208
3/8 - 16 UNC	H5	3	1306301308	2.93	0.752	1.252	0.381	0.286	0.437	
3/8 - 24 UNF			H3							1306301408
			H5							1306301508
7/16 - 14 UNC	H3	3	1306301608	3.15	0.858	1.291	0.323	0.242	0.406	
7/16 - 20 UNF			H5							1306301708
			H3							1306301808
1/2 - 13 UNC	H5	3	1306301908	3.37	0.921	1.354	0.367	0.275	0.437	
1/2 - 20 UNF	H3		1306302008							

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Titanium		Stainless Steels				Aluminum	Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High				300	400	17-4 PH					6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
13063				<input type="checkbox"/>					<input type="checkbox"/>					<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-50				8-20						8-20	15-35				

good best





List 13163

VC10	V	LHS	21°
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V-CPM-RFT, RHC/LHS for Through Hole, Plug (4P - 4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4P - 4.5P)						
			V	L	Lc	Ln	d	k	Ik
M2.5 x 0.45	D3	3	1316300108	47	12	13.8	3.58	2.79	4.8
M3 x 0.5			1316300208	50	6	16.0			
M4 x 0.7	D4		1316300308	55	8	19.1	4.26	3.33	6.4
M5 x 0.8			1316300408	62	9	22.2	4.92	3.86	
M6 x 1.0	D5		1316300508	65	12	25.4	6.47	4.85	7.3
M8 x 1.25			1316300808	69	15	28.6	8.07	6.05	9.5
M10 x 1.5	D6		1316301008	74	18	31.8	9.67	7.26	11.1
M10 x 1.25	D5		1316300908						
M12 x 1.75	D6		1316301308	85	21	32.0	9.32	6.98	
M12 x 1.25	D5		1316301108						

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Titanium	H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Nickel Alloy	Hardened Steels		
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC
13163				4140 4340							<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-50			8-20				8-20	15-35				

good best





VC10 **HR**

List 337Ni

WHR-Ni-POT, DIN Overall Length, Plug (5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5P)						
			HR	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	2	3370002562	1.77	0.437	0.476	0.140	0.109	0.188
4 - 40 UNC	H3		3370004402	2.20	0.562	0.602			
4 - 48 UNF	H2	2	3370004403	2.20	0.688	-	0.167	0.131	0.251
6 - 32 UNC	H3		3370006322			-			
8 - 32 UNC	H2	2	3370008322	2.48	0.751	-	0.194	0.151	0.251
10 - 24 UNC	H3		3370008323			-			
10 - 32 UNF	H2	2	3370010242	2.75	0.874	-	0.255	0.190	0.287
10 - 32 UNF	H3		3370010243			-			
1/4 - 20 UNC	H2	2	3370010322	3.14	1.000	-	0.317	0.238	0.342
1/4 - 20 UNC	H5		3370010323			-			
1/4 - 28 UNF	H3	2	3370014203	3.14	0.992	-	0.380	0.285	0.397
1/4 - 28 UNF	H4		3370014283			-			
5/16 - 18 UNC	H3	3	3370014284	3.54	0.665	1.377	0.322	0.242	0.405
5/16 - 18 UNC	H5		3370516183			1.377			
5/16 - 24 UNF	H3	3	3370516185	3.54	0.657	1.370	0.367	0.274	0.437
5/16 - 24 UNF	H5		3370516243			1.370			
3/8 - 16 UNC	H3	3	3370516245	3.93	0.751	1.535	0.429	0.322	0.500
3/8 - 16 UNC	H5		3370038163			1.535			
3/8 - 24 UNF	H3	3	3370038165	3.54	0.740	1.377	0.480	0.359	0.562
3/8 - 24 UNF	H5		3370038243			1.377			
7/16 - 14 UNC	H3	3	3370038245	3.93	0.858	1.291	0.590	0.442	0.688
7/16 - 14 UNC	H5		3370716143			1.291			
7/16 - 20 UNF	H3	3	3370716145	4.33	0.921	1.354	0.367	0.274	0.437
7/16 - 20 UNF	H5		3370716203			1.354			
1/2 - 13 UNC	H3	3	3370716205	4.33	1.000	1.472	0.429	0.322	0.500
1/2 - 13 UNC	H5		3370012133			1.472			
1/2 - 20 UNF	H3	3	3370012135	3.93	1.090	1.562	0.480	0.359	0.562
1/2 - 20 UNF	H5		3370012203			1.562			
9/16 - 18 UNF	H3	3	3370012205	4.33	1.200	1.712	0.590	0.442	0.688
9/16 - 18 UNF	H5		3370916183			1.712			
5/8 - 11 UNC	H3	4	3370916185	4.92	1.200	1.712	0.590	0.442	0.688
5/8 - 11 UNC	H5		3370058113			1.712			
5/8 - 18 UNF	H3	4	3370058115	4.33	1.200	1.712	0.590	0.442	0.688
5/8 - 18 UNF	H5		3370058183			1.712			
3/4 - 10 UNC	H3	4	3370058185	4.33	1.200	1.712	0.590	0.442	0.688
3/4 - 10 UNC	H5		3370034103			1.712			
3/4 - 16 UNF	H3	4	3370034105	4.92	1.200	1.712	0.590	0.442	0.688
3/4 - 16 UNF	H5		3370034163			1.712			
3/4 - 16 UNF	H5	4	3370034165	4.33	1.200	1.712	0.590	0.442	0.688

Packed: 1 pc.
Available HR coating only.





List 337Ni (Continued)

VC10

HR

WHR-Ni-POT, DIN Overall Length, Plug (5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5P)	L	Lc	Ln	d	k	lk
			HR	L	Lc	Ln	d	k	lk
7/8 - 9 UNC	H3	4	3370078093	5.51	1.334	1.885	0.697	0.522	0.751
	H5		3370078095						
7/8 - 14 UNF	H3		3370078143	4.92	1.500	2.090	0.800	0.600	0.811
	H5		3370078145						
1 - 8 UNC	H3		3370001083	6.29	1.500	2.090	0.800	0.600	0.811
	H5		3370001085						
1 - 12 UNF	H3	3370001123	5.51	1.500	2.090	0.800	0.600	0.811	
	H5	3370001125							

Packed: 1 pc.
Available HR coating only.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
337Ni																			
SFM																			

good best





VC10 HR

List 338Ni

WHR-Ni-POT, DIN Overall Length, Plug (5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5P)						
			HR	L	Lc	Ln	d	k	lk
M2.5 x 0.45	D3	2	3380250453	50	12	13.8	3.58	2.79	4.8
M3 x 0.5			3380003053	56	16	21.0			
M4 x 0.7	D4	2	3380004074	63	19	25.5	4.26	3.33	6.4
M5 x 0.8			3380005084	70	22	-			
M6 x 1.0	D5	2	3380006105	80	25	33.9	6.47	4.85	7.3
M6 x 0.75			3380006755						
M8 x 1.25			3380008255						
M8 x 1.0	D6	2	3380008105	90	15	35.0	8.07	6.05	8.7
M10 x 1.5			3380010156						
M10 x 1.25	D5	2	3380010255	100	22	43.5	9.67	7.26	10.1
M12 x 1.75	3380012756								
M12 x 1.5	D6	3	3380012156	100	21	32.0	9.32	6.98	11.1
M14 x 2.0			3380014207						
M14 x 1.5	D6	3	3380014156	100	24	36.0	10.89	8.18	12.7
M16 x 2.0	D7		3380016207						
M16 x 1.5	D6	3	3380016156	100	24	36.0	12.19	9.14	14.3
M18 x 2.5	D7		3380018257						
M18 x 1.5	D6	3	3380018156	110	30	43.0	13.76	10.31	15.9
M20 x 2.5	D8		3380020258						
M20 x 1.5	D6	3	3380020156	125	30	44.0	16.56	12.42	17.5
M22 x 2.5	D8		3380022258						
M22 x 1.5	D6	3	3380022156	125	30	44.0	17.70	13.28	19.1
M24 x 3.0	D8		3380024308						
M24 x 1.5	D6	4	3380024156	140	36	51.0	19.30	14.48	

Packed: 1 pc.
Available HR coating only.



Work Material																				
List No.	P				Die Steels	M			K Cast Iron	N		S		H						
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels						
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
338Ni																				
SFM							8-20					<input checked="" type="checkbox"/>							<input type="checkbox"/>	

good best





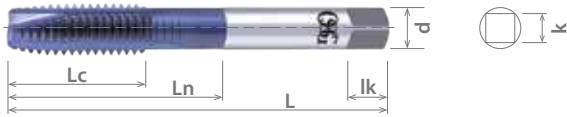
List 312Ti

V-Ti-POT, Plug (4.5P-5.5P)



VC10

V



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (4.5P-5.5P)							
			V	L	Lc	Ln	d	k	lk	
2 - 56 UNC	H2	3	1105610108	1.75	0.437	-	0.140	0.109	0.188	
4 - 40 UNC			1105610208	1.87	0.562	-				
6 - 32 UNC	H3		2.00	1105610408	0.688	-	0.167	0.131	0.251	
6 - 40 UNF	H2			1105610508		-				
8 - 32 UNC	H3		1105610608	-	2.12	0.751	0.194	0.151	0.251	
8 - 36 UNF	H2		1105610708	-						
10 - 24 UNC	H3		1105610808	-	2.37	0.874	0.194	0.151	0.251	
10 - 32 UNF	H2		1105611008	-						
1/4 - 20 UNC	H3		1105611108	-	2.50	0.866	0.255	0.190	0.311	
	H5		1105611208	-						
1/4 - 28 UNF	H3		1105611308	-	2.72	1.000	0.317	0.238	0.374	
	H4		1105611408	-						
5/16 - 18 UNC	H3		1105611508	-	2.93	0.988	0.380	0.285	0.437	
5/16 - 24 UNF	H4		1105611608	-						
3/8 - 16 UNC	H3		1105611708	-	3.15	0.665	0.322	0.242	0.405	
	H5		1105611808	-						
3/8 - 24 UNF	H3		1105611908	-	3.37	0.657	0.367	0.274	0.437	
	H4		1105612008	-						
7/16 - 14 UNC	H3		1105612108	-	3.59	0.751	0.429	0.322	0.500	
	H5		1105612208	-						
7/16 - 20 UNF	H3		1105612308	-	3.81	0.740	0.480	0.359	0.562	
	H5		1105612408	-						
1/2 - 13 UNC	H3		1105612508	-	3.15	0.858	1.291	0.322	0.242	0.405
	H5		1105612608	-						
1/2 - 20 UNF	H3		1105612708	-	3.37	0.921	1.354	0.367	0.274	0.437
	H5		1105612808	-						
9/16 - 18 UNF	H3		1105612908	-	3.59	1.000	1.472	0.429	0.322	0.500
	H5		1105613008	-						
5/8 - 11 UNC	H3	1105613108	-	3.81	1.090	1.562	0.480	0.359	0.562	
	H5	1105613208	-							
5/8 - 18 UNF	H3	1105613308	-	3.15	0.858	1.291	0.322	0.242	0.405	
	H5	1105613408	-							
5/8 - 18 UNF	H3	1105613508	-	3.59	1.000	1.472	0.429	0.322	0.500	
	H5	1105613608	-							
5/8 - 18 UNF	H3	1105613708	-	3.81	1.090	1.562	0.480	0.359	0.562	
	H5	1105613808	-							

Packed: 1 pc.
Available V coating only.

[continued on next page](#)

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
312Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-30				8-20				8-15	8-15	15-35	10-20			

good best



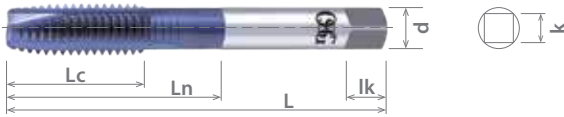


VC10

V

List 312Ti (Continued)

V-Ti-POT, Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (4.5P-5.5P)							
			V							
			L	Lc	Ln	d	k	lk		
3/4 - 10 UNC	H5	4	1105613808	4.25	1.200	1.712	0.590	0.442	0.688	
	H3		1105613908							
	H5		1105614008							
7/8 - 9 UNC	H3		1105614208	4.68	1.334	1.885	0.697	0.522	0.751	
	H5		1105614308							
	H3		1105614408							
7/8 - 14 UNF	H3		1105614508	5.12	1.500	1.956	0.800	0.600	0.811	
	H5		1105614108			2.090				
1 - 8 UNC	H5									

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
312Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30			8-20					8-15	8-15	15-35	10-20			

good best





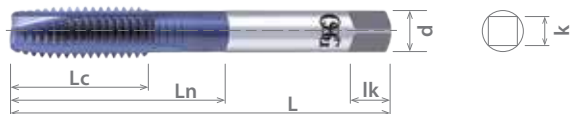
List 344Ti

V-Ti-POT, Plug (4.5P-5.5P)



VC10

V



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4.5P-5.5P)						
			V						
M3 x 0.5	D3	3	1115810108	49	15	20.9	3.58	2.79	4.8
M4 x 0.7	D4		1115810208	54	19	25.4	4.26	3.33	6.4
M5 x 0.8			1115810308	60	22	-	4.92	3.86	
M6 x 1.0	D5		1115810408	63	25	33.8	6.47	4.85	7.3
M8 x 1.25			1115810508	69	15	28.6	8.07	6.05	8.7
M10 x 1.5			D6	1115810708	74	18	31.8	9.67	7.26
M10 x 1.25	D5		1115810608						
M12 x 1.75	D6		1115810808	85	21	32.0	9.32	6.98	11.1

Packed: 1 pc.
Available V coating only.

EXT

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
344Ti				○				○				○	○	○			
SFM				15-30			8-20					8-15	8-15	15-35	10-20		

○ good ◻ best





EXOTAP® VC-10 Ti

Coolant-Through Taps Designed for Titanium Alloys

List 316Ti

VPO-Ti-POT, Coolant-Through, DIN Overall Length, Plug (5P)



NEW

VC10

V



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5P)							
			V	L						
1/4 - 28 UNF	H3	3	31621408		3.14	1.000	--	0.255	0.191	0.313
	H4		31621508							
5/16 - 24 UNF	H3		31621808		3.54	0.665	1.378	0.318	0.238	0.375
	H4		31621908							
3/8 - 24 UNF	H3		31622208		3.93	0.752	1.291	0.381	0.286	0.438
	H4		31622308							
7/16 - 20 UNF	H3		31622608		4.33	0.858	1.354	0.323	0.242	0.406
	H4		31622708							
1/2 - 20 UNF	H3		31623008		4.92	0.921	1.472	0.367	0.275	0.438
	H5		31623108							
9/16 - 18 UNF	H3		31623408		5.51	1.000	1.563	0.429	0.322	0.500
	H5		31623508							
5/8 - 18 UNF	H3	31623808		4.33	1.091	1.713	0.480	0.360	0.563	
	H4	31623908								
3/4 - 16 UNF	H3	4	31624208		4.92	1.335	1.886	0.697	0.523	0.750
	H4		31624308							
7/8 - 14 UNF	H4		31624608		5.51	1.500	2.091	0.800	0.600	0.813
	H6		31624708							
1 - 12 UNF	H4		31625008		4.33	1.201	1.713	0.590	0.442	0.688
	H6		31625108							

Packed: 1 pc.
Available V coating only.

EXT

Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
316Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30			8-20					8-15	8-15	15-35	10-20			

good best





List 347Ti

VPO-Ti-POT, Coolant-Through, DIN Overall Length, Plug (5P)



NEW	VC10	V	
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Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5P)							
			V							
M8 x 1.0	D5	3	34720508		90	15	35	8.07	6.04	9.5
M10 x 1.25			34720708		100	18	39	9.67	7.26	11.1
M12 x 1.25			34720908			21	32	9.32	6.98	
M12 x 1.5	34721008			24		36	10.89	8.17	12.7	
M14 x 1.5	34721208				12.19		9.14	14.2		
M16 x 1.5	34721408				43		44	13.76	10.31	15.8
M18 x 1.5	34721608		110	30		17.70		16.56	12.42	17.4
M20 x 1.5	34721808		125					19.30	14.47	19.0
M22 x 1.5	34722008									
M24 x 1.5		4	34722208		140	36	51	19.30	14.47	

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
347Ti				<input type="checkbox"/>								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
SFM				15-30			8-20					8-15	8-15	15-35	10-20		

good best





EXOTAP® VC-10 Ni

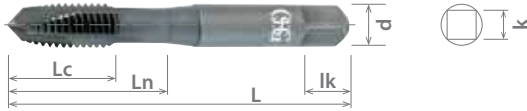
Taps Designed for Nickel Based Alloys



VC10	V	S/O
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List 312Ni

Ni-POT, Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P-5.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	2	17722	01	-	1.75	0.472	-	0.140	0.109	0.188
			17762	01	08			-			
4 - 40 UNC	H3	3	17763	01	-	1.87	0.606	-	0.140	0.109	0.188
			17720	01	-			-			
4 - 48 UNF	H2	2	17721	01	-	2.00	0.744	-	0.140	0.109	0.188
			17715	01	-			-			
6 - 32 UNC	H3	2	17063	01	08	2.12	0.822	-	0.167	0.131	0.251
			17064	01	-			-			
			17716	01	-			-			
8 - 32 UNC	H3	2	17065	01	08	2.37	0.948	-	0.194	0.151	0.251
			17717	01	-			-			
			17066	01	-			-			
10 - 24 UNC	H3	2	17067	01	08	2.50	1.102	-	0.255	0.190	0.311
			17068	01	-			-			
			17718	01	-			-			
10 - 32 UNF	H3	2	17069	01	08	2.72	0.799	-	0.317	0.238	0.374
			17719	01	-			-			
			17070	01	-			-			
1/4 - 20 UNC	H3	3	17071	01	08	2.93	0.917	-	0.380	0.285	0.437
			17072	01	-			-			
			17723	01	-			-			
1/4 - 28 UNF	H3	3	17073	01	08	3.15	0.858	-	0.322	0.242	0.405
			17724	01	-			-			
			17074	01	-			-			
5/16 - 18 UNC	H3	3	17075	01	08	3.37	0.921	-	0.367	0.274	0.437
			17076	01	-			-			
			17077	01	08			-			
5/16 - 24 UNF	H3	3	17078	01	-	3.59	1.000	-	0.429	0.322	0.500
			17079	01	08			-			
			17080	01	-			-			
3/8 - 16 UNC	H3	3	17081	01	08	3.81	1.090	-	0.480	0.359	0.562
			17082	01	-			-			
			17083	01	-			-			
3/8 - 24 UNF	H3	3	17084	01	-	4.25	1.200	-	0.590	0.442	0.688
			17085	01	08			-			
			17086	01	-			-			
7/16 - 14 UNC	H3	3	17087	01	08	3.59	1.000	-	0.429	0.322	0.500
			17088	01	-			-			
			17089	01	08			-			
7/16 - 20 UNF	H3	3	17090	01	-	3.81	1.090	-	0.480	0.359	0.562
			17172	01	-			-			
			17173	01	-			-			
1/2 - 13 UNC	H3	3	17174	01	-	4.25	1.200	-	0.590	0.442	0.688
			17175	01	-			-			
			17176	01	-			-			
1/2 - 20 UNF	H3	3	17725	01	-	4.25	1.200	-	0.590	0.442	0.688
			17177	01	-			-			
			17177	01	-			-			
9/16 - 18 UNF	H3	3	17177	01	-	4.25	1.200	-	0.590	0.442	0.688
			17177	01	-			-			
			17177	01	-			-			
5/8 - 11 UNC	H3	3	17177	01	-	4.25	1.200	-	0.590	0.442	0.688
			17177	01	-			-			
			17177	01	-			-			
5/8 - 18 UNF	H3	3	17177	01	-	4.25	1.200	-	0.590	0.442	0.688
			17177	01	-			-			
			17177	01	-			-			
3/4 - 10 UNC	H3	3	17177	01	-	4.25	1.200	-	0.590	0.442	0.688
			17177	01	-			-			
			17177	01	-			-			

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.





List 312Ni (Continued)



VC10	V	S/O
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Ni-POT, Plug (4.5P-5.5P)

Tap Size	Thread Limit	No. of Flutes	Plug (4.5P-5.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V	L	Lc	Ln	d	k	lk
3/4 - 16 UNF	H3	4	17178	01	-	4.25	1.200	1.712	0.590	0.442	0.688
	H5		17179	01	-						
7/8 - 9 UNC	H3		17181	01	-	4.68	1.334	1.885	0.697	0.522	0.751
	H5		17182	01	-						
7/8 - 14 UNF	H3		17183	01	-						
	H5		17184	01	-						
1 - 8 UNC	H5		17180	01	-	5.12	1.500	2.090	0.800	0.600	0.811

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
312Ni	1010	1035	1065	4140															
SFM	1018	1045		4340															

good best





EXOTAP[®] VC-10 Ni

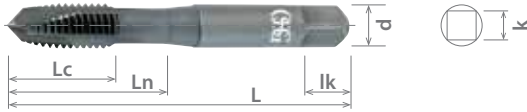
Taps Designed for Nickel Based Alloys



VC10	V	S/O
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List 344Ni

Ni-POT, Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P-5.5P)		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			EDP Number	Coating Suffix							
				S/O							V
M2.5 x 0.45	D3	2	11157100	01	08	45	12	13.7	3.58	2.79	4.8
M3 x 0.5			11157101	01	08	49	16	23.1			
M4 x 0.7	D4	3	11157102	01	08	54	19	25.7	4.26	3.32	6.4
M5 x 0.8			11157103	01	08	60	22	-	4.92	3.86	
M6 x 1.0	D5		11157104	01	08	63	25	33.7	6.47	4.85	7.8
M8 x 1.25			11157105	01	08	69	15	28.8	8.07	6.04	9.4
M10 x 1.25	D6	11157106	01	08	74	18	32.0	9.67	7.26	11.0	
M10 x 1.5		11157107	01	08							
M12 x 1.75		11157108	01	08	85	21		9.32	6.98		

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High	4140		4340	300	400		17-4 PH	6061	7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
344Ni								<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM								8-20				8-15	8-15	15-35	10-20			

good best



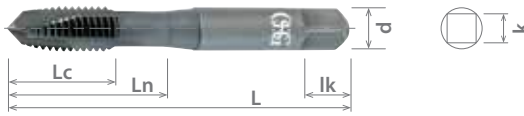


List 312

Plug (4.5P-5.5P)



VC10	V	S/O
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Tap Size	Thread Limit	No. of Flutes	Plug (4.5P-5.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V						
2 - 56 UNC	H2 H3 H4 H5	2	17590	01	08	1.75	0.437	0.476	0.140	0.109	0.188
4 - 40 UNC			17570	01	08	1.87	0.303	0.566			
			17591	01	08						
			17592	01	08						
			17593	01	08						
5 - 40 UNC	H2	17571	01	08	1.93	0.307	0.633				
6 - 32 UNC	H3	17594	01	08	2.00	0.377	0.692				
	H4	17572	01	08							
	H5	17595	01	08							
	H6	17596	01	08							
	H6	17597	01	08							
8 - 32 UNC	H2	17598	01	08	2.12	0.381	0.759	0.167	0.131		
	H3	17573	01	08							
	H4	17599	01	08							
	H5	17600	01	08							
	H6	17601	01	08							
10 - 24 UNC	H3	17574	01	08	2.37	0.500	0.874	0.194	0.151		
	H5	17602	01	08							
10 - 32 UNF	H2	17603	01	08	2.50	0.602	1.003	0.255	0.190	0.311	
	H3	17575	01	08							
	H4	17604	01	08							
	H5	17605	01	08							
	H6	17606	01	08							
1/4 - 20 UNC	H3	17576	01	08	2.72	0.669	1.129	0.317	0.238	0.374	
	H5	17002	01	08							
1/4 - 28 UNF	H3	17577	01	08	2.93	0.759	1.259	0.380	0.285	0.437	
	H4	17003	01	08							
	H5	17004	01	08							
	H6	17005	01	08							
	H6	17009	01	08							
5/16 - 18 UNC	H3	17578	01	08	2.72	0.669	1.129	0.317	0.238	0.374	
	H5	17006	01	08							
	H3	17579	01	08							
	H4	17007	01	08							
	H5	17008	01	08							
5/16 - 24 UNF	H5	17009	01	08	2.93	0.759	1.259	0.380	0.285	0.437	
	H6	17009	01	08							
	H3	17580	01	08							
	H4	17010	01	08							
	H5	17010	01	08							

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

[continued on next page](#) **EXT**

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
312				<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20			

good best

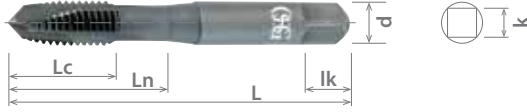




VC10	V	S/O
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List 312 (Continued)

Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P-5.5P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix							
				S/O	V						
3/8 - 24 UNF	H3	3	17581	01	08	2.93	0.759	1.259	0.380	0.285	0.437
	H4		17011	01	08						
	H5		17012	01	08						
	H6		17013	01	08						
7/16 - 14 UNC	H3		17582	01	08	3.15	0.893	1.291	0.322	0.242	0.405
	H5		17014	01	08						
7/16 - 20 UNF	H3		17583	01	08	3.37	0.960	1.354	0.367	0.274	0.437
	H5		17015	01	08						
1/2 - 13 UNC	H3		17584	01	08	3.81	1.137	1.562	0.480	0.359	0.562
	H5		17016	01	08						
1/2 - 20 UNF	H3		17585	01	08	4.25	1.251	1.712	0.590	0.442	0.688
	H5		17017	01	08						
5/8 - 11 UNC	H3	17586	01	08	4.25	1.232	1.712	0.590	0.442	0.688	
5/8 - 18 UNF	H3	17587	01	08							
	H5	17018	01	08							
3/4 - 10 UNC	H3	4	17588	01	08	4.25	1.251	1.712	0.590	0.442	0.688
3/4 - 16 UNF			17589	01	08						

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
312				☐	☐		☐	☐				☐	☐	☐	☐		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

☐ good ☐ best





List 344

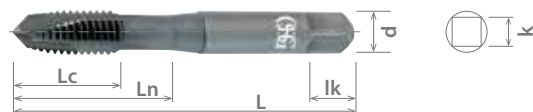
Plug (4.5P-5.5P)



VC10

V

S/O



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P-5.5P)		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			EDP Number	Coating Suffix							
				S/O							V
M3 x 0.5	D3	3	17022	01	08	49	6	16.0	3.58	2.79	4.8
M4 x 0.7	D4		17023	01	08	54	8	19.1	4.26	3.33	6.4
M5 x 0.8			17024	01	08	60	9	22.2	4.92	3.86	
M6 x 1.0	D5		17025	01	08	63	12	25.4	6.47	4.85	7.9
M8 x 1.25			17026	01	08	69	15	28.6	8.07	6.05	9.5
M10 x 1.5	D6		17028	01	08	74	17	31.7	9.67	7.26	11.1
M10 x 1.25	D5		17027	01	08			31.6			
M12 x 1.75	D6		17029	01	08	85	21	32.0	9.32	6.98	

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.

EXT

Work Material

List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
344	1010	1035	1065	4140															
SFM	1018	1045		4340															

good best





EXOTAP® VC-10

Coolant-Through Taps Designed for Difficult to Machine Materials

List 316

VPO-POT, Coolant-Through, DIN Overall Length, Plug (5P)



NEW



VC10



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5P)						
			V						
				L	Lc	Ln	d	k	lk
1/4 - 20 UNC	H3	3	31601108	3.14	0.598	1.181	0.318	0.238	0.375
	H5		31601208						
1/4 - 28 UNF	H3		31601308						
	H4		31601408						
5/16 - 18 UNC	H3		31601508	3.54	0.665	1.378	0.318	0.238	0.375
	H5		31601608						
H3	31601708								
5/16 - 24 UNF	H3		31601808						
	H4		31601808						
3/8 - 16 UNC	H3		31601908	3.93	0.752	1.535	0.381	0.275	0.438
	H5		31602008						
3/8 - 24 UNF	H3		31602108	3.54	0.752	1.535	0.381	0.275	0.438
	H4		31602208						
7/16 - 14 UNC	H3		31602308	3.93	0.858	1.291	0.323	0.242	0.406
	H5		31602408						
H3	31602508								
7/16 - 20 UNF	H3		31602608						
	H5		31602608						
1/2 - 13 UNC	H3		31602708	4.33	0.921	1.354	0.367	0.275	0.438
	H5		31602808						
1/2 - 20 UNF	H3	31602908	3.93	0.921	1.354	0.367	0.275	0.438	
	H5	31603008							
9/16 - 12 UNC	H3	31603108	4.33	1.000	1.472	0.429	0.322	0.500	
	H5	31603208							
9/16 - 18 UNF	H3	31603308	3.93	1.000	1.472	0.429	0.322	0.500	
	H5	31603408							
5/8 - 11 UNC	H3	31603508	4.33	1.091	1.563	0.480	0.360	0.563	
	H5	31603608							
5/8 - 18 UNF	H3	31603708	3.93	1.091	1.563	0.480	0.360	0.563	
	H5	31603808							
3/4 - 10 UNC	H3	31603908	4.92	1.201	1.713	0.590	0.442	0.688	
	H5	31605008							
3/4 - 16 UNF	H3	31604008	4.33	1.201	1.713	0.590	0.442	0.688	
	H5	31604108							
7/8 - 9 UNC	H4	31604208	5.51	1.335	1.886	0.697	0.523	0.750	
	H6	31604308							
7/8 - 14 UNF	H4	31604408	4.92	1.335	1.886	0.697	0.523	0.750	
	H6	31604508							
1 - 8 UNC	H4	31604608	6.29	1.500	2.091	0.800	0.600	0.813	
	H6	31604708							
1 - 12 UNF	H4	31604808	5.51	1.500	2.091	0.800	0.600	0.813	
	H6	31604908							

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
	1010 1018	1035 1045	1065	4140 4340														
316				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20			

good best





List 350

VPO-POT, Coolant-Through, DIN Overall Length, Plug (5P)



NEW VC10 V



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5P)						
			V						
M6 x 1.0	D5	3	35000408	80	12	30	6.47	4.85	7.9
M8 x 1.0			35000508	90	15	35	8.07	6.04	9.5
M8 x 1.25			35000608						
M10 x 1.25	35000708		100	18	39	9.67	7.26	11.1	
M10 x 1.5	35000808								
M12 x 1.25	35000908								
M12 x 1.5	D6		4	35001008	110	21	32	9.32	6.98
M12 x 1.75				35001108					
M14 x 1.5	35001208			100	24	36	10.89	8.17	12.7
M14 x 2.0	35001308								
M16 x 1.5	D6	35001408		100			12.19	9.14	14.2
M16 x 2.0	D7	35001508		110					
M18 x 1.5	D6	35001608		110	30	43	13.76	10.31	15.8
M18 x 2.5	D7	35001708							
M20 x 1.5	D6	35001808		125		44	16.56	12.42	17.4
M20 x 2.5	D7	35001908		140					
M22 x 1.5	D6	35002008	125	36	51	19.30	14.47	19.0	
M22 x 2.5	D7	35002108	140						
M24 x 1.5	D6	35002208	140						
M24 x 3.0	D8	35002308	160						

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels				Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
350				<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

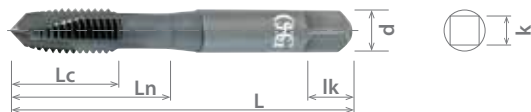
good best





List 300

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix								
				S/O	TiN	V						
2 - 56 UNC	H2	2	17346	01	-	08	1.75	0.437	0.476	0.140	0.109	0.188
	H3		17347	01	-	08						
	H4		17255	01	-	-						
3 - 48 UNC	H2		17256	01	-	-	1.81	0.496	0.535			
	H2		17300	01	05	08	1.87	0.303	0.566			
4 - 40 UNC	H3		17348	01	-	08						
	H4		17258	01	-	-						
	H5		17349	01	-	08						
	H6		17268	01	-	-						
4 - 48 UNF	H2		17269	01	-	-						
	H4		17270	01	-	-						
5 - 40 UNC	H2		17301	01	-	08	1.93	0.307	0.633			
	H2	17358	01	-	08	2.00	0.377	0.692				
6 - 32 UNC	H3	17302	01	-	08							
	H4	17398	01	05	08							
	H5	17271	01	-	-							
	H7	17371	01	-	08							
6 - 40 UNF	H2	17273	01	-	-				0.370	0.685		
	H3	17274	01	-	-							
8 - 32 UNC	H2	17359	01	-	08	2.12	0.381	0.759	0.167	0.131		
	H3	17303	01	05	08							
	H4	17275	01	-	-							
	H5	17372	01	-	08							
	H7	17276	01	-	-							
8 - 36 UNF	H2	17277	01	-	-	0.374	0.752					
10 - 24 UNC	H3	17304	01	05	08	2.37	0.500	0.874	0.194	0.151		
	H4	17278	01	-	-							
	H5	17279	01	-	-							
10 - 32 UNF	H2	17365	01	-	08							
	H3	17305	01	05	08							
	H4	17764	01	-	08							
	H5	17373	01	-	08							
	H6	17280	01	-	-							
	H7	17281	01	-	-							
12 - 24 UNC	H3	17282	01	-	-						0.508	0.937
12 - 28 UNF	H3	17283	01	-	-						0.503	0.940
1/4 - 20 UNC	H2	17366	01	-	08						2.50	0.602
	H3	17306	01	05	08							
	H5	17374	01	-	08							
	H7	17284	01	-	-							
1/4 - 28 UNF	H2	17367	01	-	08							
	H3	17307	01	05	08							
	H4	17368	01	-	08							
	H5	17285	01	-	-							
	H6	17286	01	-	-							
	H7	17287	01	-	-							

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide, TiN or V coatings as shown above.





List 300 (Continued)

Plug (3.5P-4.5P)



HSSE	V	TiN	S/O
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk						
			EDP Number	Coating Suffix														
				S/O	TiN	V												
5/16 - 18 UNC	H3	3	17308	01	05	08	2.72	0.669	1.129	0.317	0.238	0.374						
	H5		17383	01	-	08												
	H7		17288	01	-	-												
5/16 - 24 UNF	H3		17309	01	05	08												
	H4		17369	01	-	08												
	H5		17289	01	-	-												
	H6		17290	01	-	-												
3/8 - 16 UNC	H3		17310	01	05	08							2.93	0.759	1.259	0.380	0.285	0.437
	H5		17384	01	-	08												
	H7		17292	01	-	-												
3/8 - 24 UNF	H3		17311	01	05	08												
	H4		17370	01	-	08												
	H5		17293	01	-	-												
	H7		17294	01	-	-												
7/16 - 14 UNC	H3		17312	01	05	08	3.15	0.893	1.291	0.322	0.242	0.405						
	H5		17385	01	-	08												
7/16 - 20 UNF	H3		17313	01	05	08		0.881										
	H5		17386	01	-	08												
1/2 - 13 UNC	H3		17314	01	05	08		3.37										
	H5		17387	01	-	08												
	H7		17295	01	-	-												
1/2 - 20 UNF	H3		17315	01	05	08	0.944											
	H5		17388	01	-	08	0.921											
9/16 - 12 UNC	H3		17250	01	05	08	3.59		1.043	1.472	0.429	0.322	0.500					
9/16 - 18 UNF			17251	01	05	08		1.027										
5/8 - 11 UNC			H5	17316	01	05		08						3.81	1.137	1.562	0.480	0.359
	H7		17389	01	-	08												
	5/8 - 18 UNF		H3	17296	01	-	-	1.118										
H5			17317	01	05	08												
H7			17297	01	-	-												
3/4 - 10 UNC	H3	17318	01	05	08	4.25	1.251	1.712	0.590	0.442	0.688							
3/4 - 16 UNF		17319	01	05	08		1.232											
7/8 - 9 UNC	H4	17252	01	05	08	4.68	1.389	1.885	0.697	0.522	0.751							
7/8 - 14 UNF		17253	01	05	08		1.370											
1 - 8 UNC		17254	01	05	08		5.12					1.562						
1 - 12 UNF		17299	01	-	-							1.543						

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide, TiN or V coatings as shown above.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
300	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	25-80	20-50	20-45			20-45	20-45	8-20										

good best

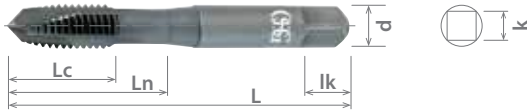




HSSE	V	TiN	S/O
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List 342

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				S/O	TiN	V						
M3 x 0.5	D3	3	17501	01	-	08	49	6	16.0	3.58	2.79	4.8
M3.5 x 0.6	D4		17729	01	-	-	50	7	17.5			
M4 x 0.7			17504	01	05	08	54	8	19.1	4.26	3.33	6.4
M5 x 0.8			17507	01	05	08	60	9	22.2	4.92	3.86	
M6 x 1.0	D5		17510	01	05	08	63	12	25.4	6.47	4.85	7.9
M7 x 1.0			17734	01	-	-			28.7			
M8 x 1.25			17513	01	05	08	69		15	28.6	8.07	6.05
M8 x 1.0	17732		01	-	-							
M10 x 1.5	D6		17516	01	05	08	74	18		31.8	9.67	7.26
M10 x 1.25	D5		17731	01	-	-		17	31.7			
M12 x 1.75	D6		17519	01	05	08	85	21	32.0	9.32	6.98	
M12 x 1.25	D5		17727	01	-	-						
M14 x 2.0	D7		17726	01	-	-						
M14 x 1.5	D6		17728	01	-	-	91	24	36.0	10.89	8.18	12.7
M16 x 1.5			17730	01	-	-						
M16 x 2.0	D7		17735	01	-	-	96			30	43.0	12.19
M18 x 1.5	D6		17733	01	-	-						

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide, TiN or V coatings as shown above.



Work Material

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
342	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	25-80	20-50	20-45			20-45	20-45	8-20										

good best





List 306

OIL-V-POT, Coolant-Through, DIN Overall Length, Plug (4P)



NEW HSSE V



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4P)							
			V	L						
1/4 - 20 UNC	H3	3	30601708	3.14	0.598	1.181	0.255	0.191	0.287	
	H5		30601808							
1/4 - 28 UNF	H3		30601908	3.54	0.665	1.378	0.318	0.238	0.375	
	H4		30602008							
5/16 - 18 UNC	H3		30602108	3.93	0.752	1.535	0.381	0.286	0.438	
	H5		30602208							
5/16 - 24 UNF	H3		30602308	3.54	0.858	1.291	0.323	0.242	0.406	
	H4		30602408							
3/8 - 16 UNC	H3		30602508	4.33	0.921	1.354	0.367	0.275	0.438	
	H5		30602608							
3/8 - 24 UNF	H3		30602708	3.93	1.000	1.472	0.429	0.322	0.500	
	H4		30602808							
7/16 - 14 UNC	H3		30602908	4.33	1.091	1.563	0.480	0.360	0.563	
	H5		30603008							
7/16 - 20 UNF	H3		30603108	3.93	1.201	1.713	0.590	0.442	0.688	
	H5		30603208							
1/2 - 13 UNC	H3		30603308	4.92	1.335	1.886	0.697	0.523	0.750	
	H5		30603408							
1/2 - 20 UNF	H3		30603508	5.51	1.500	2.091	0.800	0.600	0.813	
	H5		30603608							
9/16 - 12 UNC	H3		30603708	4.92	1.335	1.886	0.697	0.523	0.750	
	H5		30603808							
9/16 - 18 UNF	H3		30603908	4.92	1.335	1.886	0.697	0.523	0.750	
	H5		30604008							
5/8 - 11 UNC	H3	30604108	5.51	1.500	2.091	0.800	0.600	0.813		
	H5	30604208								
5/8 - 18 UNF	H3	30604308	5.51	1.500	2.091	0.800	0.600	0.813		
	H5	30604408								
3/4 - 10 UNC	H3	30604508	5.51	1.500	2.091	0.800	0.600	0.813		
	H5	30604608								
3/4 - 16 UNF	H3	30604708	5.51	1.500	2.091	0.800	0.600	0.813		
	H5	30604808								
7/8 - 9 UNC	H4	30604908	5.51	1.500	2.091	0.800	0.600	0.813		
	H6	30605008								
7/8 - 14 UNF	H4	30605108	5.51	1.500	2.091	0.800	0.600	0.813		
	H6	30605208								
1 - 8 UNC	H4	30605308	5.51	1.500	2.091	0.800	0.600	0.813		
	H6	30605408								
1 - 12 UNF	H4	30605508	5.51	1.500	2.091	0.800	0.600	0.813		
	H6	30605608								

Packed: 1 pc.
Available V coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
306	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

good best





List 346

OIL-V-POT, Coolant-Through, DIN Overall Length, Plug (4P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4P)						
			V						
M6 x 1.0	D5	3	34600508	80	12	30	6.47	4.85	7.9
M8 x 1.0			34600608	90	15	35	8.07	6.04	9.5
M8 x 1.25			34600708		100	18	39	9.67	7.26
M10 x 1.25	34600808								
M10 x 1.5	34600908								
M12 x 1.25	34601008								
M12 x 1.5	D6		34601108	110	21	32	9.32	6.98	11.1
M12 x 1.75			34601208						
M14 x 1.5	D6		34601308	100	24	36	10.89	8.17	12.7
M14 x 2.0			34601408	110			12.19	9.14	14.2
M16 x 1.5	D6		34601508	100	30	43	13.76	10.31	15.8
M16 x 2.0	D7		34601608	110			44	16.56	12.42
M18 x 1.5	D6		34601708	125	30	44			
M18 x 2.5	D7		34601808						
M20 x 1.5	D6		34601908	140	36	51	19.30	14.47	19.0
M20 x 2.5	D7		34602008	125					
M22 x 1.5	D6		34602108	140					
M22 x 2.5	D7		34602208	140					
M24 x 1.5	D6		34602308	160					
M24 x 3.0	D8		34602408	160					

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels				Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
346	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

good best



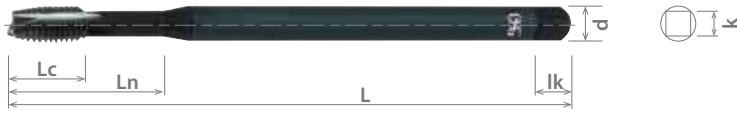
List 397

OIL-V-POT, Long Shank, Plug (3.5P-4.5P)



HSSE

S/O



Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
			Plug (3.5P - 4.5P)								
			S/O	L	Lc	Ln	d	k	lk		
4 - 40 UNC	H2	2	1764001	4	0.295	0.838	0.140	0.109	0.188		
			1766201	6							
			1764101	4							
			1764201	6							
6 - 32 UNC			1764301	4	0.370	1.039	0.167	0.131			
			1764401	6		1.027					
8 - 32 UNC			1764501	4	0.492	1.303	0.194	0.151	0.251		
10 - 24 UNC			1764601	6							
10 - 32 UNF			1764701	4	0.594	1.496	0.255	0.190	0.311		
1/4 - 20 UNC			1764801	6							
1/4 - 28 UNF	H3	3	1764901	4	0.665	1.688	0.317	0.238	0.342		
5/16 - 18 UNC										1765001	6
5/16 - 24 UNF										1765101	
3/8 - 16 UNC										1765201	
3/8 - 24 UNF										1765701	
7/16 - 14 UNC										1765301	
7/16 - 20 UNF										1765801	
1/2 - 13 UNC										1765401	
1/2 - 20 UNF										1765901	
5/8 - 11 UNC										1765501	
			1766001		0.751	1.874	0.380	0.285	0.397		
			1765601		0.858	1.291	0.322	0.242	0.405		
					0.921	1.354	0.367	0.274	0.437		
					1.090	1.562	0.480	0.359	0.562		

Packed: 1 pc.
Available Steam Oxide finish only.
Note: Neck length is designed for reaching 50% deeper holes than ANSI standard taps.



Work Material																		
List No.	P					M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
397	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	25-80	20-50	20-45			20-45	20-45	8-20										

good best





HSSE

TiN

List 320

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)	TiN						
			L	Lc	Ln	d	k	lk		
4 - 40 UNC	H2	2	1740005	1.87	0.295	0.559	0.140	0.109	0.188	
5 - 40 UNC			1740105	1.93	0.299	0.625				
6 - 32 UNC	H3		1740205	2.00	0.370	0.685				
	H5		1742005							
	H7		1742105							
8 - 32 UNC	H3		3	1740305	2.12	0.374	0.751	0.167	0.131	0.251
10 - 24 UNC		1740405		2.37	0.492	0.866	0.194	0.151		
10 - 32 UNF	H5	1740505								
	H7	1742205								
	1742305									
1/4 - 20 UNC	H3	1740605		2.50	0.594	0.996	0.255	0.190	0.311	
1/4 - 28 UNF	H5	1740705								
	H7	1742405								
	1742505									
5/16 - 18 UNC	H3	3		1740805	2.72	0.665	1.125	0.317	0.238	0.374
5/16 - 24 UNF				H5						
	H7			1742605						
	1742705									
3/8 - 16 UNC	H3		1741005	2.93	0.751	1.251	0.380	0.285	0.437	
3/8 - 24 UNF			H5							1741105
	1742805									
	1741205		3.15	0.858	1.291	0.322	0.242	0.405		
7/16 - 14 UNC	1741305									
7/16 - 20 UNF	1741405									
1/2 - 13 UNC	H3		1741505	3.37	0.921	1.354	0.367	0.274	0.437	
1/2 - 20 UNF			1741605							
5/8 - 11 UNC			1741705	3.81	1.090	1.562				0.480
5/8 - 18 UNF			1741805							
3/4 - 10 UNC			1741905	4.25	1.200	1.712	0.590	0.442	0.688	
3/4 - 16 UNF										

Packed: 1 pc.
Available TiN coating only.

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
320	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	25-80	20-50	20-45	20-50	15-20	20-45	15-20	8-20	25-75	40-80	40-65			15-35			

good best



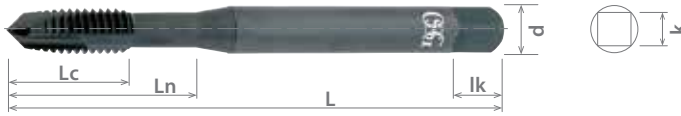


List 250



HSSE S/O

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)						
			S/O	L	Lc	Ln	d	k	lk
4 - 40 UNC	2B	2	2511401	2.20	0.295	0.704	0.140	0.109	0.188
6 - 32 UNC			2512401		0.370	0.783			
8 - 32 UNC		2517801	2.48	0.374	0.826	0.167	0.131		
10 - 24 UNC		2513401		0.976	0.194			0.151	
10 - 32 UNF		2518801	2.75	0.984		1.177	0.255		0.190
1/4 - 20 UNC		2530001		3.14	1.188				
1/4 - 28 UNF		2530401	3.54		0.665	1.377	0.317	0.238	0.372
5/16 - 18 UNC		2530801		0.657					
5/16 - 24 UNF		2531201	3.93	0.751	0.380	0.285	0.435		
3/8 - 16 UNC		2531601		0.740					
3/8 - 24 UNF		2531801	3.93	0.858	1.291	0.322	0.242	0.403	
7/16 - 14 UNC		2532001		1.090					
7/16 - 20 UNF		2532201	4.33	1.354	0.480	0.359	0.560		
1/2 - 13 UNC		2532401		1.090					
1/2 - 20 UNF		2532601	4.33	1.200	0.590	0.442	0.686		
5/8 - 11 UNC		2533201		4.33					
5/8 - 18 UNF		2533401	4.92	4.33	1.712	0.590	0.442	0.686	
3/4 - 10 UNC		2533601		4.92					
3/4 - 16 UNF		2533801	4.33						

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material

List No.	P				Die Steels	M			K	N		S	H						
	Carbon Steels			Alloy Steels		Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH			6061 7075				Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
250	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>						
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75				15-35						

good best





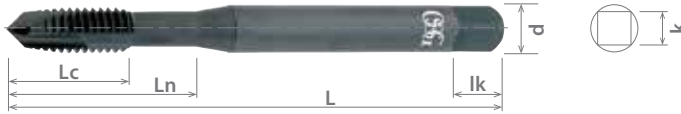
List 259



HSSE

S/O

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)	L	Lc	Ln	d	k	lk
M3 x 0.5	6H	3	2590401	56	6	18	3.58	2.79	4.8
M4 x 0.7			2590601	63	8	21	4.26	3.33	6.4
M5 x 0.8			2590801	70	9	25	4.92	3.86	
M6 x 1.0			2591001	80	12	30	6.47	4.85	7.3
M8 x 1.25			2591401	90	15	35	8.07	6.05	8.7
M10 x 1.5			2591801	100	18	39	9.67	7.26	10.1
M10 x 1.25			2591701						
M12 x 1.75			2592301	110	21	32	9.32	6.98	11.1
M12 x 1.5			2592201						
M12 x 1.25			2592101	100	24	36	10.89	8.18	12.7
M14 x 2.0			2592601	110					
M14 x 1.5			2592501	100			12.19	9.14	14.3
M16 x 2.0			2592901	110					
M16 x 1.5			2592801	100	30	43	13.76	10.31	15.9
M18 x 2.5			2593201	125					
M18 x 1.5			2593001	110					
M20 x 2.5			2593601	140					
M20 x 1.5			2593401	125	44	16.56	12.42	17.5	

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
259	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>				
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75					15-35			

good best





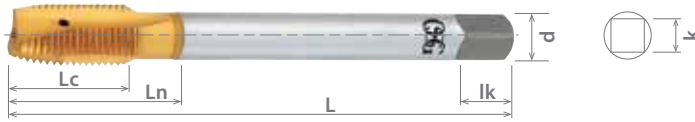
List 260



HSSE



OIL-TiN-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (3.5P - 4.5P)							
			TiN	L	Lc	Ln	d	k	lk	
1/4 - 20 UNC	2B	3	2630005	3.14	0.598	1.181	0.255	0.190	0.287	
1/4 - 28 UNF			2630405							
5/16 - 18 UNC			2630805	3.54	0.665	1.377	0.317	0.238	0.374	
5/16 - 24 UNF			2631205							
3/8 - 16 UNC			2631605	3.93	0.751	1.291	0.380	0.285	0.437	
3/8 - 24 UNF			2631805							
7/16 - 14 UNC			2632005							
7/16 - 20 UNF			2632205							
1/2 - 13 UNC			2632405	4.33	0.921	1.354	0.367	0.274	0.437	
1/2 - 20 UNF			2632605	3.93						
9/16 - 18 UNF			2633005	4.33	1.000	1.472	0.429	0.322	0.500	
5/8 - 11 UNC			2633205							
5/8 - 18 UNF			2633405	3.93	1.090	1.562	0.480	0.359	0.562	
3/4 - 10 UNC			2633605	4.92						
3/4 - 16 UNF			2633805	4.33	1.200	1.712	0.590	0.442	0.688	
7/8 - 9 UNC			2634005	5.51						
7/8 - 14 UNF			2634205	4.92	1.334	1.885	0.697	0.522	0.751	
1 - 8 UNC			2634405	6.29						
				1.500	2.090	0.800	0.600	0.811		

Packed: 1 pc.
Available TiN coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
260	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				
SFM	50-120	45-110	40-100	45-110	20-60	20-70	30-50	20-50	40-100	50-125	50-110			20-60			

good best

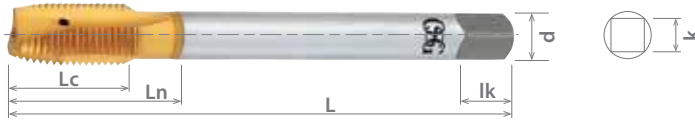




List 269



OIL-TiN-POT, Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)	L	Lc	Ln	d	k	lk
M6 x 1.0	6H	3	TiN	L	Lc	Ln	d	k	lk
M8 x 1.25			2691005	80	11	29.9	6.47	4.85	7.8
M10 x 1.5			2691405	90	15	35.0	8.07	6.04	9.4
M10 x 1.25			2691805	100	18	38.9	9.67	7.26	11.0
M12 x 1.75			2691705						
M12 x 1.5			2692305	110	21	32.0	9.32	6.98	11.0
M12 x 1.25			2692205						
M14 x 2.0			2692105	100	24	35.9	10.89	8.17	12.7
M14 x 1.5			2692605						
M16 x 2.0			2692505	100	30	43.0	13.76	10.31	15.9
M16 x 1.5			2692905						
M18 x 2.5			2692805	100	43.9	16.56	12.42	17.5	
M18 x 1.5			2693205						
M20 x 2.5			2693005	110	43.9	16.56	12.42	17.5	
M20 x 1.5			2693605						
M20 x 1.5			2693405	125					

Packed: 1 pc.
Available TiN coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
269	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>				
SFM	50-120	45-110	40-100	45-110	20-60	20-70	30-50	20-50	40-100	50-125	50-110		20-60				

good best





List 11015



HSS-Co

TiN

Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length						
			Plug (4P-5P)												
			TiN	L	Lc	Ln	d	k	lk						
4 - 40 UNC	H3	3	1101500105	1.87	0.381	0.692	0.140	0.109	0.188						
	H4		1101505605												
	H5		1101500205												
	H6		1101500305												
	H7		1101505705												
	H8		1101515505												
4 - 48 UNF	H3		1101515605							2.00	0.374	0.811	0.140	0.109	0.188
	H4		1101515705												
	H5		1101515805												
	H6		1101515905												
	H7		1101506505												
6 - 32 UNC	H3	1101506605	2.12	0.437	0.877	0.167	0.131	0.251							
	H4	1101500405													
	H5	1101505805													
	H6	1101500505													
	H7	1101500605													
	H8	1101500705													
	H9	1101500805													
	H10	1101506705													
6 - 40 UNF	H3	1101506805	2.12	0.437	0.877	0.167	0.131	0.251							
	H4	1101507005													
	H5	1101507105													
	H6	1101507205													
	H7	1101507305													
	H8	1101507405													
	H9	1101507505													
	H10	1101507605													
	H11	1101507705													
	H11	1101507805													
	8 - 32 UNC	H3							1101500905	2.12	0.437	0.877	0.167	0.131	0.251
H4		1101501005													
H5		1101501105													
H6		1101501205													
H7		1101501305													
H8		1101501405													
H9		1101507905													
H10		1101508005													
H11		1101508105													

Packed: 1 pc.
Available TiN coating only.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
11015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-45	15-20	25-75	40-80	40-65	8-15	8-15	15-35			

good best





HSS-Co

TiN

List 11015 (Continued)

Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4P-5P)						
			TiN	L	Lc	Ln	d	k	lk
8 - 36 UNF	H3	3	1101508205	2.12	0.437	0.877	0.167	0.131	
	H4		1101508305						
	H5		1101508405						
	H6		1101508505						
	H7		1101508605						
	H8		1101508705						
	H9		1101508805						
	H10		1101508905						
	H11		1101509005						
	H3		1101509105						
	H4		1101509205						
10 - 24 UNC	H5	3	1101509305	2.37	0.629	1.000	0.194	0.151	0.251
	H6		1101509405						
	H7		1101509505						
	H8		1101509605						
	H9		1101509705						
	H10		1101509805						
	H11		1101509905						
	H3		1101501505						
	H4		1101501605						
	H5		1101501705						
	H6		1101501805						
H7	1101501905								
H8	1101502005								
H9	1101502105								
H10	1101506005								
H11	1101506105								
H12	1101506205								
H13	1101516005								
12 - 28 UNC	H3	3	1101516105	2.50	0.543	1.066	0.220	0.164	0.279
	H4		1101516205						
	H5		1101516305						
	H6		1101516405						
	H7		1101516505						
	H8		1101516605						
	H9		1101516705						
	H10		1101516805						
	H11		1101516905						
	H3		1101510005						
	H4		1101510105						
H5	1101510205								
H6	1101510305								
H7	1101510405								
H8	1101510505								
H9	1101510605								
H10	1101510705								
H11	1101510805								

Packed: 1 pc.
Available TiN coating only.





List 11015 (Continued)



HSS-Co

TiN

Plug (4P-5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4P - 5P)						
			TiN						
			L	Lc	Ln	d	k	lk	
1/4 - 28 UNF	H3	3	1101502205	2.50	0.562	1.114	0.255	0.190	0.311
	H4		1101505505						
	H5		1101502305						
	H6		1101502405						
	H7		1101502505						
	H8		1101502605						
	H9		1101502705						
	H10		1101502805						
	H11		1101506305						
	H12		1101506405						
	H3		1101510905						
	H4		1101511005						
5/16 - 18 UNC	H5	3	1101511105	2.72	0.874	1.283	0.317	0.238	0.374
	H6		1101511205						
	H7		1101511305						
	H8		1101511405						
	H9		1101511505						
	H10		1101511605						
	H11		1101511705						
	H3		1101502905						
	H4		1101505905						
	H5		1101503005						
	H6		1101503105						
	H7		1101503205						
H8	1101503305								
H9	1101503405								
H10	1101503505								
H11	1101511805								
3/8 - 16 UNC	H3	3	1101511905	2.93	0.976	1.417	0.380	0.285	0.437
	H4		1101512005						
	H5		1101512105						
	H6		1101512205						
	H7		1101512305						
	H8		1101512405						
	H9		1101512505						
	H10		1101512605						
	H11		1101512705						
	H12		1101512805						
	H3		1101503605						
	H4		1101512905						
H5	1101503705								
H6	1101503805								
H7	1101503905								
H8	1101504005								
H9	1101504105								
H10	1101504205								
H11	1101513005								

Packed: 1 pc.
Available TiN coating only.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
11015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-45	15-20	25-75	40-80	40-65	8-15	8-15	15-35			

good best





List 11015 (Continued)



HSS-Co	TiN
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Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length								
			Plug (4P-5P)														
			TiN	L	Lc	Ln	d	k	lk								
7/16 - 14 UNC	H3	3	1101513105	3.15	1.098	1.496	0.322	0.242	0.405								
	H4		1101513205														
	H5		1101513305														
	H6		1101513405														
	H7		1101513505														
	H8		1101513605														
	H9		1101513705														
	H10		1101513805														
	H11		1101513905														
	H3		1101504305														
	H4		1101514005														
7/16 - 20 UNF	H5	3	1101504405	3.15	0.799	1.417	0.322	0.242	0.405								
	H6		1101504505														
	H7		1101504605														
	H8		1101504705														
	H9		1101504805														
	H10		1101514105														
	H11		1101514205														
	H3		1101514305														
	H4		1101514405														
	H5		1101514505														
	H6		1101514605														
1/2 - 13 UNC	H7	3	1101514705	3.37	1.196	1.590	0.367	0.274	0.437								
	H8		1101514805														
	H9		1101514905														
	H10		1101515005														
	H11		1101515105														
	H3		1101504905														
	H4		1101515205														
	H5		1101505005														
	H6		1101505105														
	H7		1101505205														
	H8		1101505305														
1/2 - 20 UNF	H9	3	1101505405	3.37	0.799	1.480	0.367	0.274	0.437								
	H10		1101515305														
	H11		1101515405														
	H3		1101517005														
	9/16 - 18 UNF		H5							4	1101517105	3.59	0.862	1.307	0.429	0.322	0.500
			H6								1101517205						
			H7								1101517305						
			H8								1101517405						
			H9								1101517505						
	5/8 - 11 UNC		H3							4	1101517605	3.81	1.405	1.834	0.480	0.359	0.562
			H5								1101517705						

Packed: 1 pc.
Available TiN coating only.





List 11015 (Continued)



HSS-Co

TiN

Plug (4P-5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4P-5P)						
			TiN						
			L	Lc	Ln	d	k	lk	
5/8 - 18 UNF	H3	4	1101517805	3.81	0.862	1.307	0.480	0.359	0.562
	H5		1101517905						
	H6		1101518005						
	H7		1101518105						
	H8		1101518205						
	H9		1101518305						
	H10		1101518405						
	H11		1101518505						
H3	1101518605								
H5	1101518705								
3/4 - 10 UNC	H3		5						
	H5	1101518905							
H6	1101519005								
H7	1101519105								
H8	1101519205								
H9	1101519305								
H10	1101519405								
H11	1101519505								
H3	1101519605								
H5	1101519705								
H7	1101519805								
7/8 - 9 UNC	H6	5	1101519905	4.68	1.106	1.622	0.697	0.522	0.751
	H7		1101520005						
H8	1101520105								
H9	1101520205								
H10	1101520305								
H11	1101520405								
H12	1101520505								
H6	1101520605								
H7	1101520705								
H8	1101520805								
H9	1101520905								
H10	1101521005								
7/8 - 14 UNF	H6	5	1101521005	5.12	1.291	1.842	0.800	0.600	0.811
	H7		1101520405						
H8	1101520505								
H9	1101520605								
H10	1101520705								
H11	1101520805								
H12	1101520905								
H6	1101521005								
H7	1101520405								
H8	1101520505								
H9	1101520605								
H10	1101520705								
H11	1101520805								
H12	1101520905								

Packed: 1 pc.
Available TiN coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
11015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-45	15-20	25-75	40-80	40-65	8-15	8-15	15-35			

good best





List 11115



HSS-Co

TiN

Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length								
			Plug (4P - 5P)														
			TiN														
				L	Lc	Ln	d	k	lk								
M3 x 0.5	H3	3	1111500105	49	9	19.2	3.58	2.79	4.8								
	H5		1111500205														
	H4		1111500905														
	H6		1111501005														
	H7		1111501105														
	H8		1111501205														
	H9		1111501305														
	H10		1111501405														
	H11		1111501505														
	M4 x 0.7		H4							3	1111500305	54	11	20.6	4.26	3.33	6.4
			H5								1111500405						
H6		1111501605															
H7		1111501705															
H8		1111501805															
H9		1111501905															
H10		1111502005															
H11	1111502105																
M5 x 0.8	H4	3	1111500505	60	12	25.4	4.92	3.86	6.4								
	H5		1111500605														
	H6		1111502205														
	H7		1111502305														
	H8		1111502405														
	H9		1111502505														
	H10		1111502605														
H11	1111502705																
M6 x 1.0	H5	3	1111500705	63	14	28.6	6.47	4.85	7.3								
	H6		1111502805														
	H7		1111502905														
	H8		1111503005														
	H9		1111503105														
	H10		1111503205														
	H11		1111503305														
H12	1111503405																
M8 x 1.25	H5	3	1111500805	69	17	31.9	8.07	6.05	8.7								
	H6		1111503505														
	H7		1111503605														
	H8		1111503705														
	H9		1111503805														
	H10		1111503905														
	H11		1111504005														
H12	1111504105																
M8 x 1.0	H5	3	1111507005	69	15	29.5	8.07	6.05	8.7								
	H6		1111507105														
	H7		1111507205														
	H8		1111507305														
	H9		1111507405														
	H10		1111507505														
H11	1111507605																

Packed: 1 pc.
 Available TiN coating only.
 Note: List 11115 metric taps are manufactured to H-limits rather than D-limits.





List 11115 (Continued)



HSS-Co

TiN

Plug (4P-5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (4P - 5P)							
			TiN							
				L	Lc	Ln	d	k	lk	
M10 x 1.5	H5	3	1111504905	74	22	35.0	9.67	7.26	10.1	
	H6		1111505005							
	H7		1111505105							
	H8		1111505205							
	H9		1111505305							
	H10		1111505405							
	H11		1111505505							
M10 x 1.25	H5		1111504205	19	34.8					
	H6		1111504305							
	H7		1111504405							
	H8		1111504505							
	H9		1111504605							
	H10		1111504705							
	H11		1111504805							
M12 x 1.75	H6		1111507705	26	37.3					
	H7		1111507805							
	H8		1111507905							
	H9		1111508005							
	H10		1111508105							
	H11		1111508205							
	M12 x 1.5		H6							
H7		1111506505								
H8		1111506605								
H9		1111506705								
H10		1111506805								
H11		1111506905								
M12 x 1.25		H5	1111505705	19	35.0					
	H6	1111505805								
	H7	1111505905								
	H8	1111506005								
	H9	1111506105								
	H10	1111506205								
	H11	1111506305								
M14 x 1.5	H6	1111508305	91	22	34.5	10.89	8.18	12.7		
	H7	1111508405								
	H8	1111508505								
	H9	1111508605								
	H10	1111508705								
	H11	1111508805								

Packed: 1 pc.
Available TiN coating only.

Note: List 11115 metric taps are manufactured to H-limits rather than D-limits.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
11115	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-45	15-20	25-75	40-80	40-65	8-15	8-15	15-35				

good best





List 13118



RXL-RFT, DIN Overall Length & Extended Length, Plug (4.5P-5.5P),
RHC/LHS for Through Holes



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4.5P - 5.5P)	L	Lc	Ln	d	k	lk
			V						
M16 x 2.0	D7 D17 (6H+0.005")	4	1311802408	110	24	58	12.19	9.14	14.3
			1311802508	180		93			
			1311802308	110		58			
M20 x 2.5	D8 D18 (6H+0.005")	5	1311800108	140	30	73	16.56	12.42	17.5
			1311800208	200		103			
			1311801608	140		73			
M24 x 3.0	D9 D19 (6H+0.005")	5	1311800408	160	36	88	19.30	14.48	19.1
			1311800508	200		108			
			1311801708	160		88			
M27 x 3.0	D9 D19 (6H+0.005")	5	1311800608	160	42	88	22.75	17.07	22.2
			1311800708	200		108			
			1311801808	160		88			
M30 x 3.5	D10 D20 (6H+0.005")	5	1311800808	180	42	103	25.93	19.46	25.4
			1311800908	250		158			
			1311801908	180		103			
M33 x 3.5	D10 D20 (6H+0.005")	5	1311801008	180	42	93	28.14	21.11	27.0
			1311801108	250		128			
			1311802008	180		93			
M36 x 4.0	D11 D21 (6H+0.005")	6	1311801208	200	48	118	31.31	23.50	28.6
			1311801308	250		143			
			1311802108	200		118			
M42 x 4.5	D11 D21 (6H+0.005")	6	1311801408	200	54	98	36.32	27.23	31.8
			1311801508	300		148			
			1311802208	200		98			

Packed: 1 pc.

Available V coating only.

Note: +0.005" available for threads that will be heat treated after tapping.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
13118	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
SFM	50-120	45-110	40-100	45-110	20-60	30-70	30-70	20-50	40-100	30-80	30-80			20-60	15-50		

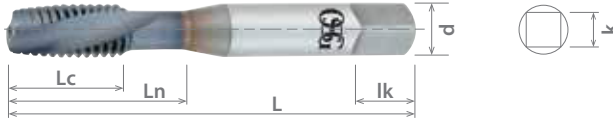
good best





List 13059

US-AL-RFT, Synchronized, Plug (5.5P-6.5P), RHC/LHS for Through Holes



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5.5P - 6.5P)						
			V						
			L	Lc	Ln	d	k	lk	
6 - 32 UNC	2B	2	1305900108	2.05	0.370	0.685	0.140	0.109	0.188
8 - 32 UNC			1305900208	2.19	0.374	0.751	0.167	0.131	
10 - 24 UNC			1305900308	2.44	0.492	0.866	0.194	0.151	
10 - 32 UNF			1305900408						
1/4 - 20 UNC			1305900508	2.57	0.594	0.996	0.255	0.190	0.311
1/4 - 28 UNF			1305900608						
5/16 - 18 UNC			1305900708						
5/16 - 24 UNF			1305900808	2.72	0.665	1.125	0.317	0.238	0.374
3/8 - 16 UNC			1305900908	2.93	0.751	1.251	0.380	0.285	0.437
3/8 - 24 UNF			1305901008						
1/2 - 13 UNC			1305901108						
1/2 - 20 UNF			1305901208	3.37	0.921	1.933	0.367	0.274	

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
13059										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
SFM										<input type="checkbox"/>	<input type="checkbox"/>						

good best





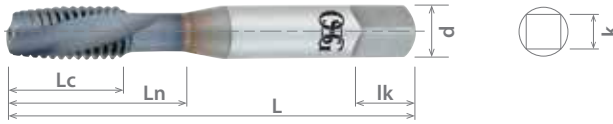
HY-PRO[®] SYNCHRO AL

High Speed Tapping of Aluminum and Aluminum Alloy



List 13159

US-AL-RFT, Synchronized, Plug (5.5P-6.5P), RHC/LHS for Through Holes



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (5.5P - 6.5P)						
			V						
			L	Lc	Ln	d	k	lk	
M3 x 0.5	6H	2	1315900108	49	6	16.0	3.58	2.79	4.8
M4 x 0.7			1315900208	54	8	19.1	4.26	3.33	6.4
M5 x 0.8			1315900308	60	9	22.2	4.92	3.86	
M6 x 1.0			1315900408	63	12	25.4	6.47	4.85	7.9
M8 x 1.25			1315900508	69	15	28.6	8.07	6.05	9.5
M10 x 1.5			1315900708	74	18	31.8	9.67	7.26	11.1
M10 x 1.25			1315900608						
M12 x 1.75			1315900908						
M12 x 1.5			1315900808		85	21	49.1	9.32	

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
13159	1010	1035	1065	4140														
SFM	1018	1045		4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
										300-800	200-700							

good best





List 11016



HSSE

N

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (3.5P - 4.5P)							
			N	L	Lc	Ln	d	k	lk	
2 - 56 UNC	H2	2	1101600103	1.77	0.437	0.476	0.140	0.109	0.188	
4 - 40 UNC			1101600203	2.20	0.295	0.704				
6 - 32 UNC	H3		1101600303	2.48	0.370	0.783	0.167	0.131	0.251	
8 - 32 UNC			1101600403		0.374	0.826				
10 - 24 UNC			1101600503	2.74	0.492	1.059				
10 - 32 UNF			1101600603		0.984					
1/4 - 20 UNC	H5		1101600703	3.14	0.594	1.177	0.255	0.190	0.287	
1/4 - 28 UNF	H3		1101600803			1.188				
			1101600903							
5/16 - 18 UNC	H5	3	1101601003	3.67	0.799	1.511	0.317	0.238	0.342	
5/16 - 24 UNF	H3		1101601103			1.519				
3/8 - 16 UNC	H5		1101601203	4.10	0.917	1.543	0.380	0.285	0.397	
3/8 - 24 UNF	H3		1101601303			1.555				
7/16 - 14 UNC	H5			1101601403	3.93	0.858	1.291	0.322	0.242	0.405
7/16 - 20 UNF	H3			1101601503			1.291			
1/2 - 13 UNC	H5			1101601603	4.33	0.921	1.354	0.367	0.274	0.437
1/2 - 20 UNF	H3			1101601703						
				1101601803						
				1101601903						
				1101602003						
				1101602103						

Packed: 1 pc.
Available Nitride treatment only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum			Nickel Alloy	Titanium	Hardened Steels		
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel			6Al4V (30 HRC)	~35 HRC	35-45 HRC
11016										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
SFM										<input type="checkbox"/>	<input type="checkbox"/>						

good best





List 11116



HSSE

N

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)							
			N	L						
M3 x 0.5	D3	3	1111600103	56	L	Lc	Ln	d	k	lk
M4 x 0.7	D4		1111600303	63		10	22.7	4.26	3.33	6.4
M5 x 0.8			1111600403	70		11	27.2	4.92	3.86	
M6 x 1.0	D5		1111600503	80		14	32.6	6.47	4.85	7.9
M8 x 1.25			1111600803	90		18	38.5	8.07	6.05	8.7
M10 x 1.5	D6		1111601003	100		22	43.5	9.67	7.26	10.1
M10 x 1.25	D5		1111600903							
M12 x 1.75	D6		1111601303	110		21	32.0	9.32	6.98	11.1
M12 x 1.5	D5		1111601203	100						
M12 x 1.25			1111601103							

Packed: 1 pc.

Available Nitride treatment only.



Work Material

List No.	P														M			K	N		S		H			
	Carbon Steels				Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels											
	Low	Med.	High	300			400	17-4 PH	6061 7075		Casting	Inconel			6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC							
	1010 1018	1035 1045	1065	4140 4340			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC								
11116																										
SFM										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>															

 good best


List 11017



DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)							
			V	L						
4 - 40 UNC	H2	2	1101700108	2.20	2.20	0.303	0.713	0.141	0.110	0.189
6 - 32 UNC			1101700208			0.378	0.791			
8 - 32 UNC	H3	3	1101700308	2.48	2.48	0.382	0.835	0.168	0.131	0.252
10 - 24 UNC			1101700408				2.75			
10 - 32 UNF			1101700508	3.15	0.602	0.992				
1/4 - 20 UNC			1101700608			3.54	0.669	1.185		
1/4 - 28 UNF			1101700708	3.93	0.760			1.197		
5/16 - 18 UNC			1101700808			3.93	0.894	1.382		
5/16 - 24 UNF			1101700908	4.33	0.961			1.390		
3/8 - 16 UNC			1101701008			3.93	0.921	1.386		
3/8 - 24 UNF			1101701108	3.93	0.921			1.398		
7/16 - 14 UNC			1101701208			3.93	0.921	1.291		
7/16 - 20 UNF			1101701308	3.93	0.921			0.858		
1/2 - 13 UNC			1101701408			3.93	0.921	1.354		
1/2 - 20 UNF			1101701508	3.93	0.921			0.367		

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH			6061 7075				Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
11017	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input type="checkbox"/>					
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60					

good best





List 11117



DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)							
			V	L						
M3 x 0.5	D3	3	1111700108	L	56	6	18.3	3.58	2.79	4.8
M4 x 0.7	D4		1111700308	L	63	8	21.2	4.26	3.33	6.4
M5 x 0.8			1111700408	L	70	9	25.2	4.92	3.86	
M6 x 1.0	D5		1111700508	L	80	12	30.2	6.47	4.85	7.9
M8 x 1.25			1111700808	L	90	15	35.2	8.07	6.05	9.5
M10 x 1.5	D6		1111701008	L	100	18	39.2	9.67	7.26	11.1
M12 x 1.75		1111701308	L	110	21	32.0	9.32	6.98		

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P																M			K	N		S	H			
	Carbon Steels					Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels											
	Low	Med.	High	4140 4340	300			400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC									
	1010 1018	1035 1045	1065		300			400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC									
11117	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>													
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60													

good best





List 280

Plug (3.5P-4.5P)



HSSE	TiCN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiCN						
2 - 56 UNC	H2	2	28056	00	01	08	1.75	0.437	-	0.140	0.109	0.188
3 - 48 UNC			28060	00	01	08	1.81	0.500	-			
4 - 40 UNC	H3	2	28064	00	01	08	1.87	0.295	0.559	0.140	0.109	0.188
	H4		28114	00	01	08						
	H5		28163	00	01	08						
	H5		28164	00	01	08						
4 - 48 UNF	H2		28165	00	01	08	1.93	0.299	0.625			
5 - 40 UNC			28070	00	01	08						
6 - 32 UNC	H3		28074	00	01	08	2.00	0.370	0.685			
	H4		28124	00	01	08						
	H5		28125	00	01	08						
	H6		28174	00	01	08						
	H7	28175	00	01	08							
	H11	28176	00	01	08							
6 - 40 UNF	H2	28177	00	01	08	2.12	0.374	0.751				
	H3	28076	00	01	08							
	H4	28078	00	01	08							
	H5	28128	00	01	08							
	H6	28129	00	01	08							
	H7	28178	00	01	08							
	H11	28179	00	01	08							
8 - 32 UNC	H2	28180	00	01	08	2.37	0.492	0.866				
	H3	28181	00	01	08							
	H5	28080	00	01	08							
	H11	28134	00	01	08							
8 - 36 UNF	H2	28134	00	01	08	2.50	0.594	0.996				
	H3	28184	00	01	08							
	H5	28234	00	01	08							
10 - 24 UNC	H2	3	28088	00	01	08	2.37	0.492	0.866	0.194	0.151	0.251
	H3		28138	00	01	08						
	H4		28139	00	01	08						
	H5		28188	00	01	08						
	H6		28189	00	01	08						
	H7		28190	00	01	08						
10 - 32 UNF	H2		28191	00	01	08	2.50	0.594	0.996			
	H3		28090	00	01	08						
	H11		28092	00	01	08						
12 - 24 UNC	H3		28094	00	01	08	2.50	0.594	0.996	0.220	0.164	
12 - 28 UNF		28300	00	01	08							
1/4 - 20 UNC	H2	28400	00	01	08	2.50	0.594	0.996	0.255	0.190	0.311	
	H3											
	H5											

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
280	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

good best





List 280 (Continued)

Plug (3.5P-4.5P)



HSSE	TiCN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length																																																																																																																																																																																																																																																																																																																																																																																				
			EDP Number	Coating Suffix																																																																																																																																																																																																																																																																																																																																																																																												
				Bright	S/O	TiCN																																																																																																																																																																																																																																																																																																																																																																																										
1/4 - 20 UNC	H7	3	28548	00	01	08	2.50	0.594	0.996	0.255	0.190	0.311																																																																																																																																																																																																																																																																																																																																																																																				
	H11		28550	00	01	08							1/4 - 28 UNF	H2	28096	00	01	08	H3	28304	00	01	08	H4	28354	00	01	08	H5	28404	00	01	08	H6	28405	00	01	08	H7	28406	00	01	08	H11	28407	00	01	08	5/16 - 18 UNC	H3	28308	00	01	08	2.72	0.665	1.125	0.317	0.238	0.374	H5	28408	00	01	08	H7	28556	00	01	08	H11	28558	00	01	08	5/16 - 24 UNF	H2	28264	00	01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6	28413	00	01	08	H7	28414	00	01	08	3/8 - 16 UNC	H3	28316	00	01	08	2.93	0.751	1.251	0.380	0.285	0.437	H5	28416	00	01	08	H7	28564	00	01	08	H11	28566	00	01	08	3/8 - 24 UNF	H2	28268	00	01	08	H3	28318	00	01	08	H4	28368	00	01	08	H5	28418	00	01	08	H6	28419	00	01	08	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291	0.322	0.242	0.405	H5	28420	00	01	08	H7	28421	00	01	08	H11	28423	00	01	08	7/16 - 20 UNF	H3	28322	00	01	08	H5	28422	00	01	08	H7	28425	00	01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00	01	08	H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08	H3	28326	00	01	08	H5	28426	00	01	08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																																																						
1/4 - 28 UNF	H2		28096	00	01	08								H3	28304	00	01	08	H4	28354	00	01	08	H5	28404	00	01	08	H6	28405	00	01	08	H7	28406	00	01	08	H11	28407	00	01	08	5/16 - 18 UNC	H3	28308	00	01		08	2.72	0.665	1.125	0.317							0.238	0.374	H5	28408	00	01	08	H7	28556	00	01	08	H11	28558	00		01	08	5/16 - 24 UNF	H2	28264	00	01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6	28413	00	01	08	H7	28414		00	01	08	3/8 - 16 UNC	H3							28316	00	01	08	2.93	0.751	1.251	0.380	0.285	0.437	H5	28416	00	01	08		H7	28564	00	01	08	H11	28566	00	01	08	3/8 - 24 UNF	H2	28268	00	01	08	H3	28318	00	01	08	H4	28368	00	01	08	H5	28418	00	01		08	H6	28419	00	01							08	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291		0.322	0.242	0.405	H5	28420	00	01	08	H7	28421	00	01	08	H11	28423	00	01	08	7/16 - 20 UNF	H3		28322	00	01	08	H5							28422	00	01	08	H7	28425	00	01	08	H11	28430	00	01	08	1/2 - 13 UNC		H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00	01	08	H7	28428	00	01	08	H11	28574	00	01	08		1/2 - 20 UNF	H2	28276	00							01	08	H3	28326	00	01	08	H5	28426	00	01	08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																				
	H3		28304	00	01	08								H4	28354	00	01	08	H5	28404	00	01	08	H6	28405	00	01	08	H7	28406	00	01	08	H11	28407	00	01	08	5/16 - 18 UNC	H3	28308	00	01		08	2.72	0.665	1.125		0.317													0.238	0.374	H5	28408	00	01	08	H7	28556	00	01	08	H11		28558	00		01	08	5/16 - 24 UNF	H2	28264	00	01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6	28413	00	01		08	H7	28414		00							01	08	3/8 - 16 UNC	H3							28316	00	01	08	2.93		0.751	1.251	0.380	0.285	0.437	H5	28416	00	01	08		H7	28564	00	01	08	H11	28566	00	01	08	3/8 - 24 UNF	H2	28268	00	01	08	H3	28318	00		01	08	H4	28368	00							01	08	H5	28418	00	01		08	H6	28419	00	01								08	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291		0.322		0.242	0.405	H5	28420	00							01	08	H7	28421	00	01	08	H11	28423	00	01	08	7/16 - 20 UNF	H3			28322	00	01	08	H5							28422	00	01	08	H7	28425	00	01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3		28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00	01	08	H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08	H3		28326	00	01	08							H5	28426	00	01	08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																									
	H4		28354	00	01	08								H5	28404	00	01	08	H6	28405	00	01	08	H7	28406	00	01	08	H11	28407	00	01	08	5/16 - 18 UNC	H3	28308	00	01		08	2.72	0.665	1.125		0.317																				0.238	0.374	H5	28408	00	01	08	H7	28556	00	01		08	H11		28558	00		01	08	5/16 - 24 UNF	H2	28264	00	01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6		28413	00	01		08							H7	28414		00							01	08	3/8 - 16 UNC	H3								28316	00	01	08	2.93		0.751	1.251	0.380	0.285	0.437	H5	28416	00	01	08		H7	28564	00	01	08	H11	28566	00		01	08	3/8 - 24 UNF	H2	28268							00	01	08	H3	28318	00		01	08	H4	28368	00								01	08	H5	28418	00	01		08	H6	28419	00	01									08	H7	28417							00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291		0.322			0.242	0.405	H5	28420	00							01	08	H7	28421	00	01	08	H11	28423	00	01	08	7/16 - 20 UNF	H3		28322		00	01	08	H5							28422	00	01	08	H7	28425	00	01	08	H11	28430	00	01	08	1/2 - 13 UNC		H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00	01	08	H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08	H3		28326	00	01	08							H5	28426	00	01	08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08														
	H5		28404	00	01	08								H6	28405	00	01	08	H7	28406	00	01	08	H11	28407	00	01	08	5/16 - 18 UNC	H3	28308	00	01		08	2.72	0.665	1.125		0.317									0.238							0.374	H5										28408	00	01	08	H7	28556	00	01	08		H11	28558		00	01		08	5/16 - 24 UNF		H2	28264	00	01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6	28413	00	01	08		H7		28414	00				01	08		3/8 - 16 UNC							H3	28316		00								01	08	2.93	0.751								1.251	0.380	0.285	0.437	H5		28416	00	01	08	H7	28564	00	01	08	H11	28566		00	01		08	3/8 - 24 UNF				H2	28268	00	01	08	H3		28318	00	01	08	H4				28368				00	01	08	H5	28418	00		01	08	H6	28419	00						01			08	H7	28417		00	01				08	7/16 - 14 UNC	H3		28320	00	01	08	3.15										0.858	1.291	0.322							0.242	0.405	H5	28420	00	01	08	H7	28421	00	01	08		H11		28423		00	01	08	7/16 - 20 UNF							H3	28322	00	01	08	H5	28422	00	01	08	H7	28425	00	01			08	H11	28430	00	01							08	1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424		00	01	08	H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08	H3	28326	00	01	08	H5	28426	00	01	08	H7	28427	00	01		08	H11	28429	00							01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08
	H6		28405	00	01	08								H7	28406	00	01	08	H11	28407	00	01	08	5/16 - 18 UNC	H3	28308	00	01		08	2.72	0.665	1.125		0.317									0.238								0.374	H5				28408										00	01	08	H7	28556	00	01	08	H11		28558	00		01	08		5/16 - 24 UNF			H2	28264	00	01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6	28413	00	01	08	H7	28414		00	01				08	3/8 - 16 UNC				H3	28316				00	01		08								2.93	0.751														1.251		0.380	0.285	0.437	H5	28416	00	01	08	H7	28564	00		01	08		H11					28566	00	01	08	3/8 - 24 UNF	H2	28268	00	01	08	H3	28318		00	01	08				H4	28368	00	01	08	H5		28418	00	01	08	H6				28419		00			01	08	H7		28417	00				01		08		7/16 - 14 UNC	H3	28320	00							01	08							3.15	0.858						1.291	0.322	0.242	0.405	H5	28420	00	01	08	H7		28421		00		01	08	H11								28423	00	01	08	7/16 - 20 UNF	H3	28322	00	01	08	H5	28422	00	01			08	H7	28425	00	01							08		H11	28430	00	01	08							1/2 - 13 UNC	H3		28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00		01	08	H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08	H3	28326	00	01	08	H5	28426	00	01	08	H7	28427	00	01	08		H11	28429	00	01							08	9/16 - 12 UNC	H3	28576	00
	H7		28406	00	01	08								H11	28407	00	01	08	5/16 - 18 UNC	H3	28308	00	01		08	2.72	0.665	1.125		0.317									0.238								0.374	H5					28408				00										01	08	H7	28556	00	01	08	H11	28558	00	01	08		5/16 - 24 UNF	H2					28264	00	01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6	28413	00	01	08	H7	28414	00		01	08				3/8 - 16 UNC		H3			28316	00				01	08		2.93		0.751	1.251	0.380																								0.285	0.437	H5	28416	00	01	08	H7		28564	00		01					08	H11	28566	00		01	08	3/8 - 24 UNF	H2	28268	00	01		08	H3	28318				00	01	08	H4	28368	00	01	08	H5	28418	00	01		08	H6	28419		00			01	08	H7		28417	00				01		08			7/16 - 14 UNC	H3	28320					00		01	08																		3.15	0.858	1.291	0.322	0.242	0.405		H5	28420	00	01	08	H7	28421			00	01				08	H11	28423	00		01	08	7/16 - 20 UNF	H3	28322	00	01	08	H5			28422	00	01	08	H7							28425		00	01	08	H11	28430								00		01	08	1/2 - 13 UNC	H3							28324	00	01		08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00	01	08		H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08	H3	28326	00	01	08	H5	28426	00	01	08	H7	28427	00	01	08	H11	28429		00	01
	H11		28407	00	01	08							5/16 - 18 UNC	H3	28308	00	01	08		2.72	0.665	1.125	0.317		0.238									0.374								H5	28408					00					01				08										H7	28556	00	01	08	H11	28558	00	01	08	5/16 - 24 UNF	H2	28264		00					01	08	H3	28312	00	01	08	H4	28362	00	01	08	H5	28412	00	01	08	H6	28413	00	01	08	H7	28414	00	01	08		3/8 - 16 UNC	H3						28316			00	01				08	2.93	0.751														1.251	0.380	0.285															0.437	H5	28416	00	01	08		H7	28564		00					01	08	H11	28566		00	01		08	3/8 - 24 UNF	H2	28268		00	01	08				H3	28318	00	01	08	H4	28368	00	01	08	H5	28418		00	01	08		H6			28419	00	01		08	H7				28417		00	01			08	7/16 - 14 UNC			H3	28320	00		01	08																								3.15	0.858	1.291	0.322	0.242	0.405	H5	28420			00	01				08	H7	28421	00		01	08		H11	28423	00	01	08	7/16 - 20 UNF	H3	28322	00	01	08	H5	28422		00	01				08		H7	28425	00	01	08								H11		28430	00		01							08	1/2 - 13 UNC	H3		28324							00	01	08	3.37	0.921		1.354	0.367	0.274	0.437	H5	28424	00	01	08	H7		28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08	H3	28326	00	01	08	H5	28426	00	01	08
5/16 - 18 UNC	H3		28308	00	01	08								2.72	0.665	1.125	0.317	0.238											0.374																																																																																																																																																																																																																																																																																																																																																																			
	H5		28408	00	01	08																		H7								28556	00				01	08				H11	28558					00			01		08	5/16 - 24 UNF	H2		28264	00	01	08	H3	28312					00	01	08	H4	28362	00	01	08	H5	28412		00	01		08	H6			28413	00	01	08	H7	28414	00	01	08	3/8 - 16 UNC	H3	28316	00	01	08	2.93	0.751	1.251	0.380	0.285	0.437	H5	28416	00	01	08	H7	28564	00		01	08	H11	28566		00	01	08	3/8 - 24 UNF	H2	28268	00	01	08	H3												28318		00								01				08	H4							28368	00	01	08	H5	28418	00	01	08	H6		28419	00	01	08	H7	28417	00		01	08		7/16 - 14 UNC		H3	28320	00	01	08	3.15	0.858	1.291	0.322	0.242	0.405	H5	28420	00	01	08	H7	28421	00	01	08		H11	28423	00		01			08	7/16 - 20 UNF	H3	28322	00	01	08	H5	28422	00	01	08	H7	28425		00				01	08	H11		28430	00			01	08		1/2 - 13 UNC		H3	28324	00	01			08																3.37	0.921	1.354		0.367	0.274				0.437	H5	28424	00	01	08	H7		28428	00	01	08	H11		28574	00	01	08	1/2 - 20 UNF	H2	28276		00	01				08	H3	28326	00	01	08	H5		28426	00				01	08	H7	28427	00		01		08	H11				28429		00	01	08							9/16 - 12 UNC	H3	28576								00	01	08	3.59	1.000	1.472		0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																	
	H7		28556	00	01	08													H11					28558			00	01				08	5/16 - 24 UNF				H2	28264				00	01			08		H3		28312	00		01		08		H4	28362	00	01	08	H5	28412	00			01	08	H6	28413	00	01	08	H7	28414	00		01	08		3/8 - 16 UNC	H3		28316	00	01	08	2.93	0.751	1.251	0.380	0.285	0.437		H5	28416	00	01	08							H7	28564	00	01	08	H11	28566	00		01	08	3/8 - 24 UNF	H2	28268	00	01	08		H3	28318	00	01	08	H4				28368	00	01		08	H5	28418		00		01								08				H6	28419							00	01	08	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291	0.322		0.242	0.405				H5	28420	00	01	08							H7	28421	00	01	08	H11	28423	00	01	08	7/16 - 20 UNF	H3	28322	00	01	08	H5	28422	00		01	08	H7	28425	00	01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3				28324	00	01		08	3.37			0.921	1.354				0.367	0.274	0.437	H5			28424					00	01													08			H7	28428	00		01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01		08	H3	28326	00		01	08		H5	28426				00	01	08	H7	28427	00	01		08	H11				28429	00	01	08	9/16 - 12 UNC	H3	28576		00	01				08		3.59	1.000	1.472		0.429	0.322				0.500		9/16 - 18 UNF			28578					00	01	08																													
	H11		28558	00	01	08							5/16 - 24 UNF						H2		28264	00		01			08	H3				28312					00	01			08	H4	28362		00	01		08		H5	28412		00		01		08	H6	28413	00	01	08	H7	28414	00	01	08	3/8 - 16 UNC	H3	28316	00	01	08	2.93	0.751	1.251		0.380	0.285			0.437	H5	28416	00	01	08								H7	28564	00	01	08							H11	28566	00	01	08	3/8 - 24 UNF	H2	28268	00	01	08		H3	28318	00	01	08		H4	28368	00	01	08	H5		28418		00	01	08		H6	28419	00		01		08	H7	28417			00	01	08	7/16 - 14 UNC				H3	28320							00	01	08	3.15	0.858	1.291	0.322	0.242		0.405	H5	28420	00	01					08						H7	28421	00	01	08							H11	28423	00	01	08	7/16 - 20 UNF	H3	28322	00	01		08	H5	28422	00	01	08	H7	28425		00	01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00		01	08		3.37	0.921	1.354	0.367	0.274	0.437		H5	28424									00			01					08	H7					28428	00							01			08	H11	28574		00	01	08	1/2 - 20 UNF	H2	28276	00		01	08	H3	28326	00	01	08	H5	28426		00	01	08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3		28576	00				01	08	3.59	1.000	1.472		0.429		0.322	0.500				9/16 - 18 UNF	28578											00	01		08																																					
5/16 - 24 UNF	H2		28264	00	01	08									H3	28312			00		01	08		H4			28362	00				01				08	H5	28412		00	01	08	H6		28413	00		01	08	H7	28414		00		01	08	3/8 - 16 UNC	H3	28316	00	01	08	2.93	0.751	1.251	0.380	0.285		0.437	H5	28416	00	01							08			H7	28564	00	01	08								H11	28566	00	01	08							3/8 - 24 UNF	H2	28268	00	01		08	H3	28318	00	01		08	H4	28368	00	01		08	H5	28418	00	01	08		H6		28419	00	01		08	H7	28417		00	01	08	7/16 - 14 UNC	H3			28320	00	01		08	3.15	0.858	1.291	0.322							0.242	0.405	H5								28420	00	01	08					H7			28421			00	01	08	H11	28423							00	01	08	7/16 - 20 UNF	H3		28322	00	01	08		H5	28422	00	01	08	H7	28425	00		01	08	H11	28430	00	01	08	1/2 - 13 UNC		H3	28324	00		01	08	3.37								0.921	1.354			0.367						0.274	0.437	H5	28424					00	01					08	H7							28428			00	01	08		H11	28574	00		01	08	1/2 - 20 UNF		H2	28276	00	01	08	H3	28326	00	01		08	H5	28426	00	01	08	H7	28427	00	01	08	H11	28429	00		01	08	9/16 - 12 UNC	H3	28576	00	01	08				3.59								1.000	1.472	0.429	0.322	0.500		9/16 - 18 UNF	28578				00	01	08																																							
	H3		28312	00	01	08	H4	28362	00	01	08	H5			28412	00			01		08	H6		28413			00	01			08	H7			28414	00	01	08		3/8 - 16 UNC	H3	28316	00	01	08	2.93		0.751	1.251	0.380	0.285	0.437	H5		28416	00		01	08	H7	28564	00								01	08	H11	28566				00			01			08	3/8 - 24 UNF	H2	28268	00							01	08	H3	28318	00	01		08	H4					28368	00	01	08		H5	28418	00	01	08		H6	28419	00	01	08		H7	28417	00	01	08	7/16 - 14 UNC		H3		28320	00	01		08	3.15	0.858	1.291	0.322	0.242	0.405		H5			28420	00	01		08					H7	28421	00						01								08	H11	28423	00					01			08	7/16 - 20 UNF	H3	28322	00	01	08	H5		28422	00				01	08	H7		28425		00	01	08	H11		28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437			H5	28424	00		01	08														H7	28428						00	01	08	H11	28574		00	01					08	1/2 - 20 UNF					H2	28276	00			01	08	H3		28326	00	01		08	H5			28426	00	01	08	H7	28427	00	01	08		H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF		28578	00	01	08																																																																
	H4		28362	00	01	08	H5	28412	00	01	08	H6			28413	00			01		08	H7		28414		00	01	08		3/8 - 16 UNC	H3	28316			00	01	08	2.93	0.751		1.251	0.380	0.285	0.437	H5		28416						00		01	08		H7	28564	00	01	08								H11	28566	00	01				08			3/8 - 24 UNF	H2		28268		00	01	08		H3	28318				00	01	08	H4	28368	00		01	08					H5	28418	00	01		08	H6	28419	00	01		08	H7	28417	00	01		08	7/16 - 14 UNC	H3	28320	00			01	08	3.15	0.858	1.291	0.322	0.242								0.405			H5	28420	00		01					08	H7	28421	00	01				08						H11		28423	00	01	08		7/16 - 20 UNF	H3		28322			00		01	08	H5	28422	00	01		08	H7				28425	00	01		08		H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00		01	08	3.37	0.921	1.354									0.367	0.274	0.437	H5	28424	00											01	08		H7	28428						00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276		00						01	08	H3			28326	00	01		08	H5	28426		00	01			08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01		08	3.59	1.000	1.472							0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																														
	H5		28412	00	01	08	H6	28413	00	01	08	H7			28414	00			01	08	3/8 - 16 UNC	H3	28316	00	01	08	2.93	0.751			1.251	0.380		0.285	0.437	H5	28416								00		01						08	H7	28564	00		01	08	H11	28566	00						01		08	3/8 - 24 UNF	H2	28268		00	01	08				H3		28318		00	01	08		H4	28368				00	01	08	H5	28418	00		01	08					H6	28419	00	01		08	H7	28417	00	01		08	7/16 - 14 UNC	H3	28320	00	01	08		3.15	0.858	1.291		0.322	0.242	0.405														H5	28420	00	01	08	H7	28421					00	01	08	H11	28423	00			01		08	7/16 - 20 UNF			H3		28322	00	01	08			H5		28422			00		01	08	H7	28425	00	01		08	H11				28430	00	01		08	1/2 - 13 UNC	H3	28324	00	01	08		3.37	0.921	1.354		0.367	0.274											0.437				H5	28424	00			01	08							H7	28428		00	01						08	H11	28574	00	01	08	1/2 - 20 UNF	H2		28276	00	01	08		H3	28326	00		01	08	H5			28426	00	01		08	H7	28427		00	01		08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59		1.000	1.472	0.429	0.322	0.500				9/16 - 18 UNF	28578	00	01	08																																																																							
	H6		28413	00	01	08	H7	28414	00	01	08	3/8 - 16 UNC		H3	28316	00	01	08	2.93	0.751		1.251	0.380	0.285	0.437	H5			28416				00			01	08								H7		28564						00	01	08	H11	28566	00	01	08	3/8 - 24 UNF	H2		28268	00			01		08		H3	28318		00	01	08				H4		28368		00	01	08		H5	28418				00	01	08	H6	28419	00		01	08					H7	28417	00	01		08	7/16 - 14 UNC	H3	28320	00	01	08		3.15	0.858	1.291	0.322	0.242																				0.405		H5	28420	00	01	08	H7	28421		00	01		08	H11	28423	00	01	08			7/16 - 20 UNF		H3				28322		00	01	08	H5			28422		00			01		08	H7	28425	00	01	08		H11	28430				00	01	08	1/2 - 13 UNC	H3		28324	00	01	08	3.37																	0.921					1.354	0.367	0.274			0.437	H5					28424	00	01	08		H7	28428						00	01	08	H11	28574	00		01		08	1/2 - 20 UNF	H2	28276		00	01	08		H3	28326	00			01	08	H5		28426	00	01	08	H7	28427		00	01	08	H11	28429	00	01		08	9/16 - 12 UNC	H3	28576		00						01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																		
	H7		28414	00	01	08	3/8 - 16 UNC	H3	28316	00	01		08	2.93	0.751	1.251	0.380	0.285								0.437			H5				28416			00	01			08					H7		28564	00	01				08	H11	28566	00	01	08	3/8 - 24 UNF	H2		28268		00	01			08		H3		28318	00		01	08	H4				28368		00		01	08	H5		28418	00				01	08	H6	28419	00	01	08	H7	28417	00	01	08		7/16 - 14 UNC	H3	28320	00	01	08		3.15	0.858	1.291	0.322	0.242											0.405										H5	28420						00	01	08	H7	28421	00	01		08	H11		28423	00	01	08	7/16 - 20 UNF	H3					28322				00		01	08	H5	28422			00		01			08	H7	28425	00	01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08		3.37		0.921	1.354	0.367	0.274						0.437							H5	28424															00					01	08	H7	28428		00	01						08	H11	28574	00	01	08		1/2 - 20 UNF		H2		28276	00		01	08	H3	28326	00	01	08	H5	28426	00	01	08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000		1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																														
3/8 - 16 UNC	H3		28316	00	01	08		2.93	0.751	1.251	0.380		0.285																0.437																																																																																																																																																																																																																																																																																																																																																																			
	H5	28416	00	01	08	H7															28564							00		01	08		H11			28566	00		01	08	3/8 - 24 UNF				H2		28268	00	01				08	H3	28318	00	01	08		H4		28368		00	01			08		H5		28418	00	01	08	H6	28419	00	01		08	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291	0.322	0.242	0.405	H5	28420	00	01	08	H7	28421	00		01	08	H11	28423	00							01						08		7/16 - 20 UNF	H3						28322	00				01	08						H5	28422	00	01	08	H7	28425		00	01		08	H11	28430	00		01				08	1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00	01	08	H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF		H2	28276	00	01	08			H3						28326		00	01					08	H5		28426	00													01		08	H7	28427	00	01	08	H11	28429	00		01	08	9/16 - 12 UNC	H3	28576			00	01	08	3.59	1.000	1.472			0.429	0.322		0.500	9/16 - 18 UNF	28578	00	01	08																																																																																																																			
	H7	28564	00	01	08	H11						28566								00	01	08						3/8 - 24 UNF		H2	28268		00			01	08		H3	28318					00		01	08	H4				28368	00	01	08	H5	28418		00		01	08	H6	28419	00	01	08	H7	28417		00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291	0.322	0.242	0.405		H5	28420	00	01	08							H7	28421	00	01	08	H11	28423	00		01	08	7/16 - 20 UNF	H3	28322	00						01		08	H5			28422			00						01	08				H7	28425						00	01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08	3.37		0.921	1.354	0.367	0.274	0.437		H5	28424	00	01	08							H7	28428	00	01	08	H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01			08	H3	28326	00	01	08		H5						28426		00	01					08	H7		28427	00				01					08			H11	28429		00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429		0.322	0.500	9/16 - 18 UNF	28578	00	01				08																																																																																																																													
	H11	28566	00	01	08	3/8 - 24 UNF	H2					28268			00	01				08	H3	28318								00	01		08			H4	28368		00	01					08	H5	28418	00	01	08	H6	28419	00	01	08	H7	28417	00		01		08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291	0.322	0.242	0.405		H5	28420	00	01	08								H7	28421	00	01	08							H11	28423	00	01	08	7/16 - 20 UNF	H3	28322	00	01	08		H5	28422	00		01	08			H7		28425	00			01			08						H11	28430			00	01	08	1/2 - 13 UNC	H3	28324			00	01	08	3.37	0.921	1.354	0.367	0.274		0.437	H5	28424	00	01		08							H7	28428	00	01	08							H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01		08	H3	28326	00		01	08	H5	28426	00	01	08		H7	28427	00				01		08	H11					28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01					08			3.59	1.000		1.472	0.429	0.322	0.500		9/16 - 18 UNF	28578	00	01					08																																																																																																																																							
3/8 - 24 UNF	H2	28268	00	01	08		H3		28318	00		01			08	H4				28368	00	01								08	H5		28418			00	01	08	H6	28419		00	01	08	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291		0.322	0.242	0.405		H5	28420	00	01	08								H7	28421	00	01	08								H11	28423	00	01	08							7/16 - 20 UNF	H3	28322	00	01		08	H5	28422	00	01		08	H7	28425		00	01			08		H11	28430			00			01					08	1/2 - 13 UNC	H3	28324	00	01	08	3.37		0.921	1.354		0.367	0.274	0.437	H5								28424	00	01	08		H7							28428	00	01	08	H11							28574	00	01	08	1/2 - 20 UNF		H2	28276	00	01		08	H3	28326	00		01	08	H5	28426	00	01	08		H7	28427	00				01		08	H11				28429	00	01	08	9/16 - 12 UNC	H3		28576	00	01		08	3.59	1.000	1.472										0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																																																																																									
	H3	28318	00	01	08		H4		28368	00		01			08	H5				28418	00	01					08			H6	28419	00	01	08	H7	28417	00	01	08	7/16 - 14 UNC		H3	28320	00	01	08	3.15	0.858	1.291		0.322	0.242	0.405	H5	28420				00					01	08	H7	28421	00								01	08	H11	28423	00							01	08	7/16 - 20 UNF	H3	28322	00		01	08					H5	28422	00	01		08	H7	28425	00	01		08	H11	28430		00	01			08		1/2 - 13 UNC	H3			28324	00	01	08		3.37	0.921	1.354	0.367		0.274	0.437	H5	28424	00									01								08	H7	28428	00		01						08	H11	28574	00	01	08		1/2 - 20 UNF	H2				28276	00	01	08			H3	28326	00	01		08	H5	28426	00		01	08	H7	28427	00	01	08		H11	28429	00				01	08	9/16 - 12 UNC	H3		28576	00	01	08	3.59	1.000	1.472		0.429	0.322	0.500	9/16 - 18 UNF	28578	00						01	08																																																																																																																																																						
	H4	28368	00	01	08		H5		28418	00		01			08	H6			28419	00	01	08	H7	28417	00		01			08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858	1.291			0.322	0.242	0.405	H5	28420								00	01				08					H7	28421	00	01	08							H11	28423	00	01	08	7/16 - 20 UNF		H3	28322				00	01		08	H5	28422		00	01					08	H7	28425	00		01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3		28324	00			01	08		3.37	0.921	1.354	0.367	0.274	0.437	H5									28424	00	01					08				H7						28428		00	01	08	H11		28574	00	01				08	1/2 - 20 UNF	H2	28276	00	01			08				H3	28326	00	01			08	H5	28426	00		01	08	H7	28427	00	01	08	H11	28429	00	01	08		9/16 - 12 UNC	H3	28576			00	01	08	3.59			1.000	1.472	0.429	0.322				0.500				9/16 - 18 UNF	28578	00	01	08																																																																																																																																																											
	H5	28418	00	01	08		H6		28419	00		01		08	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858			1.291		0.322	0.242	0.405	H5	28420					00				01	08								H7	28421				00				01	08	H11	28423	00	01		08	7/16 - 20 UNF				H3	28322	00	01	08			H5	28422				00	01		08	H7	28425		00	01					08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08		3.37	0.921	1.354	0.367	0.274	0.437	H5	28424								00	01								08	H7	28428		00			01				08		H11	28574			00		01	08	1/2 - 20 UNF	H2		28276	00	01				08		H3	28326	00	01			08				H5	28426	00	01			08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000		1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578		00	01					08																																																																																																																																																																						
	H6	28419	00	01	08		H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08	3.15	0.858		1.291	0.322	0.242	0.405	H5			28420	00						01	08					H7				28421	00				01				08	H11		28423	00	01				08	7/16 - 20 UNF	H3	28322	00	01		08					H5	28422	00	01	08			H7	28425				00	01		08	H11	28430		00	01				08	1/2 - 13 UNC	H3	28324	00	01	08		3.37	0.921	1.354	0.367	0.274								0.437	H5								28424	00					01			08	H7	28428		00	01	08	H11				28574		00	01			08		1/2 - 20 UNF	H2		28276		00	01	08				H3		28326	00	01	08			H5				28426	00	01	08		H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576		00	01	08	3.59			1.000					1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																																																																																																																							
	H7	28417	00	01	08	7/16 - 14 UNC	H3	28320	00	01	08		3.15	0.858	1.291	0.322	0.242								0.405			H5	28420						00	01				08	H7				28421	00		01	08	H11				28423	00		01	08	7/16 - 20 UNF				H3		28322	00	01	08		H5					28422	00	01	08	H7			28425	00				01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08		3.37	0.921	1.354	0.367	0.274															0.437	H5							28424	00		01	08		H7			28428	00	01		08	H11	28574	00				01		08	1/2 - 20 UNF			H2			28276		00		01	08	H3				28326		00	01	08	H5	28426		00	01	08	H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59		1.000	1.472	0.429	0.322	0.500		9/16 - 18 UNF	28578		00	01	08																																																																																																																																																																																	
7/16 - 14 UNC	H3	28320	00	01	08		3.15	0.858	1.291	0.322	0.242																	0.405																																																																																																																																																																																																																																																																																																																																																																				
	H5	28420	00	01	08															H7							28421		00	01	08				H11	28423		00	01	08	7/16 - 20 UNF				H3	28322		00	01	08				H5	28422		00	01					08		H7	28425	00	01	08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437	H5	28424	00	01	08	H7	28428		00	01	08	H11	28574							00						01		08	1/2 - 20 UNF						H2		28276	00				01	08		H3	28326		00			01	08	H5		28426	00	01	08				H7	28427	00		01	08	H11	28429		00		01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																																																																																																																																																															
	H7	28421	00	01	08							H11							28423	00	01						08		7/16 - 20 UNF	H3	28322				00	01		08	H5	28422					00	01		08	H7	28425				00	01	08	H11	28430		00	01	08	1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437		H5	28424	00	01	08							H7	28428	00	01	08	H11	28574		00	01	08	1/2 - 20 UNF	H2	28276						00		01	08			H3		28326							00		01	08				H5	28426		00	01		08			H7	28427	00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00		01	08	3.59	1.000		1.472	0.429	0.322	0.500	9/16 - 18 UNF		28578	00	01	08																																																																																																																																																																																																																										
	H11	28423	00	01	08	7/16 - 20 UNF						H3		28322	00				01	08	H5						28422			00	01				08	H7		28425	00	01					08	H11	28430	00	01	08	1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354	0.367	0.274	0.437		H5	28424	00	01	08								H7	28428	00	01	08							H11	28574	00	01	08	1/2 - 20 UNF	H2	28276	00	01	08		H3	28326		00	01			08		H5	28426			00		01							08		H7	28427				00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500		9/16 - 18 UNF	28578		00	01			08																																																																																																																																																																																																																																				
7/16 - 20 UNF	H3	28322	00	01	08			H5	28422			00		01	08				H7	28425	00						01			08	H11				28430	00	01	08	1/2 - 13 UNC	H3		28324	00	01	08	3.37	0.921	1.354	0.367	0.274		0.437	H5	28424	00	01								08	H7	28428	00	01								08	H11	28574	00	01							08	1/2 - 20 UNF	H2	28276	00		01	08	H3	28326	00		01	08		H5	28426			00		01	08			H7		28427							00	01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000		1.472	0.429	0.322	0.500							9/16 - 18 UNF	28578	00	01	08																																																																																																																																																																																																																																								
	H5	28422	00	01	08			H7	28425			00		01	08				H11	28430	00					01	08			1/2 - 13 UNC	H3	28324	00	01	08	3.37	0.921	1.354		0.367	0.274	0.437	H5	28424	00								01	08	H7	28428								00	01	08	H11	28574							00	01	08	1/2 - 20 UNF	H2	28276		00	01				08		H3	28326	00		01	08	H5	28426	00		01	08		H7	28427			00		01	08			H11	28429	00		01	08	9/16 - 12 UNC			H3	28576	00	01	08	3.59	1.000	1.472	0.429		0.322	0.500	9/16 - 18 UNF	28578			00					01	08																																																																																																																																																																																																																																																	
	H7	28425	00	01	08			H11	28430			00		01	08			1/2 - 13 UNC	H3	28324	00	01	08	3.37		0.921	1.354		0.367		0.274	0.437	H5	28424	00								01	08	H7								28428	00	01	08							H11	28574	00	01	08	1/2 - 20 UNF		H2	28276				00	01	08		H3	28326		00	01				08		H5	28426	00		01	08	H7	28427	00		01	08		H11	28429			00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322			0.500	9/16 - 18 UNF	28578	00					01			08																																																																																																																																																																																																																																																											
	H11	28430	00	01	08	1/2 - 13 UNC		H3	28324			00	01	08	3.37	0.921	1.354		0.367	0.274	0.437	H5	28424		00								01	08	H7								28428	00	01						08		H11	28574	00	01		08	1/2 - 20 UNF				H2	28276	00	01	08			H3	28326				00	01	08		H5	28426		00	01				08		H7	28427	00		01	08	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429		0.322	0.500	9/16 - 18 UNF	28578						00	01		08																																																																																																																																																																																																																																																																					
1/2 - 13 UNC	H3	28324	00	01	08		3.37	0.921	1.354	0.367	0.274	0.437																																																																																																																																																																																																																																																																																																																																																																																				
	H5	28424	00	01	08								H7	28428								00	01		08			H11		28574			00	01	08		1/2 - 20 UNF	H2	28276				00	01	08		H3	28326			00		01	08	H5	28426		00					01	08	H7	28427	00			01	08				H11	28429	00		01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF	28578	00	01	08																																																																																																																																																																																																																																																																																															
	H7	28428	00	01	08								H11	28574				00				01	08		1/2 - 20 UNF	H2	28276	00		01			08	H3	28326			00	01				08	H5	28426		00	01			08		H7	28427	00	01		08					H11	28429	00	01	08		9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF		28578	00	01	08																																																																																																																																																																																																																																																																																																										
	H11	28574	00	01	08	1/2 - 20 UNF							H2	28276		00	01	08				H3	28326			00	01	08		H5			28426	00	01			08	H7				28427	00	01		08	H11			28429		00	01	08	9/16 - 12 UNC	H3	28576		00	01	08	3.59	1.000	1.472	0.429	0.322	0.500	9/16 - 18 UNF		28578	00	01	08																																																																																																																																																																																																																																																																																																																						
1/2 - 20 UNF	H2	28276	00	01	08			H3	28326				00	01		08	H5	28426				00	01			08	H7	28427		00			01	08	H11			28429	00				01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322	0.500		9/16 - 18 UNF	28578	00	01	08																																																																																																																																																																																																																																																																																																																																		
	H3	28326	00	01	08			H5	28426				00	01		08	H7	28427				00	01			08	H11	28429		00			01	08	9/16 - 12 UNC	H3		28576	00	01	08	3.59	1.000	1.472	0.429		0.322	0.500	9/16 - 18 UNF	28578							00	01	08																																																																																																																																																																																																																																																																																																																																					
	H5	28426	00	01	08			H7	28427				00	01		08	H11	28429				00	01	08		9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429		0.322	0.500	9/16 - 18 UNF	28578	00					01			08																																																																																																																																																																																																																																																																																																																																															
	H7	28427	00	01	08			H11	28429				00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322		0.500	9/16 - 18 UNF	28578	00					01			08																																																																																																																																																																																																																																																																																																																																																									
	H11	28429	00	01	08	9/16 - 12 UNC	H3	28576	00	01	08	3.59	1.000	1.472	0.429	0.322		0.500	9/16 - 18 UNF	28578	00						01		08																																																																																																																																																																																																																																																																																																																																																																			
9/16 - 12 UNC	H3	28576	00	01	08	3.59		1.000	1.472	0.429	0.322						0.500																																																																																																																																																																																																																																																																																																																																																																															
9/16 - 18 UNF		28578	00	01	08																																																																																																																																																																																																																																																																																																																																																																																											

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.





List 280 (Continued)

Plug (3.5P-4.5P)



HSSE	TiCN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length						
			EDP Number	Coating Suffix														
				Bright	S/O	TiCN												
L	Lc	Ln	d	k	lk													
5/8 - 11 UNC	H3	3	28332	00	01	08	3.81	1.090	1.562	0.480	0.359	0.562						
	H5		28432	00	01	08												
5/8 - 18 UNF	H3		28334	00	01	08												
	H5		28434	00	01	08												
	H7		28580	00	01	08												
3/4 - 10 UNC	H3		28336	00	01	08							4.25	1.200	1.712	0.590	0.442	0.688
	H5		28436	00	01	08												
3/4 - 16 UNF	H3		28338	00	01	08												
	H5		28438	00	01	08												
7/8 - 9 UNC	H5		28440	00	01	08	4.68	1.334	1.885	0.697	0.522	0.751						
7/8 - 14 UNF	H4		28392	00	01	08												
1 - 8 UNC	H5		28444	00	01	08	5.12	1.500	2.090	0.800	0.600	0.811						
1 - 12 UNF	H4	28396	00	01	08													
1,1/8 - 7 UNC	H6	4	28498	-	01	-	5.43	1.712	2.303	0.895	0.672	0.874						
1,1/8 - 8 UNS			28502	-	01	-												
1,1/8 - 12 UNF	H5		28450	-	01	-												
1,1/4 - 7 UNC	H6		28504	-	01	-	5.75		2.000	2.381	1.020	0.766	1.000					
1,1/4 - 8 UNS			H6	28508	-	01								-				
1,1/4 - 12 UNF	H5		28456	-	01	-												
1,3/8 - 6 UNC	H6		28510	-	01	-	6.06	2.748		1.107	0.831	1.062						
1,3/8 - 8 UNS			H6	28514	-	01							-					
1,3/8 - 12 UNF	H5		28462	-	01	-												
1,1/2 - 6 UNC	H6		28516	-	01	-	6.37		2.787	1.232	0.925	1.125						
1,1/2 - 8 UNS			H6	28520	-	01							-					
1,1/2 - 12 UNF			H5	28468	-	01							-					

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
280	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60				

good best



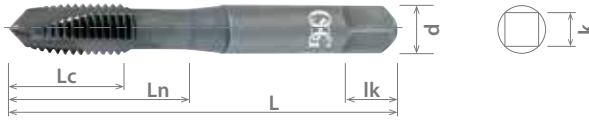


List 289

Plug (3.5P-4.5P)



HSSE	TiCN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiCN						
M3 x 0.5	D3	3	28904	00	01	08	49	6	15.9	3.58	2.79	4.8
	D11		28931	-	01	08						
M3.5 x 0.6	D4		28905	00	01	08	50	7	17.5	3.58	2.79	4.8
	D11		28933	-	01	08						
M4 x 0.7	D4		28906	00	01	08	54	8	19.0	4.26	3.33	6.4
	D11		28935	-	01	08						
M5 x 0.8	D4		28908	00	01	08	60	9	22.3	4.92	3.86	6.4
	D11		28937	-	01	08						
M6 x 1.0	D5		28910	00	01	08	63	11	25.3	6.47	4.85	7.9
	D11		28939	-	01	08						
M7 x 1.0	D5		28911	00	01	08	69	12	28.6	8.07	6.05	9.5
	D11		28941	-	01	08						
M8 x 1.25	D5		28914	00	01	08	69	15	28.6	8.07	6.05	9.5
	D11		28945	-	01	08						
M8 x 1.0	D5		28913	00	01	08	74	18	31.8	9.67	7.26	11.1
	D11		28943	-	01	08						
M10 x 1.5	D6		28918	00	01	08	74	18	31.8	9.67	7.26	11.1
	D11		28951	-	01	08						
M10 x 1.25	D5		28917	00	01	08	74	18	31.8	9.67	7.26	11.1
	D11		28949	-	01	08						
M10 x 1.0	D5		28916	00	01	08	85	21	32.0	9.32	6.98	11.1
	D11		28947	-	01	08						
M12 x 1.75	D6		28923	00	01	08	85	21	32.0	9.32	6.98	11.1
	D11		28957	-	01	08						
M12 x 1.5	D6		28922	00	01	08	91	24	36.0	10.89	8.18	12.7
	D11		28955	-	01	08						
M12 x 1.25	D5		28921	00	01	08	91	24	36.0	10.89	8.18	12.7
	D11		28952	-	01	08						
M14 x 2.0	D7	28926	-	01	08	96	24	36.0	12.19	9.14	14.3	
	D6	28925	-	01	08							
M16 x 2.0	D7	28929	-	01	08	102	30	43.0	13.76	10.31	15.9	
	D6	28928	-	01	08							
M16 x 1.5	D6	28932	-	01	08	102	30	43.0	13.76	10.31	15.9	
	D7	28930	-	01	08							
M18 x 2.5	D8	28936	-	01	08	113	30	44.0	16.56	12.42	17.5	
	D6	28934	-	01	08							
M22 x 2.5	D8	28940	-	01	-	119	36	51.0	17.70	13.28	19.1	
	D6	28938	-	01	-							
M24 x 3.0	D8	28944	-	01	-	124	36	51.0	19.30	14.48	22.2	
	D6	28942	-	01	-							
M27 x 3.0	D8	28948	-	01	-	130	42	58.0	25.93	19.46	25.4	
	D6	28946	-	01	-							
M27 x 1.5	D6	28953	-	01	-	138	38	54.1	25.93	19.46	25.4	
	D9	28950	-	01	-							
M30 x 3.5	D9											
M30 x 1.5	D6											

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
289	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>				
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60				

good best



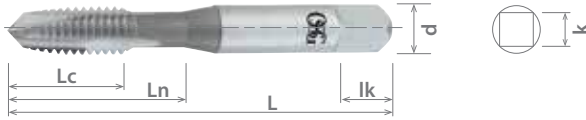


List 287

Plug (4.5P-5.5P)



HSS	TiN	S/O	BR
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Tap Size	Class of Fit	No. of Flutes	Plug (4.5P - 5.5P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk					
			EDP Number	Coating Suffix												
			Bright	S/O	TiN											
0 - 80 UNC	2B	2	28841	00	01	05	1.62	0.311	-	0.140	0.109	0.188				
1 - 64 UNC			28842	00	01	05										
1 - 72 UNF			28843	00	01	05										
2 - 56 UNC			28844	00	01	05	1.75	0.437	-							
3 - 48 UNC			28845	00	01	05										
3 - 56 UNF			28846	00	01	05	1.81	0.496	-							
4 - 40 UNC			28850	00	01	05										
4 - 48 UNF			28800	00	01	05	1.87	0.318	0.559							
5 - 40 UNC			28864	00	01	05										
6 - 32 UNC			2B	2	28865	00	01	05	1.93				0.322	0.618	0.167	0.131
6 - 40 UNF	3B	28802	00		01	05										
8 - 32 UNC	2B	28866	00		01	05	2.00	0.389	0.685							
8 - 36 UNF	3B	28853	00		01	05										
10 - 24 UNC	2B	28803	00		01	05	2.12	0.755	0.755							
10 - 32 UNF	3B	28867	00		01	05										
12 - 24 UNC	2B	28854	00		01	05	2.37	0.503	0.874	0.194	0.151	0.279				
1/4 - 20 UNC	3B	28804	00		01	05										
1/4 - 28 UNC	2B	28855	00		01	05										
5/16 - 18 UNC	2B	2	28805		00	01	05	2.50	0.637	1.007	0.255	0.190	0.311			
5/16 - 24 UNF	3B		28868	00	01	05										
3/8 - 16 UNC	2B		28856	00	01	05	2.72	0.700	1.129							
3/8 - 24 UNF	3B		28806	00	01	05										
7/16 - 14 UNC	2B		28857	00	01	05	2.93	0.759	1.248	0.317				0.238	0.374	
7/16 - 20 UNF	3B		28807	00	01	05										
1/2 - 13 UNC	2B		3	28858	00	01	05	3.15	0.881	1.314				0.380	0.285	0.437
1/2 - 20 UNF	3B			28808	00	01	05									
	2B			28859	00	01	05	3.37	0.940	1.374				0.322	0.242	0.405
	3B			28809	00	01	05									
	2B	28860		00	01	05	3.37	0.940	1.374	0.367	0.274	0.437				
	3B	28810		00	01	05										
	2B	28861		00	01	05	3.37	0.940	1.374	0.367	0.274	0.437				
	3B	28811		00	01	05										
	2B	28869		00	01	05	3.37	0.940	1.374	0.367	0.274	0.437				
	3B	28870		00	01	05										
	2B	28862	00	01	05	3.37	0.940	1.374	0.367	0.274	0.437					
	3B	28812	00	01	05											
	2B	28863	00	01	05	3.37	0.940	1.374	0.367	0.274	0.437					
	3B	28813	00	01	05											

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
287	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>								
SFM	50-90	40-80							30-80	30-80								

good best





HY-PRO® SEVEN

General Purpose Class of Fit Taps

List 288



HSS

TiN

S/O

BR

Plug (4.5P-5.5P)



Tap Size	Class of Fit	No. of Flutes	Plug (4.5P - 5.5P)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix								
				Bright	S/O	TiN	L	Lc	Ln	d	k	lk
M3 x 0.5	6H	2	28880	00	01	05	49	8	15.8	3.58	2.79	4.8
M4 x 0.7			28881	00	01	05	54	10	19.3	4.26	3.33	6.4
M5 x 0.8			28882	00	01	05	60	13	22.4	4.92	3.86	
M6 x 1.0			28883	00	01	05	63	16	25.7	6.47	4.85	7.9
M8 x 1.25			28884	00	01	05	69	18	28.8	8.07	6.05	9.7
M10 x 1.5			28885	00	01	05	74	19	31.7	9.67	7.26	11.1
M12 x 1.75			28886	00	01	05	85	23	34.9	9.32	6.98	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P												M			K Cast Iron	N		S	H			
	Carbon Steels					Alloy Steels 4140 4340	Die Steels	Stainless Steels			Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels								
	Low	Med.	High					300	400	17-4 PH	6061 7075	Casting			~35 HRC		35-45 HRC	45-50 HRC	50-70 HRC				
	1010 1018	1035 1045	1065																				
288	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>										<input type="checkbox"/>	<input type="checkbox"/>										
SFM	50-90	40-80										30-80	30-80										

good best

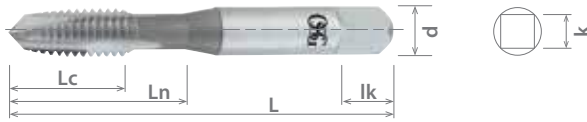




List 105

No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)

HSS	TiCN	TiN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Plug (4.5P - 5.5P)				Plug (3.5P - 4.5P)				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	
			EDP Number	Coating Suffix			EDP Number	Coating Suffix									
				Bright	S/O	TiN		TiCN	Bright	S/O							TiN
0 - 80 UNF	H1	2	12000	00	01	-	08	-	-	-	-	1.70	0.335	0.374	0.141	0.110	0.189
	H2		12050	00	01	05	08	-	-	-	-						
	H3		12100	00	01	-	08	-	-	-	-						
1 - 64 UNC	H1		12002	00	01	-	08	-	-	-	-	1.77	0.402	0.441			
	H2		12052	00	01	-	08	-	-	-	-						
1 - 72 UNF	H1		12004	00	01	-	08	-	-	-	-	1.84	0.472	0.512			
	H2		12054	00	01	05	08	-	-	-	-						
2 - 56 UNC	H1		12006	00	-	05	08	-	-	-	-	1.90	0.539	0.579			
	H2		12056	00	01	05	08	-	-	-	-						
	H3		12106	00	01	-	08	-	-	-	-						
	H5		12156	00	01	-	08	-	-	-	-						
2 - 64 UNF	H1		12008	00	-	-	08	-	-	-	-	1.97	0.366	0.606			
	H2		12058	00	01	05	08	-	-	-	-						
3 - 48 UNC	H1		12010	00	-	-	08	-	-	-	-	2.04	0.374	0.669			
	H2		12060	00	01	05	08	-	-	-	-						
	H3		12110	00	01	-	08	-	-	-	-						
	H5		20021	00	-	-	08	-	-	-	-						
3 - 56 UNF	H1		12012	00	-	-	08	-	-	-	-	2.11	0.449	0.744			
4 - 36 UNS	H2		12062	00	01	05	08	-	-	-	-						
4 - 40 UNC	H1		12014	00	-	05	08	-	-	-	-	2.04	0.374	0.669			
	H2	12064	00	01	05	08	-	-	-	-							
	H3	12114	00	01	-	08	-	-	-	-							
	H5	12164	00	01	-	08	-	-	-	-							
	H1	12016	00	-	-	08	-	-	-	-							
4 - 48 UNF	H2	12066	00	01	05	08	-	-	-	-							
	H1	12020	00	-	-	08	-	-	-	-							
5 - 40 UNC	H2	12070	00	01	05	08	-	-	-	-	2.11	0.449	0.744				
	H5	20033	00	-	-	08	-	-	-	-							
	H2	12072	00	01	05	08	-	-	-	-							
6 - 32 UNC	H1	12024	00	-	05	08	-	-	-	-	2.11	0.449	0.744				
	H2	12074	00	01	05	08	-	-	-	-							
	H3	12124	00	01	05	08	-	-	-	-							
	H4	12126	-	-	-	08	-	-	-	-							
	H5	20039	00	-	05	08	-	-	-	-							
6 - 40 UNF	H1	12174	00	01	-	08	-	-	-	-							
	H2	12026	00	-	-	08	-	-	-	-							
	H5	12076	00	01	05	08	-	-	-	-							
			20042	00	-	-	08	-	-	-							

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

[continued on next page](#)

Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
105	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

good best





GENERAL PURPOSE

List 105 (Continued)

HSS	TiCN	TiN	S/O	BR
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No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P - 5.5P)					Plug (3.5P - 4.5P)					Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk					
			EDP Number	Coating Suffix				EDP Number	Coating Suffix														
				Bright	S/O	TiN	TiCN		Bright	S/O	TiN	TiCN											
8 - 32 UNC	H1	2	-	-	-	-	12028	00	-	05	08	2.26	0.461	0.827	0.168	0.131							
	H2		-	-	-	-	12078	00	01	05	08												
	H3		-	-	-	-	12128	00	01	05	08												
	H4	3	-	-	-	-	20050	00	-	05	08												
	H5		-	-	-	-	12132	-	01	-	-												
8 - 36 UNF	H1	2	-	-	-	-	12032	00	-	-	08												
	H2		-	-	-	-	12082	00	01	05	08												
10 - 24 UNC	H1	3	-	-	-	-	12034	00	-	05	08							2.53	0.587	0.957	0.194	0.152	0.252
	H2		-	-	-	-	12136	-	01	-	-												
	H3	2	-	-	-	-	12084	00	01	05	08												
	H4		-	-	-	-	12134	00	01	05	08												
	H5		-	-	-	-	20065	00	-	-	08												
10 - 32 UNF	H1	3	-	-	-	-	20066	00	-	05	08												
	H2		-	-	-	-	12038	00	-	05	08												
	H3		-	-	-	-	12140	-	01	-	-												
	H4		-	-	-	-	12088	00	01	-	08												
	H5		-	-	-	-	12138	00	01	05	08												
12 - 24 UNC	H1	2	-	-	-	-	20060	00	-	-	08												
	H3		-	-	-	-	12188	00	01	-	08												
12 - 28 UNF	H1	2	-	-	-	-	12042	00	-	-	-												
	H3		-	-	-	-	12142	00	01	05	08												
1/4 - 20 UNC	H1	3	-	-	-	-	12144	00	01	05	08	2.68	0.744	1.114	0.255	0.191	0.287						
	H2		-	-	-	-	12200	00	01	05	08												
	H3		-	-	-	-	12250	00	01	05	08												
	H4		-	-	-	-	12300	00	01	05	08												
	H5		-	-	-	-	12302	00	01	05	08												
1/4 - 28 UNF	H1	3	-	-	-	-	12400	00	01	05	08												
	H2		-	-	-	-	12402	00	-	-	08												
	H3		-	-	-	-	12204	00	-	-	08												
	H4		-	-	-	-	12254	00	-	05	08												
	H5		-	-	-	-	12256	00	-	05	08												
5/16 - 18 UNC	H1	3	-	-	-	-	12304	00	01	05	08												
	H2		-	-	-	-	12354	00	-	-	08												
	H3		-	-	-	-	12356	00	-	-	08												
	H4		-	-	-	-	12208	00	-	05	08												
	H5		-	-	-	-	12258	00	-	05	08												
5/16 - 24 UNF	H1	3	-	-	-	-	12308	00	01	05	08												
	H2		-	-	-	-	12310	00	01	05	08												
	H3		-	-	-	-	12408	00	-	05	08												
	H4		-	-	-	-	12410	00	01	05	08												
	H5		-	-	-	-	12212	00	-	-	08												
5/16 - 24 UNF	H1	3	-	-	-	-	12262	00	-	05	08												
	H2		-	-	-	-	12264	00	-	05	08												
	H3		-	-	-	-	12312	00	01	05	08												
	H4		-	-	-	-	12362	00	-	-	08												
	H5		-	-	-	-	12364	00	-	-	08												

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 105 (Continued)

HSS	TiCN	TiN	S/O	BR
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No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)

Tap Size	Thread Limit	No. of Flutes	Plug (4.5P - 5.5P)					Plug (3.5P - 4.5P)					Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix				EDP Number	Coating Suffix									
				Bright	S/O	TiN	TiCN		Bright	S/O	TiN	TiCN						
3/8 - 16 UNC	H1	3	-	-	-	-	12216	00	-	-	08	3.10	0.925	1.413	0.381	0.286	0.402	
	H2		-	-	-	-	12266	00	01	05	08							
	H3		-	-	-	-	12316	00	01	05	08							
	H5		-	-	-	-	12416	00	01	05	08							
3/8 - 24 UNF	H1		-	-	-	-	12218	00	-	-	08							
	H2		-	-	-	-	12268	00	-	05	08							
	H3		-	-	-	-	12318	00	01	05	08							
	H4		-	-	-	-	12368	00	-	05	08							
7/16 - 14 UNC	H2		-	-	-	-	12270	00	-	-	08							
	H3		-	-	-	-	12320	00	01	05	08							
	H5		-	-	-	-	12420	00	-	05	08							
7/16 - 20 UNF	H2		-	-	-	-	12272	00	-	-	08							
	H3		-	-	-	-	12322	00	01	05	08							
	H5		-	-	-	-	12422	00	-	05	08							
1/2 - 13 UNC	H1		-	-	-	-	12224	00	-	-	08							
	H2		-	-	-	-	12274	00	-	05	08							
	H3		-	-	-	-	12324	00	01	05	08							
	H5		-	-	-	-	12424	00	-	05	08							
1/2 - 20 UNF	H1		-	-	-	-	12226	00	-	-	08							
	H2		-	-	-	-	12276	00	-	-	08							
	H3	-	-	-	-	12326	00	01	05	08								
	H5	-	-	-	-	12426	00	-	-	08								
5/8 - 11 UNC	H3	-	-	-	-	12332	00	01	05	08								
	H5	-	-	-	-	12432	00	-	05	08								
5/8 - 18 UNF	H3	-	-	-	-	12334	00	01	05	08								
	H5	-	-	-	-	20130	00	-	05	08								
3/4 - 10 UNC	H3	-	-	-	-	12336	00	01	05	08								
	H5	-	-	-	-	12436	00	-	05	08								
3/4 - 16 UNF	H3	-	-	-	-	12338	00	01	-	08								
	H5	-	-	-	-	20134	00	-	05	08								

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
105	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





GENERAL PURPOSE

List 105B

HSS	S/O	BR
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Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P-2P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix							
				Bright	S/O						
0 - 80 UNF	H1	2	12001	00	-	1.62	0.311	0.350	0.140	0.109	0.188
1 - 64 UNC	H2		30001	00	-						
			12053	00	-						
1 - 72 UNC	H1		12005	00	-	1.68	0.370	0.409			
	H2		12055	00	-						
2 - 56 UNC	H1		12007	00	-	1.75	0.440	0.480			
			12057	00	01						
3 - 48 UNC	H2		12061	00	01	1.81	0.496	0.535			
3 - 56 UNF			12063	00	-						
4 - 40 UNC			12065	00	01	1.87	0.330	0.570			
4 - 48 UNF			12067	00	-						
5 - 40 UNC			12071	00	01	1.93	0.334	0.629			
5 - 44 UNF			12073	00	-						
6 - 32 UNC			H3	12075	00	-	2.00	0.405	0.700		
			H7	12125	00	01					
			30031	00	-						
6 - 40 UNF	H2		12077	00	01		0.401	0.696	0.167	0.131	0.251
			12079	00	-						
8 - 32 UNC	H3		12129	00	01	2.12	0.405	0.771			
	H7		12147	00	-						
8 - 36 UNF	H2		12083	00	-	2.37	0.527	0.897			
10 - 24 UNC	H3		12085	00	-						
			12135	00	01						
10 - 32 UNF	H1		12009	00	-	2.37	0.519	0.889	0.194	0.151	0.251
	H2		12089	00	-						
			12139	00	01						
			12143	00	01						
12 - 24 UNC	H3		12145	00	01	2.50	0.527	0.956	0.220	0.164	0.279
12 - 28 UNF			12301	00	01						
1/4 - 20 UNC		H2	12255	00	-						
1/4 - 28 UNF	H3	12305	00	01	2.72	0.740	1.169	0.317	0.238	0.346	
5/16 - 18 UNC			12309	00							01
5/16 - 24 UNF	H4	12313	00	01	2.93	0.807	1.295	0.380	0.285	0.401	
3/8 - 16 UNC	H3	12317	00	01							
7/16 - 14 UNC		12321	00	-	3.15	0.881	1.314	0.322	0.242	0.405	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
105B	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best

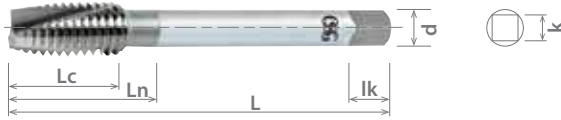




List 105A

HSS	S/O	BR
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Assembly Type Tap, Plug (4P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4P - 4.5P)			Overall Length	Thread Length		Shank Dia.	Square Width	Square Length		
			EDP Number	Coating Suffix			L	Lc				Ln	
				Bright	S/O								d
4 - 40 UNC	H2	2	16054	00	01	1.87	0.327	0.567	0.141	0.110	0.189		
5 - 40 UNC			16060	00	-	1.93	0.331	0.626					
6 - 32 UNC			16114	00	01	2.00	0.398	0.693					
8 - 32 UNC	H3		2	16118	00	01	2.12	0.398	0.764	0.168	0.131	0.252	
10 - 24 UNC				16122	00	01	2.37		0.512				0.882
10 - 32 UNF				16124	00	01		0.516		0.945	0.220		
12 - 24 UNC				16126	00	01	2.50		0.646				1.016
1/4 - 20 UNC				16300	00	01		2.72		0.705	1.134		
5/16 - 18 UNC				16304	00	-	2.93		0.768				1.256
3/8 - 16 UNC	16308	00	-	3.37	0.980	1.374		0.367		0.275			
1/2 - 13 UNC	16316	00	-										

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
105A	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best



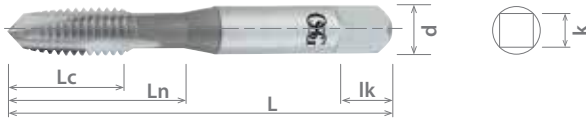


GENERAL PURPOSE

List 105+ (H7)

HSS	TiN	BR
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No. 4 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P - 5.5P)			Plug (3.5P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix		EDP Number	Coating Suffix							
				Bright	TiN		Bright	TiN	L	Lc	Ln	d	k	lk
4 - 40 UNC	H7	2	20031	00	-	-	-	-	1.87	0.326	0.566	0.140	0.109	0.188
6 - 32 UNC			17208	00	05	-	-	-	2.00	0.397	0.692			
8 - 32 UNC			-	-	-	17212	00	05	2.12		0.763	0.167	0.131	
10 - 24 UNC			-	-	-	17216	00	-	2.37	0.511	0.881	0.194	0.151	
10 - 32 UNF			-	-	-	17218	00	05						

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
105+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best

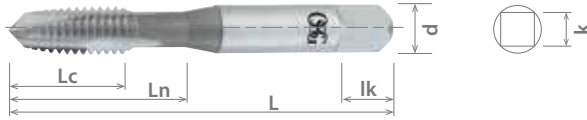




List 105H

+0.005" Oversize, Plug (4P-4.5P)

HSS	TiCN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Plug (4P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			EDP Number	Coating Suffix								
				Bright	S/O							TiCN
6 - 32 UNC	+0.005	2	15920	00	01	08	2.00	0.389	0.685	0.140	0.109	0.188
8 - 32 UNC			15928	00	01	08	2.12		0.755	0.167	0.131	0.251
10 - 24 UNC			15934	00	01	08	2.37	0.503	0.874	0.194	0.151	0.251
10 - 32 UNF			15936	00	01	08						
1/4 - 20 UNC			15900	00	01	08	2.50	0.637	1.007	0.255	0.190	0.311
1/4 - 28 UNF			15902	00	01	08						
5/16 - 18 UNC		15908	00	01	08	2.72	0.700	1.129	0.317	0.238	0.374	
5/16 - 24 UNF		15912	00	-	08							0.692
3/8 - 16 UNC		15916	00	01	08	2.93	0.759	1.248	0.380	0.285	0.437	
3/8 - 24 UNF		15918	00	01	08							0.748
7/16 - 14 UNC		15940	00	01	08	3.15	0.881	1.314	0.322	0.242	0.405	
7/16 - 20 UNF		15942	00	01	08							
1/2 - 13 UNC		15924	00	01	08	3.37	0.940	1.374	0.367	0.274	0.437	
1/2 - 20 UNF		15926	00	01	08							
5/8 - 11 UNC		15932	00	01	08	3.81	1.090	1.562	0.480	0.359	0.562	
3/4 - 10 UNF		15938	00	01	08	4.25	1.220	1.712	0.590	0.442	0.688	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
105H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





GENERAL PURPOSE

List 142H

HSS

BR

+0.005" Oversize, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5 - 4.5P)						
			Bright						
				L	Lc	Ln	d	k	lk
M4 x 0.7	+0.005"	2	1101200100	54	10	19.2	4.26	3.33	6.4
M5 x 0.8			1101200300	60	13	22.5	4.92	3.86	
M6 x 1.0			1101200500	63	16	25.6	6.47	4.85	
M8 x 1.25		3	1101200700	69	18	28.7	8.07	6.05	9.5
M10 x 1.5			1101200900	74	19	31.7	9.67	7.26	
M12 x 1.75			1101201100	85	24	34.8	9.32	6.98	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010 1018	1035 1045	1065	4140 4340													
142H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45					25-75	40-80	40-65							

good best

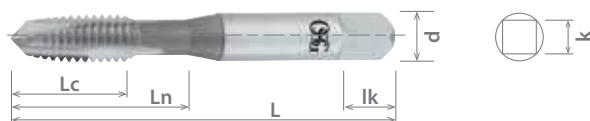




List 142

Plug (3.5P-4.5P)

HSS	TiCN	TiN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)					Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	
			EDP Number	Coating Suffix										
				Bright	S/O	TiN	TiCN							
M1.6 x 0.35	D3	2	19815	00	-	-	-	41	7	-	3.58	2.79	4.8	
M2 x 0.4			19820	00	01	-	-	44	11	-				
M2.5 x 0.45			19821	00	01	-	-	46	12	-				
M3 x 0.5	D4		19801	00	01	05	08	49	8	15.8	4.26	3.33	6.4	
M3.5 x 0.6			19822	00	01	-	-	50	10	17.5				
M4 x 0.7			19804	00	01	05	08	54	12	19.3				
M4.5 x 0.75	D5		19823	00	01	-	-	60	12	22.2	4.92	3.86	7.9	
M5 x 0.8			19807	00	01	05	-		13	22.4				
M6 x 1.0			19810	00	01	05	08		63	16				25.7
M7 x 1.0	D6	19824	00	01	-	-	69	17	-	8.07	6.05	9.5		
M8 x 1.25		19813	00	01	05	08		18	28.7					
M8 x 1.0		19814	00	01	-	-		-	-					
M10 x 1.5	D5	19825	00	01	-	-	74	19	31.6	9.67	7.26	11.1		
M10 x 1.25		19816	00	01	05	08							-	-
M10 x 1.0		19827	00	01	-	-							-	-
M12 x 1.75	D6	19826	00	01	-	-	85	23	34.9	9.32	6.98	12.7		
M12 x 1.5		19819	00	01	05	08							-	-
M12 x 1.25		19829	00	-	-	-							-	-
M14 x 2.0	D7	19828	00	01	-	-	91	25	37.4	10.89	8.18	14.3		
M14 x 1.5		19831	00	01	-	-							-	-
M14 x 1.25		19838	00	-	-	-							-	-
M16 x 2.0	D6	19830	00	01	-	-	96	27	39.7	12.19	9.14	15.9		
M16 x 1.5		19833	00	-	-	-							-	-
M16 x 1.25		19832	00	01	-	-							-	-
M18 x 2.5	D7	19833	00	-	-	-	102	40.7	13.76	10.31	17.5			
M18 x 1.5		19835	00	-	-	-						-	-	
M18 x 1.5		19834	00	01	-	-						-	-	
M20 x 2.5	D7	19837	00	-	-	-	113	31	45.0	16.56	12.42	17.5		
M20 x 1.5		19839	00	-	-	-							-	-
M20 x 1.5	D6	3	19836	00	-	-	-	-	-	-	-	-		

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
142	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best



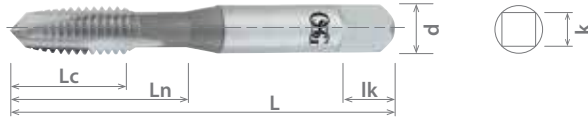


GENERAL PURPOSE

List 122

HSSE	S/O	BR
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EX-POT, JIS, Plug (4.5P-5.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (4.5P - 5.5P)							
			Bright	S/O	L	Lc	Ln	d	k	lk
M3 x 0.5	JIS 2	3	15368	16710	46	10	18.9	4.00	7.00	3.2
M4 x 0.7			15386	16714	52	13	21.0	5.00		
M5 x 0.8			15401	-	60	15	23.9	5.50		
M6 x 1.0			15413	16722	62	19	29.0	6.00	8.00	4.5
M8 x 1.25			15431	16728	70	22	37.0	6.20		
M10 x 1.5			15456	16734	75	24	41.0	7.00	9.00	6.5
M10 x 1.25			15460	-						
M12 x 1.75			15480	-	82	29	48.0	8.50	11.00	8.0
M12 x 1.5			15483	-						
M14 x 2.0			15509	-	88	30	52.0	10.50	13.00	10.0
M14 x 1.5			15512	-						
M16 x 2.0			15557	-	95	32	55.0	12.50	14.00	11.0
M16 x 1.5			15560	-						
M18 x 2.5			15593	-	100	37	58.0	14.00	15.00	12.0
M18 x 1.5			15601	-						
M20 x 2.5			15629	-	105	38	63.0	15.00	16.00	13.0
M20 x 1.5			15637	-						
M22 x 2.5			15645	-	115	45	66.0	17.00	18.00	15.0
M24 x 3.0			15673	-	120	45	66.0	19.00	18.00	15.0

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
122	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

good best

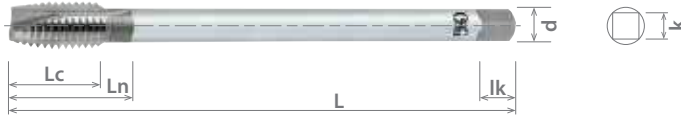




List 917

Long Shank*, Plug (3.5P-4.5P)

HSS	<input checked="" type="checkbox"/> S/O	<input type="checkbox"/> BR
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P-4.5P)			Long Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix							
				Bright	S/O						
4 - 40 UNC	H2	2	12940	00	-	4.0	0.283	0.515	0.140	0.109	0.188
6 - 32 UNC			12941	00	-						
8 - 32 UNC			12942	00	01	6.0	0.389	0.685	0.167	0.131	
			12944	00	01						
10 - 24 UNC			12945	00	01	4.0	0.503	0.874	0.194	0.151	
			12946	00	01						
10 - 32 UNF			12947	00	01	4.0	0.637	1.007	0.255	0.190	
			12948	00	01						
1/4 - 20 UNC			12949	00	01	4.0	0.834	1.263	0.317	0.238	
			12950	00	01						
1/4 - 28 UNF			12939	-	01	4.0	0.925	1.413	0.380	0.285	
			12951	00	01						
5/16 - 18 UNC			21030	00	-	4.0	0.881	1.314	0.322	0.242	
			12952	00	-						
	12935	-	01	4.0							
5/16 - 24 UNF	12937	-	01	6.0	0.940	1.374	0.367	0.274			
	12957	-	01								
3/8 - 16 UNC	21036	00	-	4.0	1.090	1.562	0.480	0.359			
	12933	-	01								
	21038	00	01	4.0							
3/8 - 24 UNF	12953	00	01	6.0	0.940	1.374	0.367	0.274			
	12958	-	01								
7/16 - 14 UNC	21044	00	01	4.0	0.940	1.374	0.367	0.274			
	12954	00	01								
7/16 - 20 UNF	21052	00	-	6.0	1.090	1.562	0.480	0.359			
	12994	-	01								
1/2 - 13 UNC	12955	00	01	4.0	0.940	1.374	0.367	0.274			
	21060	00	-								
1/2 - 20 UNF	12956	00	-	6.0	1.090	1.562	0.480	0.359			
	12956	00	-								
5/8 - 11 UNC											

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
917	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





GENERAL PURPOSE LS

List 11118

HSS

S/O

Extended Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (3.5P - 4.5P)							
			S/O	L	Lc	Ln	d	k	Ik	
M4 x 0.7	D4	2	1111800201	101	10	19.3	4.26	3.33	6.4	
			1111800301	152						
M5 x 0.8			1111800401	101						
	1111800501		152							
M6 x 1.0	D5		1111800601	101	16	25.7	6.47	4.85		7.3
			1111800701	152						
M8 x 1.25		1111800801	101							
	1111800901	152								
M10 x 1.5	D6	3	1111801001	101	19	31.7	9.67	7.26	10.2	
			1111801101	152						
M12 x 1.75			1111801201	101						
			1111801301	152						

Packed: 1 pc.
Available Steam Oxide coating only.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
11118	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





List S111

HSS

BR

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)						
			Bright	L	Lc	Ln	d	k	lk
00 - 90 UNS	H1	2	1050000	1.56	0.26	0.319	0.141	0.110	0.189
	H2		1320000						
00 - 96 UNS	H1		1080000						
	H2		2056000						

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Suggested Hole Size Limits for Different Lengths of Engagement

Tap Size	Basic O.D.	Basic P.D.	Depth of Thread Hole					
			Up to 1/3D		1/3 to 1/2D		1/2 to 3D	
			Min.	Max.	Min.	Max.	Min.	Max.
00-90	0.047	0.0398	0.0373	0.0385	0.0380	0.0392	0.0388	0.0400
00-96	0.047	0.0402	0.0379	0.0393	0.0388	0.0406	0.0397	0.0415

Work Material

List No.	P														K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels									
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC			
	1010 1018	1035 1045	1065																		4140 4340		
S111	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>												
SFM	25-80	20-50	20-45						25-75	40-80	40-65												

good best





List 16615

NEW **CARBIDE** **BR**

A-CHT, Coolant-Through, DIN Overall Length, Bottom (1.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Bright						
			L	Lc	Ln	d	k	lk		
12 - 24 UNC	H3	3	1661500200	3.14	0.500	0.944	0.220	0.165	0.281	
12 - 28 UNF			1661500300							
1/4 - 20 UNC	H5		1661500400	3.54	0.665	1.377	0.317	0.238	0.375	
1/4 - 28 UNF	H4		1661500500							
5/16 - 18 UNC	H5	4	1661500600	3.93	0.751	0.380	0.286	0.438		
5/16 - 24 UNF	H4		1661500700							
3/8 - 16 UNC	H5		1661500800	3.93	0.858	-	0.322	0.242	0.406	
3/8 - 24 UNF	H4		1661500900							
7/16 - 14 UNC	H5		1661501000	4.33	0.921	-	0.367	0.275	0.438	
7/16 - 20 UNF			1661501100							
1/2 - 13 UNC			1661501200							
1/2 - 20 UNF			1661501300							

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 Note: Reduce SFM 50% - 70% while using external coolant.



Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
16615									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
SFM									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best





List 16610

NEW

CARBIDE

BR



A-CHT, Coolant-Through, DIN Overall Length, Bottom (1.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P)	Bright						
M5 x 0.8	D4	3	1661000000	70	10	25	4.92	3.8	6.35	
M6 x 1.0	D5		1661000100	80	12	31	6.47	4.8	7.92	
M8 x 1.25			1661000200	90	15	35	8.07	6.0	9.52	
M10 x 1.5	D6	4	1661000300	100	18	39	9.67	7.2	11.11	
M10 x 1.25	D5		1661000400							
M12 x 1.75	D6		1661000500	110	21	-	9.32	6.9		
M12 x 1.5			1661000600	100		-				
M12 x 1.25			1661000700			-				

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 Note: Reduce SFM 50% - 70% while using external coolant.

ATP

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
16610									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
SFM									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							

good best

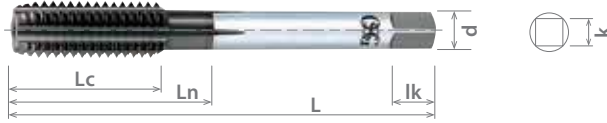




List 311



VX-OT, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length		Neck Length	Shank Dia.	Square Width	Square Length	Recommended WH-70 Drill Size		
			Modified Bottom (2.5P-3P)		L	Lc						Ln	d
4 - 40 UNC	2B	4	3110108	2.20	0.295	0.705	0.141	0.110	0.189	0.252	2.3mm		
6 - 32 UNC			3110208								0.370	0.783	2.8mm
8 - 32 UNC			3110308	2.48	0.374	0.827					3.5mm		
10 - 24 UNC			3110408	2.75	0.492	0.976					4.0mm		
10 - 32 UNF			3110508		0.500	0.984					4.2mm		
1/4 - 20 UNC			3110608	3.15	0.594	1.177					5.3mm		
1/4 - 28 UNF		3110708	0.606		1.189	5.6mm							
5/16 - 18 UNC		3110808	3.54	0.665	1.378	6.8mm							
5/16 - 24 UNF		3110908				0.752	0.318	0.238	0.374	7.1mm			
3/8 - 16 UNC		3111008	5	3.93	0.752	-	0.381	0.286	0.437	8.2mm			
3/8 - 24 UNF		3111108								0.858	0.323	0.242	0.406
7/16 - 14 UNC		3111208		0.858	-	-				0.323	0.242	0.406	9.6mm
7/16 - 20 UNF		3111308											10.1mm
1/2 - 13 UNC		3111408		4.33	0.921	-				0.367	0.275	0.437	11.1mm
1/2 - 20 UNF		3111508		3.93	0.961	-				-	-	-	11.7mm

Packed: 1 pc.
Available V coating only.



Tapping Guidelines

1. Set tapping speed between 3 ~ 10 SFM.
2. Choose largest hole-size possible, within the recommended tolerance range.
3. Use a non-water soluble cutting fluid.
4. Use highly rigid machine and tool holders.
5. Tapping by hand is NOT recommended.
6. For tapping length over 1.5D, step feed is recommended.

List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High																
	1010	1035	1065	4140															
	1018	1045		4340															
311																			
SFM																			

good best

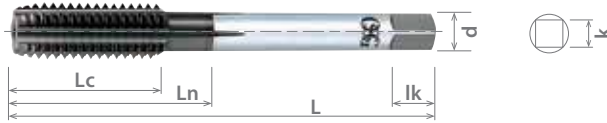




List 341

CARBIDE  V

VX-OT, JIS, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Recommended WH-70 Drill Size	
			Modified Bottom (2.5P - 3P)								
			V	L	Lc	Ln	d	k	lk		
M2.6 x 0.45	OH3	4	8330049	44	15	18.1	3.0	2.5	5	2.2mm	
M3 x 0.5			8330055	46	12	20.2	4.0	3.2	6	2.6mm	
M4 x 0.7			8330061	52	14	22.7	5.0	4.0	7	3.4mm	
M5 x 0.8			8330067	60	18	26.1	5.5	4.5		4.3mm	
M6 x 1.0			8330073	62	21	31.6	6.0		5.2mm		
M8 x 1.25		5	5	8330085	70	22	-	6.2	5.0	8	7.0mm
M8 x 1.0				8330087			-				7.2mm
M10 x 1.5				8330097	75	24	-	7.0	5.5	9	8.8mm
M10 x 1.25				8330099			-				9.0mm
M10 x 1.0				8330101			-				9.2mm
M12 x 1.75				8330115	82	29	-	8.5	6.5	9	10.6mm
M12 x 1.5				8330117			-				10.8mm
M12 x 1.25				8330119			-				11.0mm
M12 x 1.0				OH4	8330121	-	11.2mm				
M14 x 2.0				OH3	6	8330123	88	30	-	10.5	8.0
M14 x 1.5	OH4	8330125	-	12.8mm							
M16 x 2.0	OH3	8330131	95	32		-	12.5	10.0	13	14.4mm	
M16 x 1.5	OH4	8330133				-				14.8mm	
M18 x 2.5	OH4	6	8330139	100		37	-	14.0	11.0	14	16.0mm
M18 x 1.5			8330141				-				16.8mm
M20 x 2.5			8330147	105		-	15.0	12.0	15	18.0mm	
M20 x 1.5			8330149			-				18.8mm	

Packed: 1 pc.
Available V coating only.



Tapping Guidelines

1. Set tapping speed between 3 ~ 10 SFM.
2. Choose largest hole-size possible, within the recommended tolerance range.
3. Use a non-water soluble cutting fluid.
4. Use highly rigid machine and tool holders.
5. Tapping by hand is NOT recommended.
6. For tapping length over 1.5D, step feed is recommended.

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	1010	1035	1065	4140														
	1018	1045		4340														
341																		
SFM																		

good best





List 329

CARBIDE DIA

DIA-OTT, UNJC, UNJF, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)	Diamond						
			L	Lc						
4 - 40 UNC	2B	3	3297016	2.26	0.299	0.708	0.140	0.109	0.188	
	3B		3291216							
6 - 32 UNC	2B		3297116	2.55	0.374	0.787	0.167	0.131	0.251	
	3B		3291316							
8 - 32 UNC	2B		3297216	2.83	0.500	0.984	0.194	0.151	0.251	
	3B		3291416							
10 - 24 UNC	2B	3297316	3.23	0.606	1.188	0.255	0.190	0.287		
	3B	3291516								
10 - 32 UNF	2B	3297416	3.54	0.665	1.377	0.317	0.238	0.374		
	3B	3291616								
1/4 - 20 UNC	2B	3297516	3.93	0.751	1.377	0.380	0.285	0.437		
	3B	3291716								
1/4 - 28 UNF	2B	3297616	4.33	0.921	1.377	0.322	0.242	0.405		
	3B	3291816								
5/16 - 18 UNC	2B	3297716	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3298516								
5/16 - 24 UNF	2B	3297816	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3298616								
3/8 - 16 UNC	2B	3297916	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3298716								
3/8 - 24 UNF	2B	3298016	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3298816								
7/16 - 14 UNC	2B	3298116	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3298916								
7/16 - 20 UNF	2B	3298216	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3299016								
1/2 - 13 UNC	2B	3298316	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3299116								
1/2 - 20 UNF	2B	3298416	4.33	0.921	1.377	0.367	0.274	0.437		
	3B	3299216								

Packed: 1 pc.
 Available Diamond coating only.
 *3B fit taps conform to UNJ Aerospace internal threading applications.



Work Material																	
List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting						
329										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
SFM										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	

good best





List 359

CARBIDE DIA

DIA-OTT, JIS, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			Diamond	L	Lc	Ln	d	k	lk
M3 x 0.5	6H	3	3590116	46	11	19	4.0	3.2	6
M4 x 0.7		4	3590216	52	13	21	5.0	4.0	7
M5 x 0.8			3590316	60	16	24	5.5		
M6 x 1.0			3590416	62	19	29	6.0		
M8 x 1.25			3590516	70	22	-	6.2	5.0	
M10 x 1.5		5	3590616	75	24	-	7.0	5.5	8
M12 x 1.75			3590716	82	29	-	8.5	6.5	9

Packed: 1 pc.
Available Diamond coating only.



Work Material

List No.	P										M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome					
	Low	Med.	High			300	400	17-4 PH		6061	Casting							Inconel	6Al4V			
	1010	1035	1065			4140	4340	300		400	17-4 PH	6061	7075					30 HRC				
359																						
SFM																						

good best





List 319

CARBIDE

BR

DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Bottom (1.5P - 2P)	Bright							
					L	Lc	Ln	d	k	lk	
4 - 40 UNC	2B	3	3190000		2.20	0.295	0.704	0.140	0.109	0.188	
6 - 32 UNC			3190100	0.370		0.783					
8 - 32 UNC			3190200	2.48	0.374	0.826	0.167	0.131			
10 - 24 UNC			3190300		0.492	0.976					
10 - 32 UNF			3190400	2.75	0.500	0.984	0.194	0.151			
1/4 - 20 UNC			3190500		0.594	1.177					
1/4 - 28 UNF		3190600	3.14	0.606	1.188	0.255	0.190	0.311			
5/16 - 18 UNC		3190700		0.665	1.377				0.317	0.238	0.374
5/16 - 24 UNF		3191500	3.93	0.751		0.380	0.285	0.437			
3/8 - 16 UNC		3190900		0.858							
3/8 - 24 UNF		3191000									
7/16 - 14 UNC		3191100	4.33	0.921	-	0.367	0.274	0.437			
7/16 - 20 UNF		3191200									
1/2 - 13 UNC		3191300									
1/2 - 20 UNF		3191400									

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		Other				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome	
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)					
1010	1035	1065	4140	4340				6061	7075									
319									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							
SFM									40-90	60-160	55-120				40-80	30-60	15-40	

good best





List 10059

CARBIDE BR

Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)						
			Bright	L	Lc	Ln	d	k	lk
10 - 24 UNC	2B	4	1005910100	2.44	0.492	0.866	0.194	0.151	0.251
10 - 32 UNF			1005910200	2.45	0.500	0.874			
12 - 24 UNC			1005910300	2.46	0.496	0.933			
1/4 - 20 UNC			1005910400	2.57	0.594	0.996	0.255	0.190	0.311
1/4 - 28 UNF			1005910500	2.58	0.606	1.007			
5/16 - 18 UNC			1005910600	2.72	0.665	1.125	0.317	0.238	0.374
5/16 - 24 UNF			1005910700						
3/8 - 16 UNC			1005910800						
3/8 - 24 UNF			1005910900	2.93	0.751	1.251	0.380	0.285	0.437

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)				
1010	1035	1065	4140	4340													
10059									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SFM									40-90	60-160	55-120				40-80	30-60	15-40

good best





CARBIDE

BR

List 10061

DIN Overall Length, Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Plug (4P - 4.5P)						
			Bright	Bright						
M3 x 0.5	D3	3	1006101100	1006100100	49	7	17.2	3.58	2.79	4.8
M4 x 0.7	D4	4	1006101300	1006100300	54	10	20.8	4.26	3.33	6.4
M5 x 0.8			1006101400	1006100400	60	11	24.4	4.92	3.86	
M6 x 1.0	1006101500		1006100500	63	14	28.0	6.47	4.85	7.3	
M8 x 1.25	D5		1006101800	1006100800	69	15	28.6	8.07	6.05	9.5
M8 x 1.0		1006101700	1006100700							
M10 x 1.5	D6		1006102000	1006101000	74	18	31.8	9.67	7.26	11.1
M10 x 1.25	D5		1006101900	1006100900						

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting						
10061	1010	1035	1065	4140													
SFM	1018	1045		4340					40-90	60-160	55-120						

good best





List 349

CARBIDE BR

JIS, Modified Bottom (2.5P-3.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length					
			Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3.5P)											
			Bright	Bright											
M1.4 x 0.3	OH2	3	22800	24000	34	8	11.5	2.99	2.48	5.0					
M1.6 x 0.35	OH3		22801	24001	36	10	13.4								
M1.7 x 0.35			22802	24002											
M1.8 x 0.35			22803	24003											
M2 x 0.4			22804	24004	40	11	16.0								
M2.3 x 0.4			22806	24006	42	13									
M2.5 x 0.45			22807	24007	44		16.9								
M2.6 x 0.45			22808	24008											
M3 x 0.5			22810	24010	46	10	13.0				3.98	3.20	5.9		
M4 x 0.7			22814	24014	52	13	14.3				5.00	3.98			
M5 x 0.8			22817	24017	60	16	17.8				5.51	4.49	7.0		
M6 x 1.0			22820	24020	62	18	-				5.99				
M8 x 1.25			OH4	4	22830	24030	70				21	-	6.19	5.00	8.0
M8 x 1.0			OH3		22831	24031						-			
M10 x 1.5	OH4	22833	24033		75	19	-								
M10 x 1.25		22834	24034				-								
M10 x 1.0	OH3	22835	24035		82	29	-	7.01	5.51						
M12 x 1.75	OH5	22837	24037				-								
M12 x 1.5	OH4	22839	24039		80	24	-								
M12 x 1.25		22840	24040				-								
M12 x 1.0	OH3	22841	24041		88	29	-	10.49	8.00	10.9					
*M14 x 2.0	OH4	24046	24045				-								
*M14 x 1.5		24048	24047		88	21	-								
*M16 x 2.0	OH5	24052	24051		95	29	-	12.49	10.00	13.0					
*M16 x 1.5	OH4	24054	24053				-								
*M18 x 2.5	OH5	24056	24055		100	35	-	13.99	10.99	13.9					
*M18 x 1.5	OH4	24060	24059	95	29	-									
*M20 x 2.5	OH5	24062	24061	105	35	-	15.01	11.98	15.0						
*M20 x 1.5	OH4	24066	24065	95	29	-									
*M22 x 2.5	OH5	24068	24067	115	35	-	16.99	13.00	16.0						
*M22 x 1.5	OH4	24072	24071	95	29	-									
*M24 x 3.0	OH5	24074	24073	120	35	-	18.99	15.01	18.0						
*M24 x 1.5	OH4	24078	24077	95	29	-									

Packed: 1 pc.
 EDP's listed above are stocked standard, other coatings available upon request.
 Specify treatment at time of order.
 *Brazed Carbide



Work Material																	
List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting						
349	1010	1035	1065	4140	4340				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
SFM	1018	1045							40-90	60-160	55-120				40-80	30-60	15-40

good best





CARBIDE

BR

List 356

LT-OTT, JIS, Long Shank, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Long Overall Length	Thread Length		Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Bright		Lc	Ln			
M6 x 1.0	OH3	3	22929	L	100	24	-	6.0	4.5	7
M8 x 1.25			22933	L		22	-			
M10 x 1.5	OH4	4	22941	L	150	24	-	7.0	5.5	8
M10 x 1.25			22945	L			-			
M10 x 1.0			22949	L		-	-			
M12 x 1.75			22953	L		29	-	8.5	6.5	9

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting						
356									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
SFM									40-90	60-160	55-120				40-80	30-60	15-40

good best



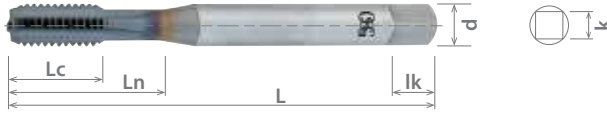


List 10051

V-XPМ-HT, Modified Bottom (2.5P-3P)



NEW SIZES XPM V



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			V	L	Lc	Ln	d	k	lk
6 - 32 UNC	H3	4	1005110508	2.00	0.374	0.688	0.140	0.109	0.188
8 - 32 UNC			1005110808	2.12		0.751	0.167		
10 - 24 UNC			1005111008	2.37	0.500	0.874	0.194	0.151	
10 - 32 UNF			1005111208						
1/4 - 20 UNC	H5	4	1005111408	2.50	0.598	1.000	0.255	0.190	0.287
1/4 - 28 UNF	H4		1005111608		0.586	0.988			
5/16 - 18 UNC	H5	5	1005111808	2.72	0.665	1.125	0.317	0.238	0.374
5/16 - 24 UNF	H4		1005112008						
3/8 - 16 UNC	H5		1005112208	2.93	0.751	1.251	0.380	0.285	
3/8 - 24 UNF	H4		1005112408						
1/2 - 13 UNC	H5	5	1005113008	3.37	0.921	1.933	0.367	0.274	
1/2 - 20 UNF			1005113208						
9/16 - 12 UNC			1005113408	3.59	1.000	1.972	0.429	0.322	0.500
9/16 - 18 UNF			1005113608						
5/8 - 11 UNC	H6	1005113808	3.81	1.091	2.126	0.480	0.360	0.563	
5/8 - 18 UNF	H5	1005114008						0.563	
3/4 - 10 UNC	H6	5	1005114208	4.25	1.201	2.433	0.590	0.442	0.689
3/4 - 16 UNF	H5		1005114408						
7/8 - 9 UNC	H7		1005114608	4.68	1.335	2.654	0.697	0.523	
7/8 - 14 UNF	H6		1005114808						
1 - 8UNC	H7	1005115008	5.12	1.500	3.012	0.800	0.600	0.811	
1 - 12 UNF	H6	1005115208							

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P				Die Steels	M			K Cast Iron	N		S		H					
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
10051				4140 4340															
SFM				15-20															8-15

good best





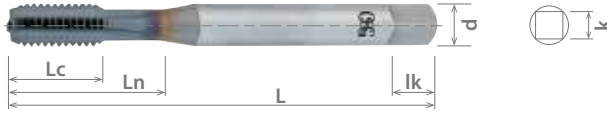
NEW SIZES

XPM

V

List 11051

V-XPM-HT, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length		Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)		L	Lc				
M3 x 0.5	D3	4	1105100108	50	6	16.0	3.58	2.79	4.8	
M4 x 0.7	D4		1105100208	55	8	19.1	4.26	3.33	6.4	
M5 x 0.8	D4		1105100308	62	9	22.2	4.92	3.86	7.3	
M6 x 1.0	D5		1105100408	63	12	25.4	6.47	4.85	9.5	
M8 x 1.25	D5	5	1105100508	74	18	31.8	9.67	7.26	11.1	
M8 x 1.0	D6		1105100608							
M10 x 1.5	D6		1105100708							
M10 x 1.25	D5		1105100808							
M10 x 1.0	D5		1105100908							
M12 x 1.75	D6		1105101008							
M12 x 1.5			1105101108							
M12 x 1.25			1105101208							
M14 x 2.0			D7	1105101308						
M14 x 1.5	D6		1105101408	96	24	50.1	10.89	8.17		12.7
M16 x 2.0	D7		1105101508							
M16 x 1.5	D6		1105101608							
M18 x 2.5	D7	1105101708								
M18 x 1.5	D6	1105101808	113	30	55.0	13.76	10.31	15.8		
M20 x 2.5	D7	1105101908								
M20 x 1.5	D6	1105102008								
M22 x 2.5	D7	1105102108								
M22 x 1.5	D6	1105102208	119	30	61.8	16.56	12.42	17.4		
M24 x 3.0	D8	1105102308								
M24 x 1.5	D6	1105102408								
M24 x 1.5	D6	1105102408								

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Titanium	H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Nickel Alloy	Hardened Steels		
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC
11051				4140 4340												<input checked="" type="checkbox"/>
SFM				15-20												<input type="checkbox"/>

good best



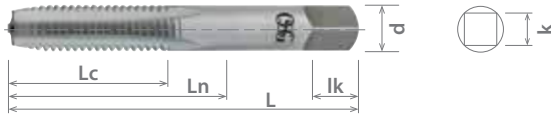


List 305

Plug (3.5P-4.5P)



HSS-Co BR



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length						
			Plug (3.5P - 4.5P)												
			Bright												
				L	Lc	Ln	d	k	lk						
4 - 40 UNC	H2	3	1745000	1.87	0.562	0.645	0.140	0.109	0.188						
6 - 32 UNC			1745100	2.00	0.688	-									
8 - 32 UNC			1745200	2.12	0.751	-									
10 - 24 UNC			1745300	2.37	0.874	-									
10 - 32 UNF			1745400		-	-									
1/4 - 20 UNC	H3	4	1734000	2.50	1.000	-	0.255	0.190	0.287						
1/4 - 28 UNF		3	1745600			-				-					
5/16 - 18 UNC	H3	3	1739000	2.72	1.125	-	0.317	0.238	0.374						
5/16 - 24 UNF			1734100			-				-					
3/8 - 16 UNC			1739100			-				-					
3/8 - 24 UNF		4	4	1734200	2.93	1.251	-	0.380	0.285	0.437					
7/16 - 14 UNC				1739200			-				-				
7/16 - 20 UNF				1739600			-				-				
1/2 - 13 UNC		4	4	1739700	3.15	1.437	-	0.322	0.242	0.405					
1/2 - 20 UNF				1734300			-				-				
5/8 - 11 UNC				1739300			3.37				1.657	-	0.367	0.274	0.437
5/8 - 18 UNF				1734400								-			
3/4 - 10 UNC				1739400			3.81				1.811	-	0.480	0.359	0.562
3/4 - 16 UNF				1734500								-			
				1739500	4.25	2.000	-	0.590	0.442	0.688					

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
305				☐	☑								☑	☐			
SFM				20-40	15-20								15-35	8-15			

☐ good ☑ best





List 10052

VP-DC-HT, DIN Overall Length, Bottom (1.5P-2P)



VC10

V



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (1.5P - 2P)						
			V	L	Lc	Ln	d	k	lk
1/4 - 20 UNC	H3	4	1005200108	3.14	0.598	1.181	0.255	0.190	0.311
	H5		1005200208						
1/4 - 28 UNF	H3		1005200308						
5/16 - 18 UNC	H3		1005200408	3.54	0.665	1.377	0.317	0.238	0.374
	H5		1005200508						
5/16 - 24 UNF	H3		1005200608	3.93	0.751	1.712	0.322	0.242	0.405
3/8 - 16 UNC	H5		1005200708						
	H3		1005200808						
3/8 - 24 UNF	H3		1005200908	4.33	0.921	1.933	0.367	0.274	0.437
7/16 - 14 UNC	H5		1005201008						
	H3		1005201108						
7/16 - 20 UNF	H3		1005201208	3.93	0.858	1.712	0.322	0.242	0.405
	H5		1005201308						
1/2 - 13 UNC	H3		1005201408	4.33	0.921	1.933	0.367	0.274	0.437
	H5		1005201508						
1/2 - 20 UNF	H3		1005201608	3.93	1.000	1.972	0.429	0.322	0.500
	H5	1005201708							
9/16 - 12 UNC	H3	1005201808	4.33	1.090	2.125	0.480	0.359	0.562	
	H5	1005201908							
9/16 - 18 UNF	H3	1005202008	3.93	1.200	2.433	0.590	0.442	0.688	
	H5	1005202108							
5/8 - 11 UNC	H3	1005202208	4.33	1.334	2.653	0.697	0.522	0.751	
	H5	1005202308							
5/8 - 18 UNF	H3	1005202408	3.93	1.500	3.011	0.800	0.600	0.811	
	H5	1005202508							
3/4 - 10 UNC	H3	1005202608	4.92	1.200	2.433	0.590	0.442	0.688	
	H5	1005202708							
3/4 - 16 UNF	H3	1005202808	4.33	1.334	2.653	0.697	0.522	0.751	
	H5	1005202908							
7/8 - 9 UNC	H3	1005203008	5.51	1.334	2.653	0.697	0.522	0.751	
	H5	1005203108							
7/8 - 14 UNF	H3	1005203208	4.92	1.500	3.011	0.800	0.600	0.811	
	H5	1005203308							
1 - 8 UNC	H3	1005203408	6.29	1.500	3.011	0.800	0.600	0.811	
	H5	1005203508							

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
10052									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM									25-75		40-65							

good best



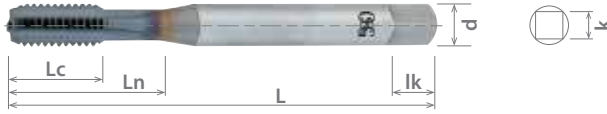
List 11052

VP-DC-HT, DIN Overall Length, Bottom (1.5P-2P)



VC10

V



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	L	Lc	Ln	d	k	lk
M6 x 1.0	D5	3	1105200108	80	12	30.0	6.47	4.85	7.9
M8 x 1.25			1105200208	90	15	35.0	8.07	6.05	9.5
M10 x 1.5	D6	4	1105200508	100	18	39.0	9.67	7.26	11.1
M10 x 1.25			1105200408						
M10 x 1.0	D5	4	1105200308	90	21	49.1	9.32	6.98	11.1
M12 x 1.75	D6		1105200808	110					
M12 x 1.5		D6	4	1105200708	100	24	50.1	10.89	8.18
M12 x 1.25	1105200608								
M14 x 2.0	D7	4	1105201008	110	24	54.0	12.19	9.14	14.3
M14 x 1.5			1105200908						
M16 x 2.0	D7	4	1105201208	110	30	55.0	13.76	10.31	15.9
M16 x 1.5			1105201108						
M18 x 2.5	D7	4	1105201508	125	30	61.8	16.56	12.42	17.5
M18 x 2.0			1105201408						
M18 x 1.5	D6	5	1105201308	110	36	68.4	19.30	14.48	19.1
M20 x 2.5			1105201808						
M20 x 2.0	D7	5	1105201708	140	36	67.4	17.70	13.28	19.1
M20 x 1.5			1105201608						
M22 x 2.5	D8	5	1105202108	140	36	67.4	17.70	13.28	19.1
M22 x 2.0			1105202008						
M22 x 1.5	D6	5	1105201908	125	36	68.4	19.30	14.48	19.1
M24 x 3.0			1105202408						
M24 x 2.0	D8	5	1105202308	160	36	68.4	19.30	14.48	19.1
M24 x 1.5			1105202208						

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
11052	1010	1035	1065	4140					<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM	1018	1045		4340					25-75		40-65							

good best



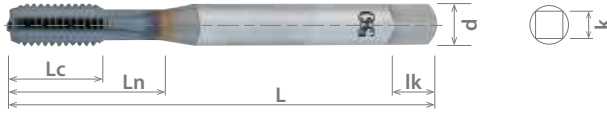


EXOTAP® DC-OIL

Premium Design for Cast Iron and Cast Aluminum

List 10053

VPO-DC-HT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)						
			V						
			L	Lc	Ln	d	k	lk	
1/4 - 20 UNC	H3	4	1005300108	3.14	0.598	1.181	0.255	0.190	0.287
	H5		1005300208						
1/4 - 28 UNF	H3		1005300308	3.54	0.665	1.377	0.317	0.238	0.374
5/16 - 18 UNC	H5		1005300408						
	5/16 - 24 UNF		H3	1005300508	3.93	0.751	0.380	0.285	0.437
H5			1005300608						
3/8 - 16 UNC	H3		1005300708	4.33	0.921	1.933	0.367	0.274	0.437
	H5		1005300808						
3/8 - 24 UNF	H3		1005300908	3.93	0.858	1.712	0.322	0.242	0.405
	H5		1005301008						
7/16 - 14 UNC	H3		1005301108	4.33	1.000	1.972	0.429	0.322	0.500
	H5		1005301208						
7/16 - 20 UNF	H3		1005301308	3.93	1.090	2.125	0.480	0.359	0.562
	H5		1005301408						
1/2 - 13 UNC	H3		1005301508	4.92	1.200	2.433	0.590	0.442	0.688
	H5		1005301608						
1/2 - 20 UNF	H3	1005301708	5.51	1.334	2.653	0.697	0.522	0.751	
	H5	1005301808							
9/16 - 12 UNC	H3	1005301908	4.92	1.334	2.653	0.697	0.522	0.751	
	H5	1005302008							
9/16 - 18 UNF	H3	1005302108	6.29	1.500	3.011	0.800	0.600	0.811	
	H5	1005302208							
5/8 - 11 UNC	H3	1005302308	4.33	1.200	2.433	0.590	0.442	0.688	
	H5	1005302408							
5/8 - 18 UNF	H3	1005302508	4.92	1.334	2.653	0.697	0.522	0.751	
	H5	1005302608							
3/4 - 10 UNC	H3	1005302708	5.51	1.334	2.653	0.697	0.522	0.751	
	H5	1005302808							
3/4 - 16 UNF	H3	1005302908	4.92	1.334	2.653	0.697	0.522	0.751	
	H5	1005303008							
7/8 - 9 UNC	H3	1005303108	4.92	1.334	2.653	0.697	0.522	0.751	
	H5	1005303208							
7/8 - 14 UNF	H3	1005303308	6.29	1.500	3.011	0.800	0.600	0.811	
	H5	1005303408							
1 - 8 UNC	H3	1005303508							

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
10053									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM									40-100		50-110							

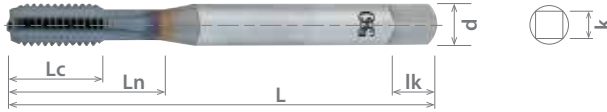
good best





List 11053

VPO-DC-HT, Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)						
			V	L	Lc	Ln	d	k	lk
M6 x 1.0	D5	3	1105300108	80	12	30.0	6.47	4.85	7.3
M8 x 1.25			1105300208	90	15	35.0	8.07	6.05	9.5
M10 x 1.5			1105300408	100	18	39.0	9.67	7.26	11.1
M10 x 1.25	1105300308								
M12 x 1.75	D6	4	1105300608	110	21	49.1	9.32	6.98	
M12 x 1.5			1105300508						
M12 x 1.25			1105302508						
M14 x 2.0	D7	5	1105300808	110	24	50.1	10.89	8.18	12.7
M14 x 1.5			1105300708	100					
M16 x 2.0			1105301208	110					
M16 x 1.5	D6	5	1105301108	100	30	54.0	12.19	9.14	14.3
M18 x 2.5	D7		1105301508	125					
M18 x 2.0			1105301408	125					
M18 x 1.5	D6	1105301308	110	36	68.4	19.30	14.48	19.1	
M20 x 2.5	D7	1105301808	140						
M20 x 2.0		1105301708	140						
M20 x 1.5	D6	1105301608	125	36	67.4	17.70	13.28	19.1	
M22 x 2.5	D8	1105302108	140						
M22 x 2.0		1105302008	140						
M22 x 1.5	D6	1105301908	125	36	68.4	19.30	14.48	19.1	
M24 x 3.0	D8	1105302408	160						
M24 x 2.0		1105302308	140						
M24 x 1.5	D6	1105302208	140						

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Stainless Steels		Aluminum	Nickel Alloy	Titanium		Hardened Steels								
	Low	Med.	High								300	400	17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
11053																			
SFM									40-100			50-110							

good best

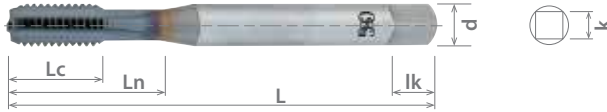




VC10 V

List 11054

VP-DC-HT, DIN Shank, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length		DIN Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)		Lc	Ln			
			V	L	Lc	Ln	d	k	lk
M6 x 1.0	D5	3	1105400108	80	11	29.9	5.99	4.90	8
M8 x 1.25		4	1105400208	90	15	35.0	7.97	6.19	8.9
M10 x 1.5	D6		1105400308	100	18	38.9	9.98	8.00	10.9

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
11054									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM								25-75			40-65							

good best





List 11055

VPO-DC-HT, Coolant-Through, DIN Shank, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	DIN Overall Length	Thread Length	Neck Length	DIN Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)						
			V	L	Lc	Ln	d	k	lk
M6 x 1.0	D5	3	1105500108	80	11	29.9	5.99	4.87	7.9
M8 x 1.25			1105500208	90	14	34.9	7.97	6.19	8.9
M10 x 1.5	D6	4	1105500308	100	17	38.9	9.98	7.97	10.9
M12 x 1.75			1105500408	110	20	43.9	8.99	6.98	9.9

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
11055	1010	1035	1065	4140	4340				<input type="checkbox"/>		<input type="checkbox"/>							
SFM	1018	1045							40-100		50-110							

good best



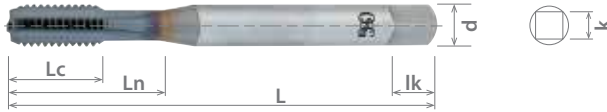


VC10

V

List 10056

VP-DC-HT, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Bottom (1.5P - 2P)							
			V	L	Lc	Ln	d	k	lk	
1/4 - 20 UNC	H3	4	1005600108	2.50	0.598	1.000	0.255	0.190	0.311	
	H5		1005600208							
	1005600308									
1/4 - 28 UNF	H3			1005600408	2.72	0.665	1.125	0.317	0.238	0.374
	H5		1005600508							
			1005600608							
5/16 - 18 UNC	H3			1005600708	2.93	0.751	1.251	0.380	0.285	0.437
	H5		1005600808							
			1005600908							
3/8 - 16 UNC	H3			1005601008	3.15	0.858	1.712	0.322	0.242	0.405
	H5		1005601108							
			1005601208							
3/8 - 24 UNF	H3		1005601308	3.37	0.921	1.933	0.367	0.274	0.437	
	H5	1005601408								
		1005601508								
7/16 - 14 UNC	H3	5	1005601608	3.59	1.000	1.972	0.429	0.322	0.500	
	H5		1005601708							
			1005601808							
7/16 - 20 UNF	H3			1005601908	3.81	1.090	2.125	0.480	0.359	0.562
	H5		1005602008							
			1005602108							
1/2 - 13 UNC	H3			1005602208	4.25	1.200	2.433	0.590	0.442	0.688
	H5		1005602308							
			1005602408							
1/2 - 20 UNF	H3			1005602508	4.25	1.200	2.433	0.590	0.442	0.688
	H5		1005602608							
			1005602708							
9/16 - 12 UNC	H3		1005602808	4.25	1.200	2.433	0.590	0.442	0.688	
	H5	1005602908								

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
10056									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM									25-75		40-65							

good best



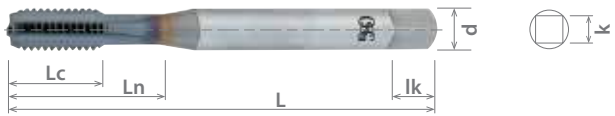


List 11056

VP-DC-HT, Bottom (1.5P-2P)



VC10	V
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Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)						
			V	L	Lc	Ln	d	k	lk
M6 x 1.0	D5	3	1105600108	63	12	25.4	6.47	4.85	7.3
M8 x 1.25			1105600208	69	15	28.6	8.07	6.05	9.5
M10 x 1.5	D6	4	1105600508	74	18	31.8	9.67	7.26	11.1
M10 x 1.25			1105600408						
M10 x 1.0	D5	4	1105600308	85	21	49.1	9.32	6.98	
M12 x 1.75			1105600808						
M12 x 1.5	D6	4	1105600708	91	24	50.1	10.89	8.18	
M12 x 1.25			1105600608						
M14 x 2.0	D7	5	1105601008	1105600908					
M14 x 1.5			1105600908						

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
11056									<input checked="" type="checkbox"/>										
SFM									25-75			<input checked="" type="checkbox"/>							

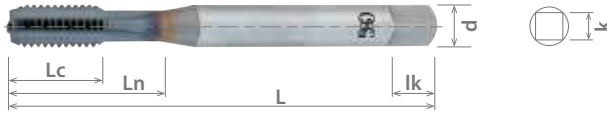
good best





List 10057

VPO-DC-HT, Coolant-Through, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)						
			V	L	Lc	Ln	d	k	lk
1/4 - 20 UNC	H3	4	1005700108	2.50	0.598	1.000	0.255	0.190	0.311
	H5		1005700208						
1/4 - 28 UNF	H3		1005700308						
5/16 - 18 UNC	H3		1005700408	2.72	0.665	1.125	0.317	0.238	0.374
	H5		1005700508						
5/16 - 24 UNF	H3		1005700608						
3/8 - 16 UNC	H3		1005700708	2.93	0.751	1.251	0.380	0.285	0.437
	H5		1005700808						
3/8 - 24 UNF	H3		1005700908						
7/16 - 14 UNC	H3		1005701008	3.15	0.858	1.712	0.322	0.242	0.405
	H5		1005701108						
7/16 - 20 UNF	H3		1005701208						
1/2 - 13 UNC	H3		1005701308	3.37	0.921	1.933	0.367	0.274	0.437
	H5		1005701408						
1/2 - 20 UNF	H3		1005701508						
1/2 - 20 UNF	H3		1005701608	1005701708					
	H5	1005701708							

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
10057									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM									40-100		50-110							

good best





List 11057

VPO-DC-HT, Coolant-Through, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)						
			V						
M6 x 1.0	D5	3	1105700108	63	12	25.4	6.47	4.85	7.9
M8 x 1.25			1105700208	69	15	28.6	8.07	6.05	9.5
M10 x 1.5			1105700408	74	18	31.8	9.67	7.26	11.1
M10 x 1.25	1105700308								
M12 x 1.75	1105700608								
M12 x 1.5	D6	4	1105700508	85	21	49.1	9.32	6.98	11.1
M14 x 2.0			1105700808						
M14 x 1.5			1105700708						

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
11057									<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>							
SFM									<input checked="" type="checkbox"/>	40-100		<input checked="" type="checkbox"/>	50-110						

good best





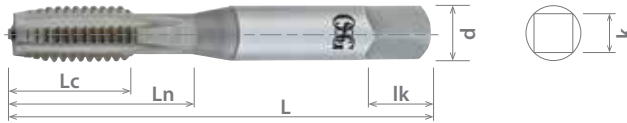
HSSE

N

BR

List 240

EX-DC-HT, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix		EDP Number	Coating Suffix							
				Bright	Nitride		Bright	Nitride						
2 - 56 UNC	H2	3	24929	00	-	24928	00	-	1.81	0.430	0.470	0.140	0.110	0.180
4 - 40 UNC			24931	00	-	24930	00	-	1.87	0.290	0.550			
5 - 40 UNC	H3		24012	-	03	24011	-	03	1.93	0.370	0.620	0.160	0.130	0.250
6 - 32 UNC			24016	-	03	24015	-	03	2.00	0.680	0.750			
8 - 32 UNC			24932	-	03	24019	-	03	2.12	0.750				
10 - 24 UNC			24024	-	03	24023	-	03	2.37	0.490	0.860	0.190	0.150	0.250
10 - 32 UNF			24028	-	03	24027	-	03	2.50	0.590	0.990			
1/4 - 20 UNC			H5	24032	-	03	24933	-	03	2.50	0.590	0.990	0.250	0.190
1/4 - 28 UNF	H3		24036	-	03	24934	-	03	2.50	0.590	0.990	0.250	0.190	0.280
5/16 - 18 UNC			24936	-	03	24935	-	03	2.72	0.660	1.120	0.310	0.230	0.370
5/16 - 24 UNF	H5	24044	-	03	24043	-	03	2.72	0.660	1.120	0.310	0.230	0.370	
3/8 - 16 UNC		24938	-	03	24937	-	03	2.93	0.750	1.250	0.380	0.280	0.430	
3/8 - 24 UNF	H3	24940	-	03	24939	-	03	2.93	0.750	1.250	0.380	0.280	0.430	
7/16 - 14 UNC		24942	-	03	24941	-	03	3.15	0.850	1.710	0.320	0.240	0.400	
7/16 - 20 UNF		24944	-	03	24943	-	03	3.15	0.850	1.710	0.320	0.240	0.400	
1/2 - 13 UNC		24064	-	03	24063	-	03	3.37	0.920	1.930	0.360	0.270	0.430	
1/2 - 20 UNF	24946	-	03	24945	-	03								
	24948	-	03	24947	-	03								
	24076	-	03	24075	-	03								
	24080	-	03	24079	-	03								

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																				
List No.	P					M			K	N		S	H							
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels						
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
240	1010	1035	1065	4140																
SFM	1018	1045		4340																

good best





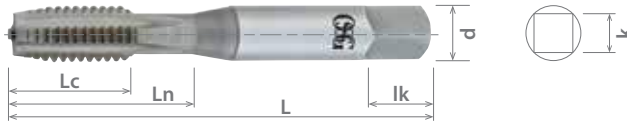
List 241



HSSE

N

EX-DC-HT, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)						
			Nitride	Nitride						
M3 x 0.5	D3	3	2410203	2494903	49	7	17.2	3.58	2.79	4.8
M4 x 0.7	D4		2495003	2410303	54	10	20.8	4.26	3.33	6.4
M5 x 0.8	D5		2410603	2495103	60	11	24.4	4.92	3.86	
M6 x 1.0		D5	2410803	2495203	63	14	28.0	6.47	4.85	7.9
M8 x 1.25	D5		2411203	2411103	69	15	28.6	8.07	6.05	9.5
M10 x 1.5		D6	4	2495403	2411703	74	18	31.8	9.67	7.26
M10 x 1.25	D5	2411603		2495303						
M12 x 1.75	D6	2495503		2412103	85	21	49.1	9.32	6.98	

Packed: 1 pc.
Available Nitride treatment only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
241									<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>						
SFM									<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>						

good best





GENERAL PURPOSE

Ideal for Cast Iron

HSS N S/O

List 101C

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)						
			Nitride-S/O	Nitride-S/O						
				L	Lc	Ln	d	k	lk	
1/4 - 20 UNC	H3	4	1600207	1600107	2.50	0.756	1.189	0.255	0.191	0.311
	H5		1600407	1600307						
1/4 - 28 UNF	H3		1600607	1600507	2.72	0.835	1.323	0.318	0.238	0.374
	H5		1600807	1600707						
5/16 - 18 UNC	H3		1601007	1600907	2.93	0.937	1.413	0.381	0.286	0.437
	H5		1601207	1601107						
5/16 - 24 UNF	H3		1601407	1601307	3.15	1.071	1.689	0.323	0.242	0.406
	H5		1601607	1601507						
3/8 - 16 UNC	H3		1601807	1601707	3.37	1.177	1.811	0.367	0.275	0.437
	H5		1602007	1601907						
3/8 - 24 UNF	H3		1602207	1602107	3.59	1.280	1.941	0.429	0.322	0.500
	H5		1602407	1602307						
7/16 - 14 UNC	H3		1602607	1602507	3.81	1.390	2.000	0.480	0.360	0.563
	H5		1602807	1602707						
7/16 - 20 UNF	H3		1603007	1602907	4.25	1.531	2.220	0.590	0.442	0.689
	H5		1603207	1603107						
1/2 - 13 UNC	H3		1603407	1603307	4.25	1.531	2.220	0.590	0.442	0.689
	H5		1603607	1603507						
1/2 - 20 UNF	H3		1603807	1603707	4.25	1.531	2.220	0.590	0.442	0.689
	H5		1600007	-						
9/16 - 12 UNC	H3	1604007	1603907	4.25	1.531	2.220	0.590	0.442	0.689	
	H5	1604807	1604707							
9/16 - 18 UNF	H3	1604207	1604107	4.25	1.531	2.220	0.590	0.442	0.689	
	H5	1605207	-							
5/8 - 11 UNC	H3	1604407	1604307	4.25	1.531	2.220	0.590	0.442	0.689	
	H5	1604607	1604507							
5/8 - 18 UNF	H3	1605007	1604907	4.25	1.531	2.220	0.590	0.442	0.689	
	H5									

Packed: 1 pc.
Available Nitride/Steam Oxide treatment only.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
101C									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM									25-75		40-65							

good best





List 141C

HSS

N S/O

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)						
			Nitride-S/O	Nitride-S/O						
M6 x 1.0	D5	3	1608207	1608107	63	17	30.9	6.47	4.85	7.9
M8 x 1.25			1608407	1608307	69	18	33.6	8.07	6.05	9.5
M10 x 1.5	D6	4	1608607	1608507	74	22	35.1	9.67	7.26	11.1
M12 x 1.75			1608807	1608707	85	27	46.0	9.32	6.98	

Packed: 1 pc.

Available Nitride/Steam Oxide treatment only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
141C									<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>							
SFM									25-75		40-65							

good best





GENERAL PURPOSE

List 101

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)

HSS	TiCN	TiN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)				Plug (3.5P - 4.5P)				Taper (5P and up)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			EDP Number	Coating Suffix			EDP Number	Coating Suffix			EDP Number	Coating Suffix									
				Bright	S/O	TiCN		Bright	S/O	TiN		TiCN	Bright	S/O							TiCN
L	Lc	Ln	d	k	lk																
1/4 - 20 UNC	H1	4	11002	00	-	08	11001	00	-	-	08	11000	00	-	08	2.50	0.748	1.181	0.255	0.190	0.311
	H2		11102	00	-	08	11101	00	-	-	08	11100	00	-	08						
	H3		11202	00	01	08	11201	00	01	05	08	11200	00	01	08						
	H5		11402	00	-	08	11401	00	-	-	08	-	-	-	-						
1/4 - 28 UNF	H1	4	11005	00	-	-	11004	00	-	-	-	-	-	-	-	2.50	0.748	1.181	0.255	0.190	0.311
	H2		11105	00	-	08	11104	00	-	-	-	-	-	-	-						
	H3		11205	00	01	08	11204	00	01	05	08	11203	00	-	08						
	H4		11305	00	-	-	11304	00	-	-	-	-	-	-	-						
5/16 - 18 UNC	H1	4	11008	00	-	-	11007	00	-	-	-	-	-	-	-	2.72	0.834	1.322	0.317	0.238	0.374
	H2		11108	00	-	-	11107	00	-	-	08	10088	00	-	-						
	H3		11208	00	01	08	11207	00	01	05	08	11206	00	01	08						
	H5		11408	00	-	08	11407	00	-	-	08	-	-	-	-						
5/16 - 24 UNF	H1	4	11011	00	-	-	11010	00	-	-	-	-	-	-	-	2.72	0.834	1.322	0.317	0.238	0.374
	H2		11111	00	-	08	11110	00	-	-	-	-	-	-	-						
	H3		11211	00	01	08	11210	00	01	05	08	11209	00	01	08						
	H4		11311	00	-	08	11310	00	-	-	-	-	-	-	-						
3/8 - 16 UNC	H1	4	11014	00	-	-	11013	00	-	-	-	-	-	-	-	2.93	0.937	1.413	0.380	0.285	0.437
	H2		11114	00	-	-	11113	00	-	-	-	-	-	-	-						
	H3		11214	00	01	08	11213	00	01	05	08	11212	00	01	08						
	H5		11414	00	-	08	11413	00	-	-	08	-	-	-	-						
3/8 - 24 UNF	H1	4	11017	00	-	08	11016	00	-	-	-	-	-	-	-	2.93	0.937	1.413	0.380	0.285	0.437
	H2		11117	00	-	-	11116	00	-	-	08	-	-	-	-						
	H3		11217	00	01	08	11216	00	01	05	08	11215	00	01	08						
	H4		11317	00	-	08	11316	00	-	-	08	-	-	-	-						
7/16 - 14 UNC	H2	4	-	-	-	-	10516	00	-	-	08	-	-	-	-	3.15	1.070	1.688	0.322	0.242	0.405
	H3		11220	00	-	08	11219	00	-	-	08	11218	00	-	08						
	H5		11420	00	-	-	11419	00	-	-	-	-	-	-	-						
	H2		-	-	-	-	11122	00	-	-	-	-	-	-	-						
7/16 - 20 UNF	H3	4	11223	00	01	08	11222	00	01	05	08	11221	00	01	08	3.15	1.070	1.688	0.322	0.242	0.405
	H5		11423	00	-	08	11422	00	-	-	08	-	-	-	-						
	H1		11026	00	-	-	11025	00	-	-	-	-	-	-	-						
	H2		11126	00	-	-	11125	00	-	-	-	-	-	-	-						
1/2 - 13 UNC	H3	4	11226	00	01	08	11225	00	01	05	08	11224	00	01	08	3.37	1.153	1.811	0.367	0.274	0.437
	H5		11426	00	-	-	11425	00	-	-	08	-	-	-	-						
	H1		11029	00	-	-	11028	00	-	-	-	-	-	-	-						
	H2		11129	00	-	-	11128	00	-	-	-	-	-	-	-						
1/2 - 20 UNF	H3	4	11229	00	01	08	11228	00	01	05	08	11227	00	01	08	3.37	1.153	1.811	0.367	0.274	0.437
	H5		11429	00	-	08	11428	00	-	-	08	-	-	-	-						
	H1		11026	00	-	-	11025	00	-	-	-	-	-	-	-						
	H2		11126	00	-	-	11125	00	-	-	-	-	-	-	-						
9/16 - 12 UNC	H3	4	11232	00	01	08	11231	00	01	-	08	11230	00	01	08	3.59	1.251	1.940	0.429	0.322	0.500
	H5		10611	00	-	08	11431	00	-	-	08	-	-	-	-						
	H2		-	-	-	-	11134	00	-	-	-	-	-	-	-						
	H3		11235	00	01	08	11234	00	01	-	08	11233	00	01	08						
9/16 - 18 UNF	H5	4	11435	00	-	08	11434	00	-	-	08	-	-	-	-	3.59	1.251	1.940	0.429	0.322	0.500
	H1		-	-	-	-	11037	00	-	-	-	-	-	-							
	H2		10632	00	-	-	11137	00	-	-	-	-	-	-	-						
	H3		11238	00	01	08	11237	00	01	05	08	11236	00	01	08						
5/8 - 11 UNC	H5	4	11438	00	-	08	11437	00	-	-	08	-	-	-	-	3.81	1.362	2.000	0.480	0.359	0.562
	H1		-	-	-	-	11040	00	-	-	-	-	-	-							
	H2		-	-	-	-	11140	00	-	-	-	-	-	-							
	H3		11241	00	01	08	11240	00	01	05	08	11239	00	01	08						
5/8 - 18 UNF	H5	4	11441	00	-	08	11440	00	-	-	08	-	-	-	-	3.81	1.362	2.000	0.480	0.359	0.562
	H1		-	-	-	-	11040	00	-	-	-	-	-	-							
	H2		-	-	-	-	11140	00	-	-	-	-	-	-							
	H3		11241	00	01	08	11240	00	01	05	08	11239	00	01	08						
11/16 - 11 UNS	H5	4	11444	00	-	08	11440	00	-	-	08	-	-	-	-	4.03	1.362	2.000	0.480	0.359	0.562
	H3		11244	00	-	08	11243	00	-	-	08	11242	00	-	-						

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 101 (Continued)

HSS	TiCN	TiN	S/O	BR
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Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)

Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)				Taper (5P and up)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length				
			EDP Number	Coating Suffix			EDP Number	Coating Suffix			EDP Number	Coating Suffix										
				Bright	S/O	TiCN		Bright	S/O	TiN		TiCN							Bright	S/O	TiCN	
11/16 - 16 UNS	H3	4	11247	00	-	08	11246	00	-	-	08	11245	00	-	08	4.03	1.362	2.129	0.542	0.405	0.625	
3/4 - 10 UNC	H1		10665	00	-	-	10089	00	-	-	-	-	-	-	-	-	4.25	1.500	2.220	0.590	0.442	0.688
	H2		-	-	-	-	11149	00	-	-	-	-	-	-	-							
	H3		11250	00	01	08	11249	00	01	05	08	11248	00	-	08							
	H5		11450	00	-	08	11449	00	-	-	08	-	-	-	-							
3/4 - 16 UNF	H1		-	-	-	-	11052	00	-	-	08	-	-	-	-							
	H2		-	-	-	-	11152	00	-	-	-	-	-	-	-							
	H3		11253	00	01	08	11252	00	01	05	08	11251	00	-	08							
	H5		11453	00	-	08	11452	00	-	-	08	-	-	-	-							
7/8 - 9 UNC	H1		10692	00	-	-	-	-	-	-	-	-	-	-	-							
	H2		-	-	-	-	10090	00	-	-	-	-	-	-	-							
	H4		11356	00	01	08	11355	00	01	05	08	11354	00	-	08							
	H6		-	-	-	-	11455	00	-	08	-	-	-	-	-							
7/8 - 14 UNF	H2		-	-	-	-	11158	00	-	-	-	-	-	-	-							
	H4		11359	00	01	08	11358	00	01	05	08	11357	00	-	08							
	H6		-	-	-	-	11458	00	-	-	08	-	-	-	-							
	H1		10719	00	-	-	10718	00	-	-	08	-	-	-	-							
1 - 8 UNC	H2		-	-	-	-	11161	00	-	-	-	-	-	-	-							
	H4		11362	00	01	08	11361	00	01	05	08	11360	00	01	08							
	H6		-	-	-	-	11461	00	-	-	08	-	-	-	-							
	H4		11365	00	-	08	11364	00	-	-	08	11363	00	-	08							
1 - 12 UNF	H4		-	-	-	-	11167	00	-	-	08	-	-	-	-							
1 - 14 UNS	H2		11368	00	01	08	11367	00	01	-	08	11366	00	01	08							
1, 1/8 - 7 UNC	H4		11371	00	01	08	11370	00	01	-	08	11369	00	-	08							
1, 1/8 - 12 UNF			11374	00	01	08	11373	00	01	-	08	11372	00	01	08							
1, 1/4 - 7 UNC			11377	00	01	08	11376	00	-	-	08	11375	00	-	08							
1, 1/4 - 12 UNF			6	11380	00	01	08	11379	00	01	-	08	11378	00	-	08						
1, 3/8 - 6 UNC			4	11383	00	-	08	11382	00	-	-	08	11381	00	01	-						
1, 3/8 - 12 UNF		6	11386	00	01	08	11385	00	01	-	08	11384	00	01	08							
1, 1/2 - 6 UNC		4	11389	00	01	08	11388	00	01	-	08	11387	00	01	08							
1, 1/2 - 12 UNF		6	11392	00	01	08	11391	00	01	-	08	11390	00	01	08							

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
101	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





GENERAL PURPOSE

List 101H

HSS	TiCN	S/O	BR
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+0.005" Oversize, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
			EDP Number	Coating Suffix		EDP Number	Coating Suffix									
				Bright	TiCN		Bright	S/O							TiCN	
L	Lc	Ln	Lk	L	Lc	Ln	d	k	lk							
1/4 - 20 UNC		+ 0.005	4	10091	00	08	15901	00	01	08	2.50	0.748	1.181	0.255	0.191	0.311
1/4 - 28 UNF	-			-	-	15903	00	01	08							
5/16 - 18 UNC				10092	00	08	15907	00	01	08	2.72	0.835	1.323	0.318	0.238	0.374
5/16 - 24 UNF	-			-	-	15911	00	-	08							
3/8 - 16 UNC				10093	00	08	15913	00	-	08	2.94	0.937	1.413	0.381	0.286	0.437
3/8 - 24 UNF	-			-	-	15915	00	-	08							
7/16 - 14 UNC				-	-	-	15919	00	-	-	3.16	1.071	1.689	0.323	0.242	0.406
7/16 - 20 UNF	-			-	-	15921	00	-	-							
1/2 - 13 UNC				10094	00	08	15925	00	-	08	3.37	1.154	1.811	0.367	0.275	0.437
1/2 - 20 UNF	-			-	-	15927	00	-	08							
5/8 - 11 UNC				11257	00	08	15937	00	-	08	3.81	1.362	2.000	0.480	0.360	0.563
5/8 - 18 UNF	-			-	-	11259	00	01	08							
3/4 - 10 UNC				-	-	-	15947	00	01	-	4.25	1.500	2.220	0.590	0.442	0.689

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
101H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





List 102

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)

HSS	TiCN	TiN	S/O	BR
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Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P-2P)				Plug (3.5P-4.5P)				Taper (5P and up)				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length			
			EDP Number	Coating Suffix				EDP Number	Coating Suffix				EDP Number	Coating Suffix									
				Bright	S/O	TiN	TiCN		Bright	S/O	TiN	TiCN		Bright							S/O	TiN	TiCN
0 - 80 UNF	H1	2	10002	00	01	05	08	10001	00	01	05	08	10000	00	01	-	08	1.62	0.311				
	H2		10102	00	-	-	08	10101	00	-	05	08	-	-	-	-	-						
1 - 64 UNC	H1	2	10005	00	01	-	-	10004	00	01	-	-	10003	00	-	-	-	1.68	0.370				
	H2		10080	00	-	-	08	10104	00	-	-	08	-	-	-	-	-						
1 - 72 UNF	H1	2	10008	00	01	-	-	10007	00	01	-	-	10006	00	01	-	08	1.75	0.437				
	H2		10108	00	-	-	08	10107	00	-	-	08	-	-	-	-	-						
2 - 56 UNC	H1	2	10011	00	-	-	08	10010	00	-	-	-	10009	00	-	-	-	1.81	0.496				
	H2		10111	00	01	05	08	10110	00	01	05	08	10109	00	01	-	08						
2 - 64 UNF	H1	2	10014	00	01	-	-	10013	00	-	-	-	-	-	-	-	-	1.87	0.370	0.681	0.140	0.109	0.188
	H2		10114	00	01	-	-	10113	00	01	-	-	10112	00	-	-	-						
3 - 48 UNC	H1	2	-	-	-	-	-	10016	00	-	-	-	-	-	-	-	-	1.93	0.374	0.744			
	H2		10117	00	01	-	08	10116	00	01	-	08	10115	00	01	-	08						
3 - 56 UNF	H1	2	-	-	-	-	-	10019	00	-	-	-	-	-	-	-	-	1.93	0.374	0.744			
	H2		10120	00	01	-	08	10119	00	01	-	08	10118	00	01	-	-						
4 - 36 UNS	H1	3	10129	00	01	-	-	10128	00	-	-	-	10127	00	-	-	-	2.00	0.464	0.799			
	H2		10023	00	-	-	-	10022	00	-	-	-	10021	00	-	-	-						
4 - 40 UNC	H1	3	10123	00	01	05	08	10122	00	01	05	08	10121	00	01	-	08	2.12	0.468	0.933	0.167	0.131	0.251
	H2		-	-	-	-	-	10025	00	-	-	-	-	-	-	-	-						
4 - 48 UNF	H1	3	10126	00	01	-	08	10125	00	01	-	08	10124	00	-	-	-	2.00	0.464	0.799			
	H2		10032	00	-	-	-	10031	00	-	-	-	-	-	-	-	-						
5 - 40 UNC	H1	3	10132	00	01	05	08	10131	00	01	05	08	10130	00	01	-	08	2.12	0.468	0.933	0.167	0.131	0.251
	H2		-	-	-	-	-	10034	00	-	-	08	-	-	-	-	-						
5 - 44 UNF	H1	3	10135	00	01	-	08	10134	00	01	-	08	10133	00	01	-	08	2.12	0.468	0.933	0.167	0.131	0.251
	H2		10038	00	-	-	-	10037	00	-	-	-	10036	00	-	-	-						
6 - 32 UNC	H1	3	10138	00	-	05	08	10137	00	-	05	08	10136	00	-	-	08	2.00	0.464	0.799			
	H2		10238	00	01	05	08	10237	00	01	05	08	10236	00	01	-	08						
6 - 40 UNF	H1	3	-	-	-	-	-	10681	-	-	05	-	-	-	-	-	-	2.12	0.468	0.933	0.167	0.131	0.251
	H2		10141	00	01	05	-	10140	00	01	05	-	10139	00	-	-	08						
8 - 32 UNC	H1	4	10044	00	-	-	-	10043	00	-	-	08	10042	00	-	-	08	2.12	0.468	0.933	0.167	0.131	0.251
	H2		10144	00	-	05	-	10143	00	-	05	08	10142	00	-	-	-						
	H3	3	10244	00	01	05	08	10243	00	01	05	08	10242	00	01	-	08	2.12	0.468	0.933	0.167	0.131	0.251
	H7		10199	00	-	-	-	10198	00	-	-	-	-	-	-	-	-						
8 - 36 UNF	H1	4	-	-	-	-	-	10046	00	-	-	-	-	-	-	-	-	2.12	0.468	0.933	0.167	0.131	0.251
	H2		10147	00	01	05	-	10146	00	01	05	-	10145	00	01	-	-						

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.

continued on next page

Work Material																										
List No.	P					M			K	N		S	H													
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels												
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC									
102	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>															
SFM	25-80	20-50	20-45						25-75	40-80	40-65															

good best





GENERAL PURPOSE

List 102 (Continued)

HSS	TiCN	TiN	S/O	BR
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Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)				Plug (3.5P - 4.5P)				Taper (5P and up)				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk						
			EDP Number	Coating Suffix				EDP Number	Coating Suffix				EDP Number	Coating Suffix												
				Bright	S/O	TiN	TiCN		Bright	S/O	TiN	TiCN		Bright							S/O	TiN	TiCN			
10 - 24 UNC	H1	4	10050	00	01	-	-	10049	00	-	-	-	10048	00	-	-	-	2.37	0.618	1.047	0.194	0.151	0.251			
	H2		10150	00	-	-	08	10149	00	-	-	-	10148	00	-	05	08									
	H3		10250	00	01	05	08	10249	00	01	05	08	10248	00	01	-	-									
	H7		10087	00	-	-	-	10086	00	-	-	-	-	-	-	-	-									
10 - 32 UNF	H1	4	10053	00	-	-	-	10052	00	-	-	-	10051	00	-	-	-		2.37	0.618	1.047	0.194	0.151	0.251		
	H2		10153	00	-	05	08	10152	00	-	-	08	10151	00	-	05	-									
	H3		10253	00	01	05	08	10252	00	01	05	08	10251	00	01	05	08									
	H7		10286	00	-	-	-	10285	00	-	-	-	-	-	-	-	-									
12 - 24 UNC	H1	4	-	-	-	-	-	10055	00	-	-	-	-	-	-	-	-	2.37		0.622	1.110	0.220	0.164	0.279		
	H3		10256	00	01	-	08	10255	00	01	05	08	10254	00	01	-	08									
12 - 28 UNF	H1		-	-	-	-	-	10058	00	-	-	-	-	-	-	-	-			-	2.37	0.622	1.110	0.220	0.164	0.279
	H3		10259	00	01	05	08	10258	00	01	-	08	10257	00	01	-	08									

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
102	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65								

good best





List 102H

HSS	<input checked="" type="checkbox"/> S/O	<input type="checkbox"/> BR
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+0.005" Oversize, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)							
			Bright	S/O						
6 - 32 UNC	+ 0.005	3	1593500	-	2.00	0.464	0.799	0.14	0.109	0.188
8 - 32 UNC			1594300	-	2.12	0.468	0.933	0.167	0.131	
10 - 24 UNC		4	1594900	-	2.37	0.618	1.047	0.194	0.151	0.251
10 - 32 UNF			1595100	1595101						

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P										M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels								
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC			
	1010 1018	1035 1045	1065																	4140 4340		
102H	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>												
SFM	25-80	20-50	20-45						25-75	40-80	40-65											

good best





GENERAL PURPOSE

List 103

HSS	TiN	S/O	BR
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Three Flute, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
			EDP Number	Coating Suffix			EDP Number	Coating Suffix								
				Bright	S/O	TiN		Bright							S/O	TiN
8 - 32 UNC	H1	3	10402	00	-	-	10401	00	-	-	2.12	0.469	0.933	0.168	0.131	0.252
	H2		10452	00	-	-	10451	00	-	-						
	H3		10502	00	-	-	10501	00	-	-						
10 - 24 UNC	H1		-	-	-	-	10407	00	-	-	2.37	0.618	1.047	0.194	0.152	0.252
	H2		-	-	-	-	10457	00	-	-						
	H3		10508	00	-	-	10507	00	-	-						
10 - 32 UNF	H2		10461	00	-	-	10460	00	-	-	2.50	0.748	1.181	0.255	0.191	0.311
	H3		10511	00	01	05	10510	00	01	05						
1/4 - 20 UNC	H1		10593	00	-	-	11601	00	-	-	2.72	0.835	1.323	0.318	0.238	0.374
	H2		10356	00	-	-	11651	00	-	-						
	H3		11702	00	01	05	11701	00	01	05						
	H5		11802	00	-	-	11801	00	-	-						
1/4 - 28 UNF	H3	11705	00	01	05	11704	00	01	05	2.93	0.937	1.413	0.381	0.286	0.437	
5/16 - 18 UNC	H1	-	-	-	-	11607	00	-	-							
5/16 - 18 UNC	H3	11708	00	-	-	11707	00	-	05	3.15	1.071	1.689	0.323	0.242	0.406	
	H5	11808	00	-	-	11807	00	-	-							
5/16 - 24 UNF	H3	11711	00	01	05	11710	00	01	05	3.37	1.154	1.811	0.367	0.275	0.437	
3/8 - 16 UNC	H1	10462	00	-	-	11613	00	-	-							
	H3	11714	00	01	05	11713	00	01	05							
	H5	11814	00	-	-	11813	00	-	-							
3/8 - 24 UNF	H1	11717	00	01	05	11716	00	01	05	3.15	1.071	1.689	0.323	0.242	0.406	
7/16 - 14 UNC	H3	11720	00	-	-	11719	00	-	-							
7/16 - 20 UNF	H3	10547	00	-	-	11722	00	-	-	3.37	1.154	1.811	0.367	0.275	0.437	
1/2 - 13 UNC	H3	11726	00	01	05	11725	00	01	05							
1/2 - 20 UNF	H3	10593	00	-	-	11728	00	-	-							

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
103	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





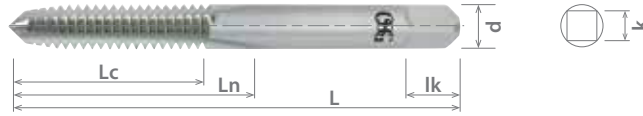
List 104

HSS

S/O

BR

Two Flute, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix		EDP Number	Coating Suffix							
				Bright	S/O		Bright	S/O						
2 - 56 UNC	H1	2	10602	00	-	10601	00	-	1.75	0.472	0.511	0.140	0.109	0.188
	H2		10652	00	-	10651	00	-						
3 - 48 UNC	H2		10658	00	-	10657	00	-	1.81	0.539	0.578			
4 - 40 UNC	H1		10079	00	-	10613	00	-	1.87	0.370	0.681			
	H2		10664	00	-	10663	00	-						
5 - 40 UNC	H2		10673	00	-	10672	00	-	1.93	0.425	0.795			
5 - 44 UNF	H2		-	-	-	10675	00	-						
6 - 32 UNC	H1		10081	00	-	10628	00	-	2.00	0.523	0.858			
	H2		10679	00	-	10678	00	-						
	H3		10729	00	01	10728	00	01						
6 - 40 UNF	H2		10164	00	-	10681	00	-	2.12	0.539	1.003			
	H3		10685	00	-	10684	00	-						
8 - 32 UNC	H3		10735	00	01	10734	00	01	2.37	0.700	1.129			
	H2		10691	00	-	10690	00	-						
	H3		10741	00	01	10740	00	01						
10 - 24 UNC	H1		10262	00	-	10261	00	-	2.50	0.854	1.287			
	H2		10694	00	-	10693	00	-						
	H3		10744	00	01	10743	00	01						
1/4 - 20 UNC	H3		11952	00	01	11951	00	01	2.72	0.854	1.322			
1/4 - 28 UNF			11955	00	01	11954	00	01						
5/16 - 18 UNC		11958	00	-	11957	00	-							

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request.

Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
104	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

good best





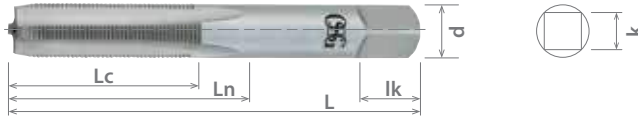
GENERAL PURPOSE

List 101N

HSS

BR

UNEF, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)						
			Bright	Bright						
12 - 32 UNEF	H3	4	1670200	1670100	2.37	0.622	1.110	0.220	0.165	0.280
1/4 - 32 UNEF			1680200	1680100	2.50	0.748	1.181	0.255	0.191	0.311
5/16 - 32 UNEF			1680400	1680300	2.72	0.835	1.323	0.318	0.238	0.374
3/8 - 32 UNEF			1680600	1680500	2.93	0.937	1.413	0.381	0.286	0.437
7/16 - 28 UNEF			1680800	1680700	3.15	0.992	1.689	0.323	0.242	0.406
1/2 - 28 UNEF			1681000	1680900	3.37	1.154	1.811	0.367	0.275	0.437
9/16 - 24 UNEF			1681200	1681100	3.59	1.252	1.941	0.429	0.322	0.500
5/8 - 24 UNEF			1681400	1681300	3.81	1.362	2.000	0.480	0.360	0.563
11/16 - 24 UNEF		1681600	1681500	4.03	2.130		0.542	0.406	0.626	
3/4 - 20 UNEF		1681800	1681700	4.25	1.500	2.220	0.590	0.442	0.689	
13/16 - 20 UNEF		1682000	1681900	4.46		2.382	0.652	0.489		
7/8 - 20 UNEF		1682200	1682100	4.68	1.665	2.500	0.697	0.523	0.752	
15/16 - 20 UNEF		1682400	1682300	4.90	1.500		0.760	0.570	0.752	
1 - 20 UNEF		1682600	1682500	5.12	1.874	2.720	0.800	0.600	0.811	

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
101N	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best

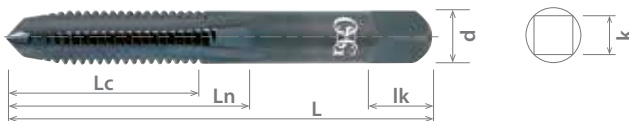




List 141

HSS S/O BR

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)			Taper (5P and up)	Overall Length	Thread Length	Neck Length	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix		EDP Number	Coating Suffix		EDP Number						
				Bright	S/O		Bright	S/O							
M1.6 x 0.35	D3	3	-	-	-	19788	00	-	-	41	7	8.9	3.58	2.79	4.8
M2 x 0.4			19774	00	-	19773	00	-	-	44	11	12.1			
M2.5 x 0.45			19723	00	01	19722	00	01	-	46	12	13.8			
M3 x 0.5			19702	00	01	19701	00	01	1970000	49	7	18.9			
M3.5 x 0.6			19726	00	01	19725	00	01	-	50	9	20.4			
M4 x 0.7	D4	4	19705	00	01	19704	00	01	1970300	54	10	23.7	4.26	3.33	6.4
M4.5 x 0.75			19729	00	01	19728	00	01	-	60	12	26.7	4.92	3.86	
M5 x 0.8			19708	00	01	19707	00	01	1970600	60	10	26.9	4.92	3.86	
M6 x 1.0	D5	5	19711	00	01	19710	00	01	1970900	63	15	30.0	6.47	4.85	7.9
M7 x 1.0			19732	00	01	19731	00	01	-	69	18	33.6	8.07	6.05	9.5
M8 x 1.25			19714	00	01	19713	00	01	1971200						
M8 x 1.0	D6	6	19735	00	01	19734	00	01	-	74	22	35.1	9.67	7.26	11.1
M10 x 1.5			19717	00	01	19716	00	01	1971500						
M10 x 1.25	D5	5	19741	00	01	19740	00	01	-	85	27	46.0	9.32	6.98	11.1
M10 x 1.0			19738	00	01	19737	00	01	-						
M12 x 1.75	D6	6	19720	00	01	19719	00	01	1971800	91	30	49.3	10.89	8.18	12.7
M12 x 1.5			19747	00	-	19746	00	-	-						
M12 x 1.25	D5	5	19744	00	01	19743	00	01	-	96	31	50.8	12.19	9.14	14.3
M14 x 2.0			19753	00	-	19752	00	01	1975100						
M14 x 1.5	D6	6	19777	00	-	19776	00	-	-	102	37	54.1	13.76	10.31	15.9
M14 x 1.25			19750	00	-	19749	00	-	-						
M16 x 2.0	D7	7	19759	00	01	19758	00	01	1975700	113	38	60.5	16.56	12.42	17.5
M16 x 1.5			19756	00	01	19755	00	01	-						
M18 x 2.5	D7	7	19765	00	-	19764	00	01	-	124	45	63.5	19.30	14.48	19.1
M18 x 1.5			19762	00	01	19761	00	-	-						
M20 x 2.5	D7	7	19771	00	01	19770	00	01	1966900	124	45	63.5	19.30	14.48	19.1
M20 x 1.5			19768	00	01	19767	00	-	-						
M24 x 3.0	D8	8	19772	00	-	19775	00	-	1978000	138	52	74.7	25.93	19.46	25.4
M30 x 3.5			19782	00	-	19783	00	-	1978400						
M36 x 4.0	D9	9	-	-	-	19786	00	-	1978700	154	60	80.0	31.31	23.50	28.6

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
141	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best

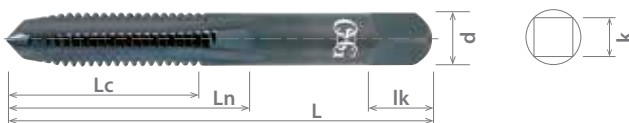


GENERAL PURPOSE

List 121

HSS S/O BR

JIS, Taper (5P and up), Plug (4.5P-5.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
			Bottom (1.5P - 2P)		Plug (4.5P - 5.5P)							Taper (5P and up)	
			Bright	S/O	Bright							S/O	Bright
M2 x 0.4			233	-	232	-	-	40	8	12.3			
M2.3 x 0.4			293	-	292	-	-	42	9	-	3.0	2.5	5
M2.6 x 0.45			353	-	352	-	-	44		-			
M3 x 0.5		3	393	22606	392	22605	391	46	11	19.0	4.0	3.2	6
M3.5 x 0.6			413	-	412	-	411	48	13	20.0			
M4 x 0.7			453	22612	452	22611	451	52		13	21.0	5.0	4.0
M4.5 x 0.75		-	-	482	-	-	55	16	24.0				
M5 x 0.8			513	22618	512	22617	511	60	16	24.0	5.5	4.5	7
M6 x 1.0			583	22622	582	22621	581	62	19	29.0			
M6 x 0.75			593	-	592	-	591	65	19	29.0	6.0	4.5	7
M7 x 1.0			-	-	612	-	-			33.0			
M8 x 1.25			643	22628	642	22627	641	70	22	37.0	6.2	5.0	8
M8 x 1.0			653	-	652	-	651		20	35.0			
M8 x 0.75			-	-	662	-	-	72	22	38.0	7.0	5.5	8
M9 x 1.25			-	-	692	-	-		22				
M10 x 1.5			733	22634	732	22633	731	75	24	41.0	7.0	5.5	8
M10 x 1.25			743	22638	742	22637	741						
M10 x 1.0			753	-	752	-	751	80	25	48.0	8.0	6.0	9
M11 x 1.5			-	-	792	-	-						
M12 x 1.75			853	22644	852	22643	851	82	29	48.0	8.5	6.5	9
M12 x 1.5			-	-	862	-	-						
M12 x 1.25			873	-	872	-	871	88	30	10.5	8.0	8.0	11
M12 x 1.0	JIS 2		883	-	882	-	881						
M14 x 2.0			983	-	982	-	981	95	32	52.0	12.5	10.0	13
M14 x 1.5			993	-	992	-	991						
M14 x 1.25			1003	-	1002	-	1001	100	37	55.0	14.0	11.0	14
M16 x 2.0		4	1113	-	1112	-	1111						
M16 x 1.5				1123	-	1122	-	1121	105	38	63.0	17.0	13.0
M16 x 1.0			-	-	1142	-	-						
M18 x 2.5			1253	-	1252	-	1251	110	37	58.0	15.0	12.0	15
M18 x 2.0			-	-	1262	-	-						
M18 x 1.5			1273	-	1272	-	1271	115	38	63.0	17.0	13.0	16
M20 x 2.5			1393	-	1392	-	1391						
M20 x 1.5			1413	-	1412	-	1411	120	45	66.0	19.0	15.0	18
M22 x 2.5			1503	-	1502	-	1501						
M22 x 1.5			1523	-	1522	-	-	130	45	71.0	20.0	17.0	20
M24 x 3.0			1603	-	1602	-	1601						
M24 x 1.5			-	-	1632	-	-	135	51	74.0	23.0	17.0	20
M26 x 3.0			1713	-	1712	-	1711						
M26 x 1.5			1733	-	1732	-	1731	130	45	60.0	21.0	19.0	22
M28 x 1.5			1823	-	1822	-	1821						
M30 x 3.5			1843	-	1842	-	1841	135	51	74.0	24.0	19.0	22
M30 x 1.5			1873	-	1872	-	1871	130	45	60.0			
M32 x 1.5			1933	-	1932	-	1931	105	37	47.0	24.0	19.0	22
M33 x 1.5			1983	-	1982	-	1981	110	37	47.0	25.0		

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.





List 121 (Continued)

HSS	<input checked="" type="checkbox"/>	BR
	S/O	

JIS, Taper (5P and up), Plug (4.5P-5.5P), Bottom (1.5P-2P)

Tap Size	Thread Limit	No. of Flutes	EDP Number					Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)		Plug (4.5P - 5.5P)		Taper (5P and up)						
			Bright	S/O	Bright	S/O	Bright						
M34 x 1.5	JIS 2	4	2033	-	2032	-	2031	110	37	47.0	26.0	21.0	24
M36 x 1.5			2143	-	2142	-	2141				28.0		

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
121	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

good best





GENERAL PURPOSE LS

HSS S/O

List 916

Long Shank, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Long Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)							
			S/O	L						
1/4 - 20 UNC	H3	4	1290001	6.0	1.000	1.688	0.255	0.190	0.311	
			1290201	8.0						
5/16 - 18 UNC			1290401	6.0	1.125	1.755	0.317	0.238	0.374	
			1290601	8.0						
3/8 - 16 UNC			1290801	6.0	1.251	1.881	0.380	0.285	0.437	
			1291001	8.0						
			1291201	10.0						
7/16 - 14 UNC			1291401	6.0	1.437	2.224	0.444	0.333	0.500	
			1291601	8.0						
			1292001	6.0						
1/2 - 13 UNC			1292201	8.0	1.657	2.444	0.507	0.379	0.562	
			1292401	10.0						
	1292601	12.0								
	1292801	6.0								
5/8 - 11 UNC	1293001	8.0	1.811	2.598	0.632	0.475	0.688			
	1293201	10.0								
	1293401	12.0								
	1293601	10.0								
3/4 - 10 UNC	1293801	12.0	2.000	2.787	0.759	0.568	0.748			

Packed: 1 pc.
Available Steam Oxide finish only.



Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
916	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>									
SFM	25-80	20-50	20-45						25-75									

good best





List S110

HSS

BR

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	Basic OD	Basic P.D.
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)								
			Bright	Bright								
000 - 120 UNC	H1	2	1020000	1010000	1.57	0.200	0.259	0.140	0.109	0.188	0.034	0.0286
	H2		2054000	1929000								
00 - 90 UNC	H1		1040000	1030000	1.72	0.279	0.338				0.047	0.0402
	H2		2055000	3370000								
00 - 96 UNC	H1		1070000	1060000	1.72	0.279	0.338				0.047	0.0398
	H2		1322000	3380000								

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Suggested Hole Size Limits for Different Lengths of Engagement

Tap Size	Basic O.D.	Basic P.D.	Depth of Thread Hole					
			Up to 1/3D		1/3 to 1/2D		1/2 to 3D	
			Min.	Max.	Min.	Max.	Min.	Max.
000-120	0.0340	0.0286	0.0260	0.0270	0.0270	0.0280	0.0275	0.0285
00-90	0.0470	0.0398	0.0373	0.0385	0.0380	0.0392	0.0388	0.0400
00-96	0.0470	0.0402	0.0379	0.0393	0.0388	0.0406	0.0397	0.0415

Work Material

List No.	P			Alloy Steels 4140 4340	Die Steels	M			K Cast Iron	N		S Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	H			
	Carbon Steels					Stainless Steels				Aluminum				Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010 1018	1035 1045	1065														
S110	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45					25-75	40-80	40-65							

good best





GENERAL PURPOSE

Designed for Plastic

List 114

HSS-Co

N

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)						
			Nitride	Nitride						
			L	Lc	Ln	d	k	lk		
2 - 56 UNC	2B+	3	3141903	3141803	1.75	0.437	-	0.140	0.109	0.188
	H7		3141303	3141203			-			
4 - 40 UNC	2B+	4	3142903	3142803	1.87	0.295	0.559	0.167	0.131	0.251
	H7		3142303	3142203						
6 - 32 UNC	2B+		3144903	3144803	2.00	0.370	0.685	0.194	0.151	0.311
	H7		3144303	3144203		0.362				
8 - 32 UNC	2B+		3145903	3145803	2.12	0.374	0.751	0.194	0.151	0.311
	H7		3145303	3145203						
10 - 24 UNC	2B+		3146903	3146803	2.37	0.492	0.866	0.194	0.151	0.311
	H7		3146303	3146203						
10 - 32 UNF	2B+		3146503	3146403	2.50	0.594	0.996	0.255	0.190	0.311
	H7		3146703	3146603						
1/4 - 20 UNC	2B+	3147903	3147803	2.50	0.594	0.996	0.255	0.190	0.311	
	H7	3147303	3147203							

Packed: 1 pc.
Available Nitride coating only.



The H7 series are designed for tapping thermoplastic materials such as nylon and vinyl.

The 2B+ are designed for tapping thermosetting, reinforced plastics and laminated plastics such as epoxy, bakelite, fiberglass, etc. The 2B+ limit is based on the actual products limit and machining properties, taking the guess work out of H limit selection.

Oversize 2B+ Series = +.0005"~.001" over 2B thread limit.

Work Material															
List No.	P					M			K	N		S	Other		
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Thermo Plastics	Thermosetting Plastics
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)		
114	1010	1035	1065	4140										<input type="checkbox"/>	<input type="checkbox"/>
SFM	1018	1045		4340										33-66	33-66

good best



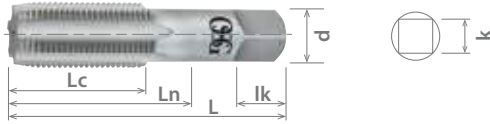


List 180

HSS

BR

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk		
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)								
			Bright	Bright								
1,1/8 - 8	H5	4	1690200	1690100	5.43	1.874	2.940	0.895	0.672	0.874		
1,1/4 - 8			1690500	1690400	5.75		3.000	1.020	0.766	1.000		
1,3/8 - 8			1690800	1690700	6.06		3.161	1.107	0.831	1.062		
1,1/2 - 8			1691100	1691000	6.37		3.381	1.232	0.925	1.125		
1,5/8 - 8	1691400	1691300	6.68	3.590	1.430						1.072	1.251
1,3/4 - 8	1691700	1691600	7.00				3.811	1.644	1.233	1.374		
2 - 8	1692300	1692200	7.62									
2,1/4 - 8	8020000	8019000	8.25									

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P										M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels								
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC			
	1010 1018	1035 1045	1065	4140 4340																		
180	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>											
SFM	25-80	20-50	20-45						25-75	40-80	40-65											

good best





GENERAL PURPOSE

Left Hand Taps

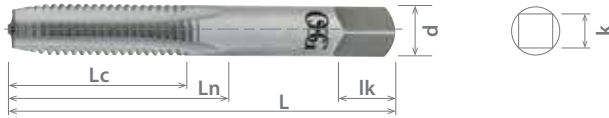
List 101L

HSS

BR

LH

Left Hand, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)								
			Bright	Bright								
			L	Lc	Ln	d	k	lk				
6 - 32 UNC	H3	3	1650200	1650100	2.00	0.523	0.858	0.140	0.109	0.188		
6 - 40 UNF	H2		1650400	1650300								
8 - 32 UNC	H3		1650600	1650500								
8 - 36 UNF	H2	4	1650800	1650700	2.12	0.539	1.003	0.167	0.131	0.251		
10 - 24 UNC	H3		1651000	1650900								
10 - 32 UNF			1651200	1651100								
1/4 - 20 UNC			1660200	1660100	2.50	0.854	1.287	0.255	0.190	0.311		
1/4 - 28 UNF			1660400	1660300								
5/16 - 18 UNC			1660600	1660500	2.72	0.834	1.322	0.317	0.238	0.374		
5/16 - 24 UNF			1660800	1660700								
3/8 - 16 UNC			H3	4	1661000	1660900	2.93	0.937	1.413	0.380	0.285	0.437
3/8 - 24 UNF					1661200	1661100						
7/16 - 14 UNC					1661400	1661300	3.15	1.070	1.688	0.322	0.242	0.405
7/16 - 20 UNF		1661600			1661500							
1/2 - 13 UNC	1661800	1661700			3.37	1.153	1.811	0.367	0.274	0.437		
1/2 - 20 UNF	1662000	1661900										
9/16 - 12 UNC	H4	4			1662200	1662100	3.59	1.251	1.940	0.429	0.322	0.500
9/16 - 18 UNF					1662400	1662300						
5/8 - 11 UNC					1662600	1662500	3.81	1.362	2.000	0.480	0.359	0.562
5/8 - 18 UNF					1662800	1662700						
3/4 - 10 UNC			1663400	1663300	4.25	1.500	2.220	0.590	0.442	0.688		
3/4 - 16 UNF			1663600	1663500								
7/8 - 9 UNC			H4	4	1663800	1663700	4.68	1.665	2.500	0.697	0.522	0.751
7/8 - 14 UNF					1664000	1663900						
1 - 8 UNC					1664200	1664100	5.12	1.874	2.720	0.800	0.600	0.811
1 - 12 UNF					1664400	1664300						

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
101L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

good best

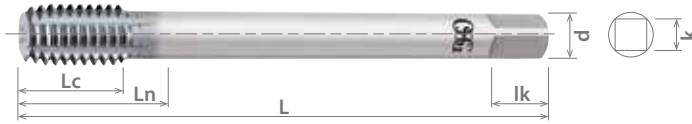




List 16260

HSS-Co	V	STI
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HL-S-XPF, DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit	
			Modified Bottom (2.5P)	L	Lc	Ln				Min	Max	2B	3B
			V	L	Lc	Ln				d	k	lk	Min
2 - 56 UNC	2.5P	H1	1626000108	2.27	0.261	0.718	0.140	0.109	0.188	0.0994	0.1013	H2	H1
		H2	1626000208							0.1309	0.1333		
4 - 40 UNC	2.5P	H3	1626000308	2.55	0.365	0.841	0.140	0.109	0.188	0.1309	0.1333	H3	H2
		H2	1626000408		0.364					0.1281	0.1299		
4 - 48 UNF	2.5P	H2	1626000508	2.27	0.362	0.800	0.140	0.109	0.188	0.1281	0.1299	H3	H2
		H3	1626000608							0.1613	0.1637		
6 - 32 UNC	2.5P	H2	1626000708	2.85	0.456	1.003	0.194	0.151	0.251	0.1613	0.1637	H3	H2
		H3	1626000808							0.1569	0.1590		
6 - 40 UNF	2.5P	H2	1626000908	2.83	0.449	0.996	0.167	0.131	0.251	0.1569	0.1590	H3	H2
		H3	1626001008							0.1873	0.1895		
8 - 32 UNC	2.5P	H2	1626001108	3.25	0.452	1.196	0.220	0.164	0.279	0.1873	0.1895	H4	H3
		H3	1626001208							0.1849	0.1870		
8 - 36 UNF	2.5P	H2	1626001308	3.25	0.452	1.196	0.220	0.164	0.279	0.1849	0.1870	H4	H3
		H3	1626001408							0.2210	0.2238		
10 - 24 UNC	2.5P	H4	1626001508	3.24	0.605	1.203	0.255	0.190	0.287	0.2210	0.2238	H4	H3
10 - 32 UNF		H3	1626001608							0.2138	0.2160		
1/4 - 20 UNC	2.5P	H3	1626001708	3.54	0.600	1.199	0.317	0.238	0.374	0.2868	0.2899	H4	H3
		H4	1626001808							0.2769	0.2879		
1/4 - 28 UNF	2.5P	H3	1626001908	3.54	0.500	1.377	0.317	0.238	0.374	0.2769	0.2879	H4	H3
		H4	1626002008							0.3537	0.3568		
5/16 - 18 UNC	2.5P	H5	1626002108	3.93	0.555	1.535	0.380	0.285	0.437	0.3537	0.3568	H5	H4
5/16 - 24 UNF		H4	1626002208							0.3440	0.3462		
3/8 - 16 UNC	2.5P	H5	1626002308	3.54	0.625	1.933	0.367	0.274	0.437	0.4215	0.4248	H6	H5
		H4	1626002408							0.4070	0.4091		
3/8 - 24 UNF	2.5P	H5	1626002508	3.93	0.625	1.712	0.322	0.242	0.405	0.4070	0.4091	H6	H5
		H6	1626002608							0.4907	0.4938		
7/16 - 14 UNC	2.5P	H5	1626002708	4.33	0.712	1.972	0.429	0.322	0.500	0.4907	0.4938	H7	H5
		H7	1626002808							0.4758	0.4777		
7/16 - 20 UNF	2.5P	H5	1626002908	3.93	0.712	1.933	0.367	0.274	0.437	0.4758	0.4777	H7	H5
		H7	1626003008							0.5570	0.5600		
1/2 - 13 UNC	2.5P	H5	1626003108	4.33	0.767	2.125	0.480	0.359	0.562	0.5570	0.5600	H7	H5
		H7	1626003208							0.5570	0.5600		
1/2 - 13 UNC	2.5P	H5	1626003308	4.33	0.767	2.125	0.480	0.359	0.562	0.5570	0.5600	H7	H5
		H7	1626003408							0.5570	0.5600		
1/2 - 13 UNC	2.5P	H5	1626003508	4.33	0.767	2.125	0.480	0.359	0.562	0.5570	0.5600	H7	H5
		H7	1626003608							0.5570	0.5600		

Packed: 1 pc.
Available V coating only.

continued on next page

List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
16260	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	12-25				

*For Stainless Steel, please use non-water-soluble coolant.

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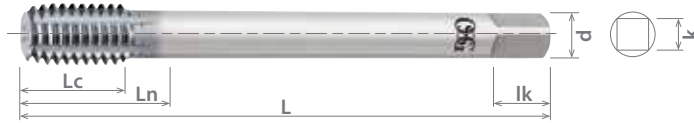




List 16260 (Continued)

HSS-Co	V	STI
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HL-S-XPF, DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size		Class of Fit				
			Modified Bottom (2.5P)							L	Lc	Ln	Min	Max	2B	3B
			V							L	Lc	Ln	d	k	lk	Min
1/2 - 20 UNF	2.5P	H5	1626003708	3.93	0.767	1.972	0.429	0.322	0.500	0.5383	0.5402	H7	H5			
		H7	1626003808													
9/16 - 12 UNC	2.5P	H9	1626003908	4.33	0.834	2.165	0.542	0.405	0.625	0.6251	0.6282	H9	H7			
		H7	1626004008													
9/16 - 18 UNF	2.5P	H7	1626004108	3.93	0.909	2.125	0.480	0.359	0.562	0.6057	0.6077	H9	H7			
		H9	1626004208													
5/8 - 11 UNC	2.5P	H7	1626004308	4.92	1.000	2.433	0.590	0.442	0.688	0.6928	0.6961	H9	H7			
		H9	1626004408													
5/8 - 18 UNF	2.5P	H7	1626004508	4.33	1.110	2.165	0.542	0.405	0.625	0.6682	0.6702	H10	H7			
		H9	1626004608													
3/4 - 10 UNC	2.5P	H7	1626004708	5.51	1.251	2.653	0.697	0.522	0.751	0.8241	0.8276	H11	H8			
		H9	1626004808													
3/4 - 16 UNF	2.5P	H7	1626004908	4.92	1.110	2.433	0.652	0.488	0.688	0.7980	0.8002	H10	H7			
		H9	1626005008													
7/8 - 9 UNC	2.5P	H7	1626005108	6.29	1.251	3.011	0.800	0.600	0.811	0.9573	0.9606	H11	H8			
		H10	1626005208													
7/8 - 14 UNF	2.5P	H7	1626005308	5.51	1.251	3.114	0.895	0.672	0.874	1.0925	1.0966	H11	H8			
		H10	1626005408													
1 - 8 UNC	2.5P	H8	1626005508	7.08	1.251	3.114	1.020	0.766	1.000	1.0925	1.0966	H11	H8			
		H11	1626005608													
1 - 12 UNF	2.5P	H8	1626005708	5.51	1.251	3.114	0.895	0.672	0.874	1.0636	1.0658	H11	H8			
		H11	1626005808													

Packed: 1 pc.
Available V coating only.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
16260	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	12-25			

*For Stainless Steel, please use non-water-soluble coolant.

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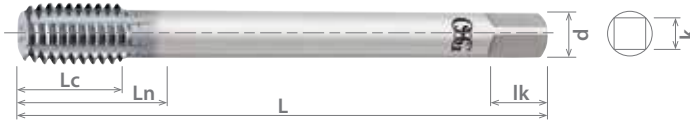




List 16360

HSS-Co	V	STI
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HL-S-XPF, DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	EDP Number	DIN Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Tap Drill Size	
			Modified Bottom (2.5P)	L	Lc	Ln	d	k	lk	Min	Max
M2 x 0.4	2.5P	D3	1636000108	50	8	9.2	3.58	2.79	4.8	2.32	2.35
M2.5 x 0.45			1636000208	56	6	18.2				2.85	2.89
M3 x 0.5			1636000308	63	7	21.3				3.39	3.43
M4 x 0.7		D4	1636000408	70	10	25.3	4.92	3.86	6.4	4.54	4.59
M5 x 0.8			1636000508	80	11	30.4	6.47	4.85	7.3	5.61	5.67
M6 x 1.0		D5	1636000608	90	10	35.0	8.07	6.05	9.5	6.76	6.83
M8 x 1.25		D6	1636000708	100	12	39.0	9.67	7.26	11.1	8.95	9.03
M10 x 1.5		D8	1636000808		15	49.1	9.32	6.98		11.15	11.23
M12 x 1.75		D9	1636000908	110	17	50.1	10.89	8.18	12.7	13.33	13.43
M14 x 2.0		D10	1636001008		20	55.0	13.76	10.31	15.9	15.52	15.63
M16 x 2.0			1636001108	125		61.8	14.98	11.23	17.5	17.52	17.63
M18 x 2.5			1636001208	140	25	67.4	17.70	13.28	19.1	19.87	20.00
M20 x 2.5			1636001308	160		68.4	19.30	14.48		21.87	22.00
M22 x 2.5			1636001408		76.5	20.32	15.24	20.6	23.87	24.00	
M24 x 3.0			D11	1636001508	30	79.1	22.75	17.07	22.2	26.23	26.38

Packed: 1 pc.
Available V coating only.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH	6061 7075		Casting	Inconel			6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
16360	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	10-30		65-115	65-90	8-12	8-15	50-100	12-25			

*For Stainless Steel, please use non-water-soluble coolant.

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List 315Ti



V-HL-Ti-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V						
2 - 56 UNC	H2	3	31540108	1.94	0.574	0.614	0.140	0.109	0.188
4 - 40 UNC			31540208	2.05	0.688	-			
6 - 32 UNC	H3		31540308	2.45	0.870	1.066	0.194	0.151	0.251
8 - 32 UNC			31540408	2.46	0.937	-	0.220	0.164	0.279
10 - 32 UNF			31540508	2.50	1.000	1.196	0.255	0.190	0.287
1/4 - 28 UNF			31540608	2.72	0.500	1.125	0.317	0.238	0.374
5/16 - 24 UNF			31540708	2.93	0.555	1.251	0.380	0.285	0.437
3/8 - 24 UNF			31540808	3.15	0.625	1.712	0.322	0.242	0.405
7/16 - 20 UNF	H4		31540908	3.37	0.712	1.933	0.367	0.274	0.437
1/2 - 20 UNF			31541008	3.59	0.767	1.972	0.429	0.322	0.500

Packed: 1 pc.
Available V coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
315Ti				<input type="checkbox"/>				<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30			8-20					8-15	8-15	15-35	10-20		

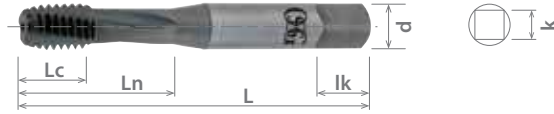
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List 315Ni

V-HL-Ti-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P-3P)						
			V	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	3	31520108	1.88	0.559	-	0.140	0.109	0.188
4 - 40 UNC			31520208	2.00	0.688	-			
6 - 32 UNC	H3		31520308	2.38	0.870	-	0.194	0.151	0.251
8 - 32 UNC			31520408		0.937	-	0.220	0.164	0.279
10 - 32 UNF			31520508	2.50	1.000	-	0.255	0.190	0.311
1/4 - 28 UNF			31520608	2.72	0.500	1.125	0.317	0.238	0.374
5/16 - 24 UNF			31520708	2.94	0.555	1.251	0.380	0.285	0.437
3/8 - 24 UNF			31520808	3.16	0.625	1.712	0.322	0.242	0.405
7/16 - 20 UNF	H4		31520908	3.38	0.712	1.933	0.367	0.274	0.437
1/2 - 20 UNF			31521008	3.59	0.767	1.972	0.429	0.322	0.500

Packed: 1 pc.
Available V coating only.



Work Material																			
List No.	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
315Ni	1010	1035	1065	4140															
SFM	1018	1045		4340				8-20											

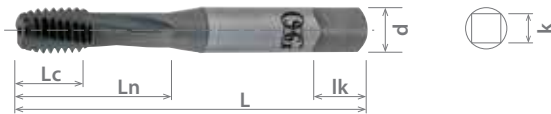
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List 315

V-HL-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P - 3P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V						
2 - 56 UNC	H2	2	17157	01	08	1.93	0.177	0.562	0.140	0.109	0.188
3 - 48 UNC			315001	01	08	1.99	0.208	0.625			
4 - 40 UNC			17158	01	08	2.05	0.251	0.688			
4 - 48 UNF			315002	01	08	2.07	0.267	0.704			
6 - 32 UNC	H3	2	17159	01	08	2.45	0.311	0.874	0.194	0.151	0.251
6 - 40 UNF			17160	01	08						
8 - 32 UNC	H3	2	17161	01	08	2.46	0.311	0.937	0.220	0.164	0.279
8 - 36 UNF			17162	01	08						
10 - 24 UNC	H3	2	315004	01	08	2.48	0.330	0.956	0.255	0.190	0.287
10 - 32 UNF			315005	01	08						
			315006	01	08						
1/4 - 20 UNC	H2	3	17163	01	08	2.50	0.417	1.000	0.255	0.190	0.287
1/4 - 28 UNF			17164	01	08						
5/16 - 18 UNC	H4	3	315007	01	08	2.72	0.500	1.125	0.317	0.238	0.374
			315008	01	08						
			17165	01	08						
5/16 - 24 UNF	H3	3	17166	01	08	2.93	0.555	1.251	0.380	0.285	0.437
			315009	01	08						
3/8 - 16 UNC	H4	3	315010	01	08	3.37	0.625	1.933	0.367	0.274	0.405
			315011	01	08						
3/8 - 24 UNF	H3	3	17167	01	08	3.59	0.712	1.972	0.429	0.322	0.500
			315012	01	08						
7/16 - 14 UNC	H4	3	315013	01	08	3.37	0.767	1.933	0.367	0.274	0.437
			315014	01	08						
7/16 - 20 UNF	H3	3	315015	01	08	3.81	0.767	2.125	0.480	0.359	0.562
			315016	01	08						
1/2 - 13 UNC	H4	3	315017	01	08	3.59	0.767	1.972	0.429	0.322	0.500
			315018	01	08						
1/2 - 20 UNF	H3	3	315019	01	08	4.03	0.834	2.165	0.542	0.405	0.625
			315020	01	08						
9/16 - 12 UNC	H4	3	315021	01	08	3.81	0.834	2.125	0.480	0.359	0.562
			315022	01	08						
9/16 - 18 UNF	H3	3	315023	01	08	4.25	0.909	2.433	0.590	0.442	0.688
			315024	01	08						
5/8 - 11 UNC	H4	3	315025	01	08	4.03	0.909	2.165	0.542	0.405	0.625
			315026	01	08						
5/8 - 18 UNF	H3	3	315027	01	08	4.68	1.000	2.653	0.697	0.522	0.751
			315028	01	08						
3/4 - 10 UNC	H5	3	315029	01	08	4.46	1.000	2.433	0.652	0.488	0.688
			315030	01	08						
3/4 - 16 UNF	H4	3	315031	01	08	5.12	1.110	3.011	0.800	0.600	0.811
			315032	01	08						
7/8 - 9 UNC	H5	3	315033	01	08	5.12	1.110	3.011	0.800	0.600	0.811
			315034	01	08						
			315035	01	08						
			315036	01	08						
			315037	01	08						

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.





List 315 (Continued)



VC10	V	S/O	STI	15°
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V-HL-SFT, Spiral Fluted, Modified Bottom (2.5P-3P)

Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P - 3P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix							
				S/O	V						
7/8 - 14 UNF	H3	4	315038	01	08	5.12	1.110	3.011	0.800	0.600	0.811
	H4		315039	01	08						
1 - 8 UNC	H4		315040	01	08	5.75	1.251	3.114	1.020	0.766	1.000
	H6		315041	01	08						
1 - 12 UNF	H4		315042	01	08	5.43			0.895	0.672	0.874
	H6		315043	01	08						

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010	1035	1045	1065	4140	4340											
315				<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

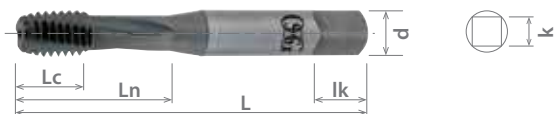
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List 345STI

Spiral Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P - 3P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			EDP Number	Coating Suffix								
				S/O	V	L	Lc	Ln	d	k	lk	
M2 x 0.4	D2	2	345001	01	08	47	12	13.9	3.58	2.79	4.8	
M2.5 x 0.45			345002	01	08	49	4	15.9				
M3 x 0.5	D3	3	345003	01	08	50	5	17.6	4.92	3.86	6.4	
M4 x 0.7			345004	01	08	60	7	22.2				
M5 x 0.8			345005	01	08	63	8	25.5				
M6 x 1			345006	01	08	69	10	28.6				
M8 x 1.25	D4	3	345007	01	08	74	12	31.8	9.67	7.26	11.1	
M10 x 1.5			345008	01	08	85	15	49.1	9.32	6.98		
M12 x 1.75	D5	4	345009	01	08	91	17	50.1	10.89	8.18	12.7	
M14 x 2			345010	01	08	102	20	55.0	13.76	10.31	15.9	
M16 x 2			345011	01	08	108		61.8	14.98	11.23	17.5	
M18 x 2.5			345012	01	08	119	25	67.4	17.70	13.28	19.1	
M20 x 2.5			345013	01	08	124		68.4	19.30	14.48		
M22 x 2.5			345014	01	08	130		76.5	20.32	15.24	20.6	
M24 x 3			D6	345015	01	08	138	30	79.1	22.75	17.07	22.2

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
345STI				<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>				<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

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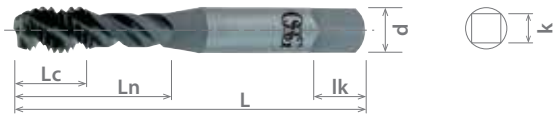


List 302

Spiral Fluted, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



HSSE	V	S/O	STI	45°
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Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Modified Bottom (2.5P - 3P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix		EDP Number	Coating Suffix							
				S/O	V		S/O	V						
2 - 56 UNC	H2	2	01447	01	08	17135	01	-	1.88	0.176	0.565	0.141	0.110	0.189
3 - 48 UNC			302001	01	08	-	-	-	1.94	0.209	0.626			
4 - 40 UNC			01448	01	08	17136	01	-	2.00	0.252	0.689			
4 - 48 UNF			302002	01	08	-	-	-						
6 - 32 UNC	H3	2	01449	01	08	17137	01	-	2.38	0.313	0.876	0.194	0.152	0.252
6 - 40 UNF	01450		01	08	17138	01	-	2.13						
8 - 32 UNC	H3	3	01451	01	08	302003	01	08	2.38	0.311	0.937	0.220	0.165	0.280
8 - 36 UNF	H2		01452	01	08	17139	01	-						
10 - 24 UNC	H3		01453	01	08	17140	01	-						
10 - 32 UNF	H4		01454	01	08	302004	01	08						
10 - 32 UNF	H2	3	302005	01	08	-	-	-	2.50	0.418	1.000	0.255	0.191	0.311
10 - 32 UNF	H3		01455	01	08	302007	01	08						
10 - 32 UNF	H4		01456	01	08	302008	01	08						
1/4 - 20 UNC	H2		01457	01	08	17141	01	-						
1/4 - 28 UNF	H2	3	01458	01	08	-	-	-	2.72	0.500	1.126	0.318	0.238	0.374
5/16 - 18 UNC	H3		01460	01	08	302010	01	08						
5/16 - 24 UNF	H4		01461	01	08	302011	01	08						
3/8 - 16 UNC	H2		01462	01	08	17143	01	-						
3/8 - 24 UNF	H3	3	01463	01	08	17144	01	-	2.94	0.555	1.252	0.381	0.286	0.437
7/16 - 14 UNC	H4		01464	01	08	302012	01	08						
7/16 - 20 UNF	H2		01465	01	08	302013	01	08						
1/2 - 13 UNC	H3		01466	01	08	17145	01	-						
1/2 - 20 UNF	H4	3	01467	01	08	302014	01	08	3.38	0.626	1.933	0.367	0.275	0.406
7/16 - 14 UNC	H3		01468	01	08	302015	01	08						
7/16 - 20 UNF	H4		01469	01	08	302016	01	08						
1/2 - 13 UNC	H2		01470	01	08	302017	01	08						
1/2 - 20 UNF	H3	3	01471	01	08	302018	01	08	3.16	0.713	1.713	0.323	0.242	0.500
1/2 - 20 UNF	H4		01472	01	08	302019	01	08						
9/16 - 12 UNC	H3		01473	01	08	302021	01	08						
9/16 - 12 UNC	H4		01474	01	08	302022	01	08						
1/2 - 13 UNC	H3	4	01475	01	08	302023	01	08	3.59	0.768	1.933	0.367	0.275	0.437
1/2 - 20 UNF	H4		01476	01	08	302024	01	08						
1/2 - 20 UNF	H3		01477	01	08	302025	01	08						
1/2 - 20 UNF	H4		01478	01	08	302026	01	08						
9/16 - 12 UNC	H3	4	01479	01	08	302027	01	08	3.81	0.768	2.126	0.480	0.360	0.563
9/16 - 12 UNC	H4		302029	01	08	302028	01	08						
9/16 - 12 UNC	H3	4	302032	01	08	302031	01	08	4.03	0.835	2.126	0.542	0.406	0.626
9/16 - 12 UNC	H4													

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

[continued on next page](#) **EXT**

Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
302	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	25-80	20-50	20-45			20-45	20-45	8-20										

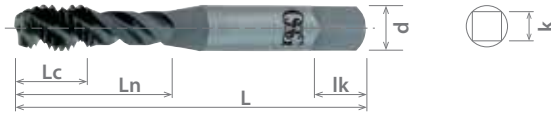
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List 302 (Continued)

Spiral Fluted, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Bottom (1.5P - 2P)			Modified Bottom (2.5P - 3P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix		EDP Number	Coating Suffix							
				S/O	V		S/O	V						
9/16 - 18 UNF	H3	4	01480	01	08	302033	01	08	3.81	0.835	2.126	0.480	0.360	0.563
	H4		302035	01	08	302034	01	08						
5/8 - 11 UNC	H3		302037	01	08	302036	01	08	4.25	0.909	2.433	0.590	0.442	0.689
	H4		302039	01	08	302038	01	08						
5/8 - 18 UNF	H3		01481	01	08	302041	01	08	4.03	1.000	2.165	0.542	0.406	0.626
	H4		302043	01	08	302042	01	08						
3/4 - 10 UNC	H3		302045	01	08	302044	01	08	4.68	1.110	2.654	0.697	0.523	0.752
	H5		302047	01	08	302046	01	08						
3/4 - 16 UNF	H3		302049	01	08	302048	01	08	4.46	3.012	0.800	0.600	0.811	
	H4		01482	01	08	302051	01	08						
7/8 - 9 UNC	H3		302053	01	08	302052	01	08	5.13	1.252	3.075	1.021	0.766	1.000
	H5		302055	01	08	302054	01	08						
7/8 - 14 UNF	H3		302057	01	08	302056	01	08	5.75	0.896	0.672	0.874		
	H4		01483	01	08	302059	01	08						
1 - 8 UNC	H3		302063	01	08	302062	01	08	5.44	0.896	0.672	0.874		
	H6		302065	01	08	302064	01	08						
1 - 12 UNF	H4	302067	01	08	302066	01	08	5.44	0.896	0.672	0.874			
	H6	302069	01	08	302068	01	08							

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
302	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

good best



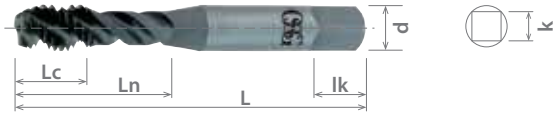


List 343STI

Spiral Fluted, Modified Bottom (2.5P-3P)



HSSE	V	S/O	STI	45°
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Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P - 3P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V						
M2 x 0.4	D2	2	343001	01	08	46	12	13.7	3.58	2.79	4.8
M2.5 x 0.45			343002	01	08	49	4	16.0			
M3 x 0.5	D3	3	343003	01	08	50	5	17.7	4.92	3.86	6.4
M4 x 0.7			343004	01	08	60	7	22.3			
M5 x 0.8			343005	01	08	63	8	25.5			
M6 x 1.0	D4	3	343006	01	08	69	10	28.6	8.07	6.05	9.5
M8 x 1.25			343007	01	08	74	12	31.8	9.67	7.26	11.1
M10 x 1.5	D5	4	343008	01	08	85	15	49.1	9.32	6.98	19.1
M12 x 1.75			343009	01	08	91	17	50.1	10.89	8.18	
M14 x 2.0	D6	4	343010	01	08	102	20	55.0	13.76	10.31	15.9
M16 x 2.0			343011	01	08	108		61.8	14.98	11.23	17.5
M18 x 2.5			343012	01	08	119	25	67.4	17.70	13.28	19.1
M20 x 2.5	343013	01	08	124	68.4	19.30		14.48			
M22 x 2.5	343014	01	08	130	76.5	20.32		15.24	20.6		
M24 x 3.0			343015	01	08	138	30	79.1	22.75	17.07	22.2

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
343STI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

good best





List 13039



HSSE	V	BR	STI	50°
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Spiral Fluted, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P - 3P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				Bright	V						
2 - 56 UNC	H2	2	13039001	00	08	1.88	0.177	0.562	0.140	0.109	0.188
4 - 40 UNC			13039002	00	08	2.00	0.251	0.688			
6 - 32 UNC			13039003	00	08	2.38	0.311	0.874	0.194	0.151	0.251
8 - 32 UNC			13039004	00	08			0.937	0.220	0.164	0.279
10 - 32 UNF			H3	13039005	00	08	2.50	0.417	1.000	0.255	0.190
1/4 - 20 UNC	13039006			00	08	2.72	0.500	1.125	0.317	0.238	0.374
1/4 - 28 UNF	13039007			00	08						
5/16 - 18 UNC	13039008			00	08	2.94	0.555	1.251	0.380	0.285	0.437
5/16 - 24 UNF	13039009			00	08						
3/8 - 16 UNC	13039010			00	08						
3/8 - 24 UNF	13039011	00		08	3.16	1.712	0.322	0.242	0.405		
7/16 - 20 UNF	H4	13039012		00	08	3.38	0.712	1.933	0.367	0.274	0.437
1/2 - 20 UNF		13039013	00	08	3.59	0.767	1.972	0.429	0.322	0.500	

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
13039	1010	1035	1065	4140															
SFM	1018	1045		4340						40-80	40-65								

good best





List S108

Spiral Fluted, Bottom (1.5P-2P)

HSS	BR	STI	50°
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Tap Size	Thread Limit	No. of Flutes	EDP Number			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P-2P)	Bright	L						
2 - 56 UNC	H2	2	8003000	1.88	0.188	0.574	0.140	0.109	0.188		
3 - 48 UNC			10800100	1.94	0.208	0.625					
4 - 40 UNC			8003600	2.00	0.251	0.688					
4 - 48 UNF			10800200								
6 - 32 UNC	H3	2	8005400	2.38	0.314	0.885	0.194	0.151	0.251		
6 - 40 UNF	H2		10800300	2.12		0.755				0.167	0.131
8 - 32 UNC	H3	2	8006900	2.38	0.311	0.940	0.220	0.164	0.279		
8 - 36 UNF	H2		8007200			0.937					
10 - 24 UNC	H3		10800400								
10 - 32 UNF	H2	3	8007800	2.50	0.417	1.000	0.255	0.190	0.311		
1/4 - 20 UNC	H3		8008100								
1/4 - 28 UNF	H2		8008700								
5/16 - 18 UNC	H3	3	8009000	2.72	0.500	1.129	0.317	0.238	0.338		
5/16 - 24 UNF	H4		8010900								
3/8 - 16 UNC	H2		8011200								
3/8 - 24 UNF	H3	3	8011800	2.93	0.555	1.251	0.380	0.285	0.397		
7/16 - 14 UNC	H4		8013000								
7/16 - 20 UNF	H2		8013300								
9/16 - 12 UNC	H3	4	8013600	3.37	0.625	1.933	0.367	0.274	0.437		
9/16 - 18 UNF	H4		8015400								
1 1/8 - 10 UNC	H2		8015700								
1 1/8 - 14 UNF	H3	4	8015800	3.15	0.712	1.712	0.322	0.242	0.405		
1 1/8 - 18 UNF	H4		8017000								
1 1/2 - 10 UNC	H3		10800500								
1 1/2 - 14 UNF	H4	3	8017400	3.59	0.712	1.972	0.429	0.322	0.500		
1 1/2 - 18 UNF	H3		8017500								
1 3/8 - 10 UNC	H4		8017400								
1 3/8 - 14 UNF	H3	4	8017500	3.81	0.767	2.125	0.480	0.359	0.562		
1 3/8 - 18 UNF	H4		10800600								
1 3/4 - 10 UNC	H3		8018400								
1 3/4 - 14 UNF	H4	4	10800700	3.59	0.834	1.972	0.429	0.322	0.500		
1 3/4 - 18 UNF	H3		10800800								
2 - 10 UNC	H4		10800900								
2 - 14 UNF	H3	4	10801000	4.03	0.834	2.125	0.542	0.405	0.625		
2 - 18 UNF	H4		10801100								
2 1/8 - 10 UNC	H3		10801100								

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page **STI**

Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
S108	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

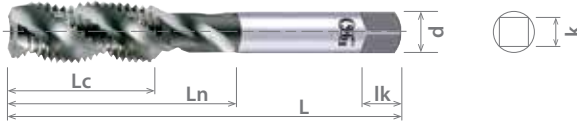
good best





List S108 (Continued)

Spiral Fluted, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length			
			Bottom (1.5P - 2P)									
			Bright	L	Lc	Ln	d	k	lk			
5/8 - 11 UNC	H3	4	10801200	4.25	0.909	2.433	0.590	0.442	0.688			
	H4		10801300									
5/8 - 18 UNF	H3		10801400	4.03		2.165	0.542	0.405	0.625			
	H4		10801500									
3/4 - 10 UNC	H3		10801600	4.68	1.000	2.653	0.697	0.522	0.751			
	H5		10801700									
3/4 - 16 UNF	H3		10801800	4.46		2.433	0.652	0.488	0.688			
	H4		10801900									
7/8 - 9 UNC	H3		10802000	5.12	1.110	3.011	0.800	0.600	0.811			
	H5		10802100									
7/8 - 14 UNF	H3		10802200									
	H4		10802300									
1 - 8 UNC	H3		10802400	5.75	1.251	3.074	1.020	0.766	1.000			
	H4		10802500									
1 - 12 UNF	H4		10802600	5.43						0.895	0.672	0.874
	H6		10802700									

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
S108	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





List S109

HSS

BR

STI

50°

Spiral Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)								
			Bright	L	Lc	Ln					
M2 x 0.4	D2	2	10900100	46	12	-	3.58	2.79	4.8		
M2.5 x 0.45			10900200	49	4	15.90					
M3 x 0.5			10900300	50	5	17.50					
M4 x 0.7	D3	3	10900400	60	7	22.20	4.92	3.86	6.4		
M5 x 0.8			10900500	63	8	25.40	6.47	4.85	7.9		
M6 x 1.0			10900600	69	10	28.60	8.07	6.05	9.5		
M8 x 1.25	D4	3	10900700	74	12	31.80	9.67	7.26	11.1		
M10 x 1.5			10900800	85	15	49.10	9.32	6.98	11.1		
M12 x 1.75			10900900	91	17	50.10	10.89	8.18	12.7		
M14 x 2.0	D5	4	10901000	102	20	55.00	13.76	10.31	15.9		
M16 x 2.0			10901100	108		61.80	14.98	11.23	17.5		
M18 x 2.5			10901200	119	25	67.40	17.70	13.28	19.1		
M20 x 2.5			10901300	124		68.40	19.30	14.48	20.6		
M22 x 2.5			10901400	130		76.50	20.32	15.24	20.6		
M24 x 3.0	D6		10901500	138	30	79.10	22.75	17.07	22.2		

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH	6061 7075		Casting	Inconel			6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
S109	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





List 314Ti



V-HL-Ti-POT, Spiral Pointed, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)						
			V	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	2	31440108	1.88	0.562	-	0.140	0.109	0.188
4 - 40 UNC			31440208	2.00	0.688	-			
6 - 32 UNC	H3	3	31440308	2.38	0.874	-	0.194	0.151	0.251
8 - 32 UNC			31440408		0.933	-			
10 - 32 UNF			31440508	2.50	1.000	-	0.255	0.190	0.311
1/4 - 28 UNF			31440608	2.72	0.696	1.122	0.317	0.238	0.374
5/16 - 24 UNF			31440708	2.94	0.779	1.251	0.380	0.285	0.437
3/4 - 24 UNF	H4	3	31440808	3.16	0.874	1.307	0.322	0.242	0.405
7/16 - 20 UNF			31440908	3.38	1.000	1.433	0.367	0.274	0.437
1/2 - 20 UNF			31441008	3.59	1.078	1.551	0.429	0.322	0.500

Packed: 1 pc.
Available V coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
314Ti				<input type="checkbox"/>							<input checked="" type="checkbox"/>	<input type="checkbox"/>					
SFM				15-30			8-20				8-15	8-15	15-35	10-20			

good best



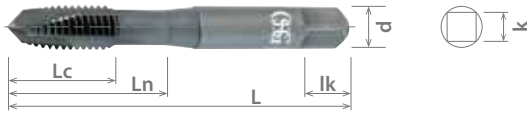


List 314Ni

V-HL-Ni-POT, Spiral Pointed, Plug (3.5P-4.5P)



VC10	V	STI
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Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)						
			V	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	3	31420108	1.93	0.562	0.602	0.140	0.109	0.188
4 - 40 UNC			31420208	2.05	0.688	-			
6 - 32 UNC			31420308	2.45	0.874	1.070	0.194	0.151	0.251
8 - 32 UNC	H3		31420408	2.46	0.933	-	0.220	0.164	0.279
10 - 32 UNF			31420508	2.57	1.000	1.196	0.255	0.190	0.287
1/4 - 28 UNF			31420608	2.81	0.696	1.122	0.317	0.238	0.342
5/16 - 24 UNF			31420708	3.05	0.779	1.251	0.380	0.285	0.397
3/8 - 24 UNF			31420808	3.15	0.874	1.307	0.322	0.242	0.405
7/16 - 20 UNF	H4		31420908	3.37	1.000	1.433	0.367	0.274	0.437
1/2 - 20 UNF			31421008	3.59	1.078	1.551	0.429	0.322	0.500

Packed: 1 pc.
Available V coating only.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
314Ni																		
SFM								8-20				8-15	8-15	15-35	10-20			

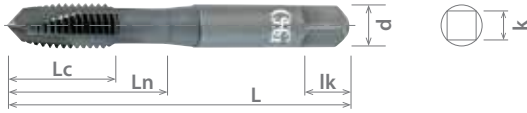
good best





List 314

Spiral Pointed, Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P - 5.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V						
2 - 56 UNC	H2	2	17146	01	08	1.88	0.299	0.610	0.140	0.109	0.188
3 - 48 UNC			314001	01	08	1.94	0.346	0.681			
4 - 40 UNC			17147	01	08	2.00	0.413	0.751			
4 - 48 UNF			314002	01	08						
6 - 32 UNC	H3	3	17148	01	08	2.38	0.515	0.952	0.194	0.151	0.251
6 - 40 UNF			17149	01	08			0.830			
8 - 32 UNC	H3	3	17150	01	08	2.38	0.527	1.027	0.220	0.164	0.279
8 - 36 UNF			17151	01	08						
10 - 24 UNC	H3	3	314003	01	08	2.50	0.688	1.106	0.255	0.190	0.287
10 - 32 UNF			17152	01	08						
1/4 - 20 UNC	H3	3	314004	01	08	2.72	0.842	1.267	0.317	0.238	0.342
1/4 - 28 UNC			314005	01	08						
5/16 - 18 UNC	H3	3	314006	01	08	2.94	0.956	1.429	0.380	0.285	0.397
5/16 - 24 UNF			17152	01	08						
3/8 - 16 UNC	H4	3	17153	01	08	3.38	0.874	1.307	0.367	0.274	0.437
3/8 - 24 UNF			314007	01	08						
7/16 - 14 UNC	H4	3	314008	01	08	3.59	1.000	1.472	0.429	0.322	0.500
7/16 - 20 UNF			17154	01	08						
1/2 - 13 UNC	H4	3	314009	01	08	3.81	1.078	1.551	0.480	0.359	0.562
1/2 - 20 UNF			314010	01	08						
9/16 - 12 UNC	H4	3	314011	01	08	4.03	1.165	1.677	0.542	0.405	0.625
9/16 - 18 UNF			17155	01	08						
5/8 - 11 UNC	H4	3	314012	01	08	4.25	1.271	1.822	0.590	0.442	0.688
5/8 - 18 UNF			314013	01	08						
3/4 - 10 UNC	H5	3	314014	01	08	4.68	1.401	1.992	0.697	0.522	0.751
3/4 - 16 UNF			314015	01	08						
7/8 - 9 UNC	H5	3	314016	01	08	5.12	1.555	2.145	0.800	0.600	0.811
			314017	01	08						

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.





List 314 (Continued)

Spiral Pointed, Plug (4.5P-5.5P)



VC10	V	S/O	STI
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Tap Size	Thread Limit	No. of Flutes	Plug (4.5P - 5.5P)			Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk
			EDP Number	Coating Suffix							
				S/O	V						
7/8 - 14 UNF	H3	4	314038	01	08	5.12	1.555	2.145	0.800	0.600	0.811
	H4		314039	01	08						
1 - 8 UNC	H4		314040	01	08	5.75	1.751	2.381	1.020	0.766	1.000
	H6		314041	01	08						
1 - 12 UNF	H4		314042	01	08	5.44			0.895	0.672	0.874
	H6		314043	01	08						

Packed: 1 pc.

EDP's listed above are stocked standard.

Available in Steam Oxide or V coatings as shown above.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
	1010	1035	1045	1065	4140	4340												
314					<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			
SFM					15-30	10-25		12-45	8-20			8-15	8-15	15-35	10-20			

good best





List 344STI

Spiral Pointed, Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (4.5P - 5.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V						
M2 X 0.4	D2	2	344001	01	08	48	12	-	3.58	2.79	4.8
M2.5 X 0.45			344002	01	08	49	6	15.9			
M3 X 0.5			344003	01	08	50	7	17.7			
M4 X 0.7	D3	3	344004	01	08	60	9	22.3	4.92	3.86	6.4
M5 X 0.8			344005	01	08	63	11	25.5	6.47	4.85	7.8
M6 X 1.0			344006	01	08	69	14	28.8	8.07	6.04	9.4
M8 X 1.25	D4	3	344007	01	08	74	17	32.0	9.67	7.26	11.0
M10 X 1.5			344008	01	08	85	21		9.32	6.98	
M12 X 1.75			344009	01	08	91	24		10.89	8.17	
M14 X 2.0	D5	4	344010	01	08	102	27	40.9	13.76	10.31	15.9
M16 X 2.0			344011	01	08	108		42.0	14.98	11.22	17.5
M18 X 2.5			344012	01	08	119		35	48.9	17.70	13.28
M20 X 2.5	344013	01	08	124	35	50.0	19.30	14.47			
M22 X 2.5	344014	01	08	130		20.32	15.24	20.5			
M24 X 3.0	D6		344015	01	08	138	42	57.9	22.75	17.06	22.1

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
344STI				<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>				
SFM				15-30	10-25		12-45	8-20			8-15	8-15	15-35	10-20				

good best





List 301

Spiral Pointed, Plug (3.5P-4.5P)



HSSE	V	S/O	STI
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			EDP Number	Coating Suffix							
				S/O	V						
2 - 56 UNC	H2	2	17124	01	08	1.88	0.259	0.570	0.140	0.109	0.188
3 - 48 UNC			301001	01	08	1.94	0.307	0.633			
4 - 40 UNC			17125	01	08	2.00	0.362	0.700			
4 - 48 UNF			301002	01	08						
6 - 32 UNC	H3	2	17126	01	08	2.38	0.440	0.877	0.194	0.151	0.251
6 - 40 UNF			17127	01	08						
			301003	01	08						
8 - 32 UNC	H3	2	17128	01	08	2.38	0.440	0.940	0.220	0.164	0.279
8 - 36 UNF			17129	01	08						
10 - 24 UNC	H3	2	301004	01	08	2.50	0.590	1.007	0.255	0.190	0.311
10 - 32 UNF			301005	01	08						
			301006	01	08						
1/4 - 20 UNC	H3	2	17130	01	08	2.72	0.708	1.133	0.317	0.238	0.374
1/4 - 28 UNF			17131	01	08						
5/16 - 18 UNC	H4	3	301007	01	08	2.94	0.791	1.263	0.380	0.285	0.397
			301008	01	08						
			17132	01	08						
5/16 - 24 UNF	H3	3	17133	01	08	3.37	0.921	1.354	0.367	0.274	0.437
			301009	01	08						
3/8 - 16 UNC	H4	3	301010	01	08	3.15	0.858	1.291	0.322	0.242	0.405
			301011	01	08						
3/8 - 24 UNF	H3	3	301012	01	08	3.59	1.000	1.472	0.429	0.322	0.500
			17134	01	08						
7/16 - 14 UNC	H4	3	301013	01	08	3.37	0.921	1.354	0.367	0.274	0.437
			301014	01	08						
7/16 - 20 UNF	H4	3	301015	01	08	3.81	1.090	1.562	0.480	0.359	0.562
			301016	01	08						
1/2 - 13 UNC	H4	3	301017	01	08	3.59	1.000	1.472	0.429	0.322	0.500
			301018	01	08						
1/2 - 20 UNF	H4	3	301019	01	08	3.81	1.090	1.562	0.480	0.359	0.562
			301020	01	08						
9/16 - 12 UNC	H4	3	301021	01	08	4.03	1.200	1.712	0.542	0.405	0.629
			301022	01	08						
9/16 - 18 UNF	H4	3	301023	01	08	3.59	1.000	1.472	0.429	0.322	0.500
			301024	01	08						
			301025	01	08	3.81	1.090	1.562	0.480	0.359	0.562
			301026	01	08						
			301027	01	08						
			301028	01	08						
			301029	01	08						

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

continued on next page **EXT**

Work Material																			
List No.	P					Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Titanium		Stainless Steels				Aluminum	Nickel Alloy	Hardened Steels						
	Low	Med.	High				300	400	17-4 PH				6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
301	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>										
SFM	25-80	20-50	20-45				20-45	20-45	8-20										

good best



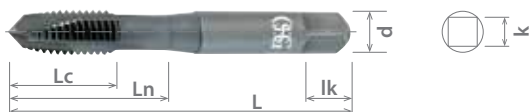


List 301 (Continued)

Spiral Pointed, Plug (3.5P-4.5P)



HSSE	V	S/O	STI
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)		Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	
			EDP Number	Coating Suffix							
				S/O							V
5/8 - 11 UNC	H3	3	301031	01	08	4.25	1.200	1.712	0.590	0.442	0.688
	H4		301032	01	08						
5/8 - 18 UNF	H3		301033	01	08	4.03	1.334	1.885	0.697	0.522	0.751
	H4		301034	01	08						
3/4 - 10 UNC	H3		301035	01	08	4.68	1.500	2.090	0.800	0.600	0.811
	H5		301036	01	08						
3/4 - 16 UNF	H3		301037	01	08	4.46	1.712	2.381	1.020	0.766	1.000
	H4		301038	01	08						
7/8 - 9 UNC	H3		301039	01	08	5.12	2.303	2.895	1.200	0.874	0.874
	H5		301041	01	08						
7/8 - 14 UNF	H3		301042	01	08	5.75	2.303	2.895	1.020	0.766	1.000
	H4		301043	01	08						
1 - 8 UNC	H4	301044	01	08	5.43	2.303	2.895	1.020	0.766	1.000	
	H6	301045	01	08							
1 - 12 UNF	H4	301046	01	08	5.43	2.303	2.895	1.020	0.766	1.000	
	H6	301047	01	08							

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or V coatings as shown above.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Titanium	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Nickel Alloy	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
301	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

good best





List 342STI

Spiral Pointed, Plug (3.5P-4P)



HSSE	V	S/O	STI
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Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			EDP Number	Coating Suffix								
				S/O	V	L	Lc	Ln	d	k	lk	
M2 x 0.4	D2	2	342001	01	08	46	6	13.1	3.58	2.79	4.8	
M2.5 x 0.45			342002	01	08	49	7	15.9				
M3 x 0.5			342003	01	08	50	9	17.5				
M4 x 0.7	D3	3	342004	01	08	60	12	22.2	4.92	3.86	6.4	
M5 x 0.8			342005	01	08	63	15	25.4	6.47	4.85	7.9	
M6 x 1.0			342006	01	08	69	16	28.6	8.07	6.05	9.5	
M8 x 1.25	342007		01	08	74	19	31.9	9.67	7.26	11.1		
M10 x 1.5	342008		01	08	85	23	34.4	9.32	6.98			
M12 x 1.75	D4		342009	01	08	91	25	37.4	10.89	8.18	12.7	
M14 x 2.0	D5	3	342010	01	08	102	27	40.7	13.76	10.31	16.0	
M16 x 2.0			342011	01	08	108	30	43.5	14.98	11.23	17.5	
M18 x 2.5			342012	01	08	119	33	47.9	17.70	13.28	19.1	
M20 x 2.5	342013		01	08	124	19.30			14.48			
M22 x 2.5	D6		4	342014	01	08	130	38	53.1	20.32	15.24	20.6
M24 x 3.0				342015	01	08	138	43	58.5	22.75	17.07	22.2

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.



Work Material																		
List No.	P					Die Steels	M			K Cast Iron	N		S	H				
	Carbon Steels			Alloy Steels	Titanium		Stainless Steels				Aluminum	Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High				300	400	17-4 PH					6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC
342STI	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>									
SFM	25-80	20-50	20-45				20-45	20-45	8-20									

good best





List 11036

Spiral Pointed, Plug (3.5P - 4.5P)



Tap Size	Thread Limit	No. of Flutes	Plug (3.5P - 4.5P)			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
			EDP Number	Coating Suffix									
				Bright	V	L	Lc	Ln	d	k	lk		
2 - 56 UNC	H2	2	11036001	00	08	1.88	0.295	0.559	0.140	0.109	0.188		
4 - 40 UNC			11036002	00	08	2.00	0.366	0.681					
6 - 32 UNC			11036003	00	08	2.38	0.492	0.874				0.194	0.151
8 - 32 UNC	11036004	00	08	0.500	0.937		0.220	0.164	0.279				
10 - 32 UNF	H3	3	11036005	00	08	2.50	0.598	1.000	0.255	0.190	0.311		
1/4 - 20 UNC			11036006	00	08	2.72	0.669	1.129	0.317	0.238	0.374		
1/4 - 28 UNF			11036007	00	08								
5/16 - 18 UNC			11036008	00	08							2.94	0.417
5/16 - 24 UNF			11036009	00	08	0.751							
3/8 - 16 UNC			H4	3	11036010	00	08	3.38	0.921	1.354	0.367	0.274	0.405
3/8 - 24 UNF					11036011	00	08	3.16	0.858	1.291	0.322	0.242	
7/16 - 20 UNF	11036012	00			08	3.38	0.921	1.354	0.367	0.274	0.437		
1/2 - 20 UNF			11036013	00	08	3.59	1.000	1.472	0.429	0.322	0.500		

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																											
List No.	P					M			K	N		S	H														
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels													
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC										
11036	1010	1035	1065	4140																							
SFM	1018	1045	1065	4340																							

good best





List 125

HSS BR STI

Spiral Pointed, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Plug (3.5P - 4.5P)							
			Bright	L	Lc	Ln	d	k	Ik	
2 - 56 UNC	H2	2	7002600	1.88	0.322	0.559	0.140	0.109	0.188	
3 - 48 UNC			7003200	1.94		0.618				
4 - 40 UNC	H1		1820400	2.00	0.389	0.688				
4 - 48 UNF	H2		1824000							
5 - 40 UNC	H2		7004400	2.12		0.755	0.167	0.131		
6 - 32 UNC			H3			1824800	0.507	0.877	0.194	0.151
6 - 40 UNF	H2		1830400	2.38	0.507	0.877	0.194	0.151	0.251	
8 - 32 UNC	H3		7007100	2.12	0.393	0.759	0.167	0.131		
8 - 36 UNF	H2		1825200	2.38	0.511	0.940	0.220	0.164	0.279	
10 - 24 UNC	H3		1830800							
10 - 32 UNF	H2		7008600	2.50	0.641	1.007	0.255	0.190	0.311	
10 - 32 UNF	H3		1825600							
	H3		7009800							
1/4 - 20 UNC	H2		3	1826400	2.72	0.700	1.129	0.317	0.238	0.374
1/4 - 20 UNC	H3			1832000						
1/4 - 28 UNF	H2			1826600	2.94	0.763	1.251	0.380	0.285	0.437
1/4 - 28 UNF	H3	1832200								
5/16 - 18 UNC	H4	7014700		3.38	0.940	1.374	0.367	0.274		
5/16 - 24 UNF	H2	7015300								
5/16 - 24 UNF	H2	7015900		3.16	0.881	1.314	0.322	0.242	0.405	
3/8 - 16 UNC	H3	7016200								
3/8 - 16 UNC	H4	7017100		3.59	1.000	1.472	0.429	0.322	0.500	
3/8 - 24 UNF	H2	7017400								
3/8 - 24 UNF	H3	7018000		3.38	0.940	1.374	0.367	0.274	0.437	
7/16 - 14 UNC	H4	7018300								
7/16 - 20 UNF	H3	12500100		3.81	1.090	1.562	0.480	0.359	0.562	
7/16 - 20 UNF	H4	12500200								
1/2 - 13 UNC	H3	12500300		3.59	1.000	1.472	0.429	0.322	0.500	
1/2 - 20 UNF	H4	12500400								
1/2 - 13 UNC	H3	12500500	4.03	1.090	1.562	0.542	0.405	0.625		
1/2 - 20 UNF	H4	12500600								
9/16 - 12 UNC	H3	12500700								
9/16 - 12 UNC	H4	12500800								
	H3	12500900								
	H4	12501000								

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page



Work Material																		
List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
125	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





List 125 (Continued)

HSS	BR	STI
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Spiral Pointed, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4.5P)						
			Bright	L	Lc	Ln	d	k	lk
9/16 - 18 UNF	H3	3	12501100	3.81	1.090	1.562	0.480	0.359	0.562
	H4		12501200						
5/8 - 11 UNC	H3		12501300	4.25	1.220	1.712	0.590	0.442	0.688
	H4		12501400						
5/8 - 18 UNF	H3		12501500	4.03	1.090	1.562	0.542	0.405	0.625
	H4		12501600						
3/4 - 10 UNC	H3		12501700	4.68	1.334	1.885	0.697	0.522	0.751
	H5		12501800						
3/4 - 16 UNF	H3		12501900	4.46	1.417	1.771	0.652	0.488	0.688
	H4		12502000						
7/8 - 9 UNC	H3		12502100	5.12	1.500	2.090	0.800	0.600	0.811
	H5		12502200						
7/8 - 14 UNF	H3	12502300	5.12	1.500	2.090	0.800	0.600	0.811	
	H4	12502400							
1 - 8 UNC	H6	4	12502500	5.75	1.712	2.381	1.020	0.766	1.000
	H4		12502600						
1 - 12 UNF	H4		12502700	5.44	1.712	2.303	0.895	0.672	0.874
	H6		12502800						

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
125	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>								
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best





List 127

HSS BR STI

Spiral Pointed, Plug (3.5P-4P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Plug (3.5P - 4P)						
			Bright						
			L	Lc	Ln	d	k	lk	
M2 x 0.4	D2	2	12700100	46	6	13.1	3.58	2.79	4.8
M2.5 x 0.45			12700200	49	8	15.7			
M3 x 0.5			12700300	50	10	17.5			
M4 x 0.7	D3		12700400	60	13	22.4	4.92	3.86	6.4
M5 x 0.8			12700500	63	16	25.7	6.47	4.85	7.9
M6 x 1.0			12700600	69	17	28.7	8.07	6.05	9.5
M8 x 1.25	D4	3	12700700	74	19	31.8	9.67	7.26	11.1
M10 x 1.5			12700800	85	23	34.9	9.32	6.98	
M12 x 1.75			12700900	91	25	37.4	10.89	8.18	
M14 x 2.0	D5		12701000	102	27	40.7	13.76	10.31	15.9
M16 x 2.0			12701100	108	31	43.5	14.98	11.23	17.5
M18 x 2.5			12701200	119	33	47.9	17.70	13.28	19.1
M20 x 2.5	12701300	124	19.30	14.48					
M22 x 2.5	D5	12701400	130	38	53.1	20.32	15.24	20.6	
M24 x 3.0		D6	12701500	138	43	58.5	22.75	17.07	22.2

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
127	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best

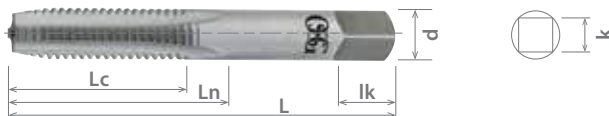




List 126



Straight Fluted, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)						
			Bright	Bright	L	Lc	Ln	d	k	lk
2 - 56 UNC	H2	3	6002700	6002600	1.88	0.279	0.696	0.140	0.109	0.188
3 - 48 UNC			6003300	6003200	1.94	0.314	0.748			
4 - 40 UNC	H1		6004600	6004500	2.00	0.374	0.803			
4 - 48 UNF	12600200		12600100	2.05						
5 - 40 UNC	H2		6006100	6006000	2.19	0.444	1.003	0.167	0.131	0.251
			6006700	-	2.26					
6 - 32 UNC	H3		-	6006600	2.38	0.476	1.055	0.194	0.167	0.251
			1810500	1810400	2.38					
6 - 40 UNF	H2		6007600	-	2.20	0.472	0.937	0.167	0.131	0.251
			-	6007500	2.27	0.547	1.011			
8 - 32 UNC	H2		6008200	-	2.46	0.468	1.114	0.220	0.164	0.279
			-	6008100	2.55	0.559	1.204			
			1810900	-	2.46	0.468	1.114			
8 - 36 UNF	H3		-	1810800	2.55	0.559	1.204	0.220	0.164	0.279
			12600400	-	2.46	0.468	1.114			
			-	12600300	2.55	0.559	1.204			
10 - 24 UNC	H2		1805700	-	2.49	0.625	1.185	0.255	0.190	0.287
			-	1805600	2.60	0.732	1.291			
			6010300	-	2.57	0.625	1.185			
10 - 32 UNF	H3		-	6010200	2.60	0.732	1.291	0.255	0.190	0.311
		1805900	-	2.49	0.625	1.185				
		-	1805800	2.60	0.732	1.291				
10 - 32 UNF	H2	1811500	-	2.49	0.625	1.185	0.255	0.190	0.311	
		-	1811400	2.60	0.732	1.291				
		-	1811400	2.60	0.732	1.291				
1/4 - 20 UNC	H2	6013300	6013200	2.72	0.751	1.322	0.317	0.238	0.374	
	H3	1812100	1812000							
1/4 - 28 UNF	H2	1806700	1806600	2.93	0.834	1.413	0.380	0.285	0.437	
	H3	6014500	6014400							
5/16 - 18 UNC	H3	1812500	1812400	2.93	0.834	1.413	0.380	0.285	0.437	
	H4	6015700	6015600							
5/16 - 24 UNF	H2	12600600	12600500	3.37	0.937	1.811	0.367	0.274	0.437	
	H3	6016600	6016500							
3/8 - 16 UNC	H4	1812900	1812800	3.37	0.937	1.811	0.367	0.274	0.437	
	H2	12600800	12600700							
3/8 - 24 UNF	H2	6018400	6018300	3.15	1.070	1.940	0.429	0.322	0.500	
	H3	6018700	6018600							
7/16 - 14 UNC	H3	6019600	1813200	3.59	1.070	1.940	0.429	0.322	0.500	
	H4	6019900	6019800							
7/16 - 20 UNF	H3	1813500	1813400	3.37	1.153	2.000	0.480	0.359	0.562	
	H4	12601000	12600900							
1/2 - 13 UNC	H3	6022000	1813600	3.81	1.153	2.000	0.480	0.359	0.562	
	H4	12601200	12601100							
1/2 - 20 UNF	H3	1813900	1813800	3.59	1.153	1.940	0.429	0.322	0.500	
	H4	12601400	12601300							
9/16 - 12 UNC	H3	12601600	12601500	4.03	1.165	2.165	0.542	0.405	0.625	
	H4	12601800	12601700							

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.





List 126 (Continued)

HSS **BR** STI

Straight Fluted, Plug (3.5P-4.5P), Bottom (1.5P-2P)

Tap Size	Thread Limit	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)							
			Bright	Bright							
9/16 - 18 UNF	H3	4	12602000	12601900	3.81	1.165	2.125	0.480	0.359	0.562	
	H4		12602200	12602100							
5/8 - 11 UNC	H3		12602400	12602300	4.25	1.271	2.433	0.590	0.442	0.688	
	H4		12602600	12602500							
5/8 - 18 UNF	H3		12602800	12602700	4.03		2.165	0.542	0.405	0.625	
	H4		12603000	12602900							
3/4 - 10 UNC	H3		12603200	12603100	4.68	1.401	2.653	0.697	0.522	0.751	
	H5		12603400	12603300							
3/4 - 16 UNF	H3		12603600	12603500	4.46		2.433	0.652	0.488	0.688	
	H4		12603800	12603700							
7/8 - 9 UNC	H3		12604000	12603900	5.12	1.555	3.011	0.800	0.600	0.811	
	H5		12604200	12604100							
7/8 - 14 UNF	H3		12604400	12604300	5.12		12604600	12604500	1.020	0.766	1.000
	H4		12604800	12604700							
1 - 8 UNC	H6		12605000	12604900	5.75	1.751	3.074	0.895	0.672	0.881	
	H4		12605200	12605100							
1 - 12 UNF	H4		12605400	12605300	5.43		12605200	12605100	1.020	0.766	1.000
	H6		12605400	12605300							

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
126	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

good best

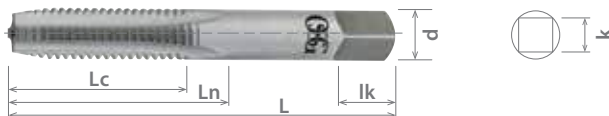




List 128



Straight Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
			Modified Bottom (2.5P - 3P)						
			Bright						
			L	Lc	Ln	d	k	lk	
M2 x 0.4	D2	2	12800100	47	13	14.0	3.58	2.79	4.8
M2.5 x 0.45			12800200	49	6	16.3			
M3 x 0.5			12800300	50	7	17.6			
M4 x 0.7	D3	3	12800400	60	10	22.7	4.92	3.86	6.4
M5 x 0.8			12800500	63	11	25.5	6.47	4.85	7.9
M6 x 1.0			12800600	69	14	28.6	8.07	6.05	9.5
M8 x 1.25	D4	4	12800700	74	17	31.8	9.67	7.26	11.1
M10 x 1.5			12800800	85	21	49.1	9.32	6.98	
M12 x 1.75			12800900	91	24	50.1	10.89	8.18	
M14 x 2.0	D5	4	12801000	102	28	55.0	13.76	10.31	15.9
M16 x 2.0			12801100	108		61.8	14.98	11.23	17.5
M18 x 2.5			12801200	119		67.4	17.70	13.28	19.1
M20 x 2.5	12801300	124	35	68.4	19.30	14.48			
M22 x 2.5	12801400	130	76.5	20.32	15.24	20.6			
M24 x 3.0	D6		12801500	138	42	79.1	22.75	17.07	22.4

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
128	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>							
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

good best

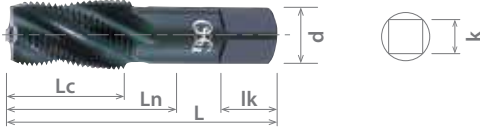


List 308

NPT



HSSE	TiN	S/O	15°
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Tap Size	No. of Flutes	NPT			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
		EDP Number	Coating Suffix								
			S/O	TiN							
1/16 - 27	4	17350	01	05	2.12	0.689	0.925	0.313	0.234	0.374	
1/8 - 27 (Sm. Shk)		17352	01	05		-					
1/8 - 27 (Lg. Shk)		17351	01	05		0.988	0.438	0.328			
1/4 - 18		17353	01	05	2.43	1.091	1.346	0.563	0.421	0.437	
3/8 - 18		17354	01	05	2.56			0.700	0.531	0.500	
1/2 - 14		17355	01	05	3.12	1.409	-	0.688	0.515	0.626	
3/4 - 14		5	17448	-	05	3.25	1.374	-	0.906	0.679	0.689
			17356	01	-						
1 - 11,1/2		4	17449	-	05	3.75	1.752	-	1.125	0.843	0.811
		5	17357	01	-						

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or TiN coatings as shown above.

EXT

Work Material																	
List No.	P				Die Steels	M			K Cast Iron	N		S	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
308	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
SFM	15-40	10-25				10-25	10-25	8-12									

good best



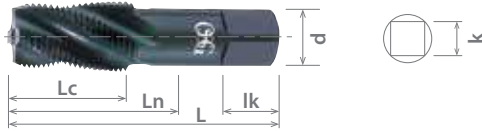


List 318

NPTF



HSSE	TiN	S/O	15°
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Tap Size	No. of Flutes	NPTF			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
		EDP Number	Coating Suffix								
			S/O	TiN							
1/16 - 27	4	17375	01	05	2.12	0.688	0.925	0.312	0.233	0.374	
1/8 - 27 (Sm. Shk)		17377	01	05		-					
1/8 - 27 (Lg. Shk)		17376	01	05		0.751	0.988	0.437	0.327		
1/4 - 18		17378	01	05	2.43	1.090	1.346	0.562	0.420	0.437	
3/8 - 18		17379	01	05	2.56		1.346	0.700	0.531	0.500	
1/2 - 14		17380	01	05	3.12	1.374	-	0.687	0.514	0.625	
3/4 - 14		17399	-	05	3.25		-	0.906	0.679	0.688	
		5	17381	01			-				
1 - 11,1/2		4	17446	-	05	3.75	1.751	-	1.125	0.842	0.811
		5	17382	01	-						

Packed: 1 pc.
 EDP's listed above are stocked standard.
 Available in Steam Oxide or TiN coatings as shown above.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	H			
	Carbon Steels			Alloy Steels 4140 4340		Stainless Steels				Aluminum				Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
318	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>									
SFM	15-40	10-25				10-25	10-25	8-12									

good best





List 12053

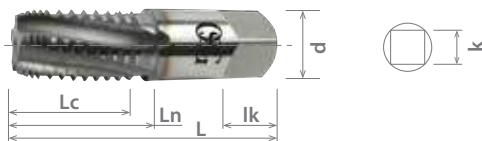


HSSE

TiCN

10°

NPT, Interrupted



Tap Size	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		NPT, Interrupted							
		TiCN	L						
1/8 - 27 (Sm. Shk)	3	1205300108	2.12	0.751	-	-	0.312	0.233	0.374
1/8 - 27 (Lg. Shk)		1205300208							
1/4 - 18	5	1205300308	2.44	1.062	1.318	-	0.562	0.420	0.437
3/8 - 18		1205300408	2.56						
1/2 - 14		1205300508	3.12	1.374	-	-	0.687	0.514	0.625
3/4 - 14		1205300608	3.25						
1 - 11,1/2		1205300708	3.75	1.751	-	-	1.125	0.842	0.811

Packed: 1 pc.
Available TiCN coating only.



Work Material

List No.	P				Die Steels	M			K	N		S		H					
	Carbon Steels			Alloy Steels		Stainless Steels				Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
12053	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>					
SFM	15-40	10-25	10-20	10-25	10-15	10-25	10-25	8-12	15-50					10-20	8-12				

good best





List 12054

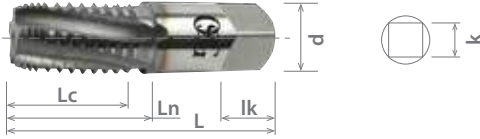


HSSE

TiCN

10°

NPTF, Interrupted



Tap Size	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		NPTF, Interrupted							
		TiCN		L	Lc	Ln	d	k	lk
1/8 - 27 (Sm. Shk)	3	1205400108		2.12	0.751	-	0.312	0.233	0.374
1/8 - 27 (Lg. Shk)		1205400208							
1/4 - 18	5	1205400308		2.44	1.062	1.318	0.562	0.420	0.437
3/8 - 18		1205400408		2.56					
1/2 - 14		1205400508		3.12	1.374	-	0.687	0.514	0.625
3/4 - 14		1205400608		3.25		-	0.906	0.679	0.688
1 - 11,1/2		1205400708		3.75	1.751	-	1.125	0.842	0.811

Packed: 1 pc.
Available TiCN coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
12054	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>			
SFM	15-40	10-25	10-20	10-25	10-15	10-25	10-25	8-12	15-50				10-20	8-12			

good best





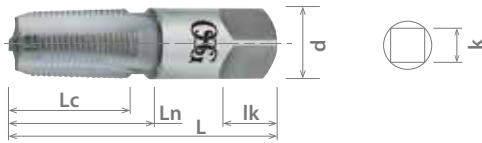
List 328

NPT, ANPT



HSS-Co

BR



Tap Size	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		NPT, ANPT							
		Bright							
1/8 - 27 (Lg. Shk)	4	1736000		2.12	0.751	0.992	0.437	0.327	0.374
1/4 - 18		1736100		2.43	1.062	1.318	0.562	0.420	0.437
3/8 - 18		1736200		2.56			0.700	0.531	0.500
1/2 - 14		1736300		3.12	1.374	-	0.687	0.514	0.625
3/4 - 14	1736400		3.25	-		0.906	0.679	0.688	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

EXT

Work Material

List No.	P										M			K	N		S		H			
	Carbon Steels					Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels						
	Low	Med.	High	4140 4340	300			400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC				
	1010 1018	1035 1045	1065																			
328	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input checked="" type="checkbox"/>	<input type="checkbox"/>							
SFM	15-40	10-25	10-20	10-25	10-15	10-25	10-25	8-12						10-20	8-12							

good best



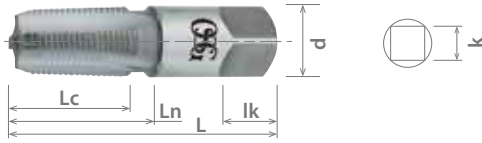


GENERAL PURPOSE

List 108

HSS	TiCN	TiN	S/O	BR
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NPT, ANPT



Tap Size	No. of Flutes	NPT, ANPT					Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	
		EDP Number	Coating Suffix										
			Bright	S/O	TiN	TiCN							
1/16 - 27	4	13100	00	01	05	08	2.12	0.688	0.925	0.312	0.233	0.374	
1/8 - 27 (Sm. Shk)		13102	00	01	05	08							
1/8 - 27 (Lg. Shk)		13101	00	01	05	08							
1/4 - 18		13103	00	01	05	08	2.43	1.062	1.318	0.562	0.420		0.437
3/8 - 18		13104	00	01	05	08	2.56			0.700	0.531		0.500
1/2 - 14		13105	00	01	05	08	3.12			-	0.687		0.514
3/4 - 14	13106	00	01	05	08	3.25	1.374	-	0.906	0.679	0.688		
1 - 11,1/2	13107	00	01	05	08	3.75			-	1.125	0.842	0.811	
1,1/4 - 11,1/2	13108	00	01	-	08	4.00			1.751	-	1.312	0.983	0.937
1,1/2 - 11,1/2	13109	00	01	-	08	4.25	-	1.500			1.125	1.000	
2 - 11,1/2	13110	00	01	-	08	4.50	-	1.875			1.405	1.125	

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

Work Material

List No.	P															K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels										
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)		~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC				
	1010 1018	1035 1045	1065			4140 4340																		
108	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>														
SFM	15-40	10-25	10-20						15-50	15-40	20-35													

good best



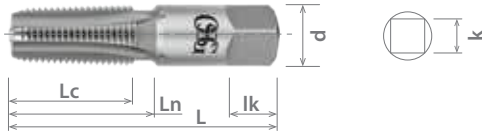


List 108AL

HSS

BR

NPT, For Aluminum



Tap Size	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		NPT							
		Bright							
1/8 - 27 (Lg. Shk)	4	1311100		2.12	0.752	0.988	0.438	0.328	0.374
1/4 - 18		1311200		2.43	1.063	1.319	0.563	0.421	0.437
3/8 - 18		1311400		2.56			0.700	0.531	0.500
1/2 - 14		1311800		3.12	1.374	-	0.688	0.515	0.626
3/4 - 14	5	1311500		3.25	-	-	0.906	0.679	0.689
1 - 11,1/2		1311600		3.75	1.752	-	1.125	0.843	0.811

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P										M			K	N		S		H			
	Carbon Steels					Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels						
	Low	Med.	High	4140 4340	300			400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC				
	1010 1018	1035 1045	1065																			
108AL																						
SFM																						

good best



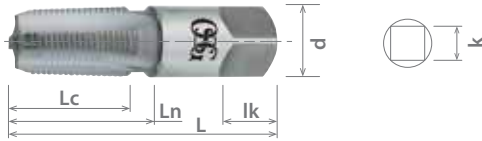


GENERAL PURPOSE

List 118

HSS	TiCN	TiN	S/O	BR
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NPTF



Tap Size	No. of Flutes	NPTF				Overall Length L	Thread Length Lc	Neck Length Ln	Shank Dia. d	Square Width k	Square Length lk	
		EDP Number	Coating Suffix									
			Bright	S/O	TiN							TiCN
1/16 - 27	4	13125	00	01	05	08	2.12	0.688	0.885	0.312	0.233	
1/8 - 27 (Sm. Shk)		13127	00	01	05	08		0.751	0.948			
1/8 - 27 (Lg. Shk)		13126	00	01	05	08	1.062	1.279	0.437	0.327	0.437	
1/4 - 18		13128	00	01	05	08			0.562	0.420		
3/8 - 18		13129	00	01	05	08			0.700	0.531		0.500
1/2 - 14		13130	00	01	05	08	3.12	1.374	-	0.687	0.514	0.625
3/4 - 14	13131	00	01	05	08	3.25	-		0.906	0.679	0.688	
1 - 11,1/2	5	13132	00	01	-	08	3.75	1.751	-	1.125	0.842	0.811
1,1/4 - 11,1/2		13133	00	01	-	08	4.00		-	1.312	0.983	0.937
1,1/2 - 11,1/2	7	13134	00	01	-	08	4.25		-	1.500	1.125	1.000
2 - 11,1/2		13135	00	01	-	08	4.50		-	1.875	1.405	1.125

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340		Stainless Steels				Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
118	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						
SFM	15-40	10-25	10-20						15-50	15-40	20-35						

good best





List 108G

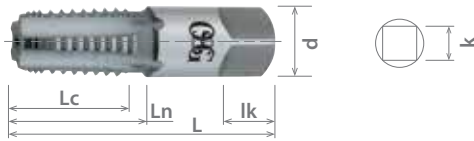
HSS

TiCN

S/O

BR

Interrupted Thread, NPT, NPTF, ANPT



Tap Size	No. of Flutes	NPT, ANPT, Interrupted Thread			NPTF, Interrupted Thread			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length		
		EDP Number	Coating Suffix			EDP Number	Coating Suffix								
			Bright	S/O	TiCN		Bright	S/O	TiCN	L	Lc	Ln	d	k	lk
1/8 - 27 (Sm. Shk)	5	13152	00	01	08	33105	00	01	08	2.12	0.752	-	0.313	0.234	0.374
1/8 - 27 (Lg. Shk)		13151	00	01	08	33101	00	01	08			-	0.988	0.438	
1/4 - 18		13153	00	01	08	33109	00	01	08	2.43	1.063	1.319	0.563	0.421	0.437
3/8 - 18		13154	00	01	08	13113	00	01	08				2.56	0.700	0.531
1/2 - 14		13155	00	01	08	13117	00	01	08	3.12	1.374	-	0.688	0.515	0.626
3/4 - 14		13156	00	01	08	13121	00	01	08				3.25	0.906	0.679
1 - 11,1/2		13157	00	01	08	33125	00	01	08	3.75	-	-	1.125	0.843	0.811
1,1/4 - 11,1/2		13158	00	01	08	33129	00	01	08				4.00	1.313	0.984
1,1/2 - 11,1/2	7	13159	00	01	08	-	-	-	-	4.25	1.752	-	1.500	1.125	1.000
2 - 11,1/2		13160	00	01	-	-	-	-	-				4.50	-	1.875

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
108G	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	15-40	10-25	10-20						15-50	15-40	20-35							

good best



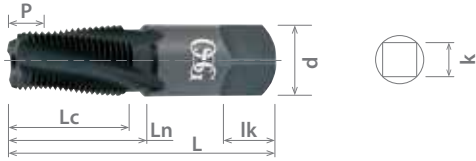


GENERAL PURPOSE

List S125

HSS	TiCN	S/O	BR	15°
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Short Projection, NPT, NPTF



Tap Size	No. of Flutes	NPT, ANPT, Interrupted Thread				NPTF, Interrupted Thread				Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Projection
		EDP Number	Coating Suffix			EDP Number	Coating Suffix									
			Bright	S/O	TiCN		Bright	S/O	TiCN							
1/8 - 27 (Lg. Shk)	4	12505	00	01	08	12506	00	01	08	2.12	0.751	0.988	0.437	0.327	0.374	0.234
1/4 - 18		12513	00	01	08	12514	00	01	08	2.43	1.062	1.318	0.562	0.420	0.437	
3/8 - 18		12517	00	01	08	12518	00	01	08	2.56			0.700	0.531	0.500	
1/2 - 14		12521	00	01	08	12522	00	01	08	3.12			-	0.687	0.514	
3/4 - 14	5	12525	00	01	08	12526	00	01	08	3.25	1.374	-	0.906	0.679	0.688	0.453
1 - 11,1/2		12529	00	01	08	12530	00	01	08	3.75	1.751	-	1.125	0.842	0.811	0.578

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010 1018	1035 1045	1065	4140 4340													
S125	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>		<input type="checkbox"/>							
SFM	15-40	10-25	10-20					15-50	15-40	20-35							

good best



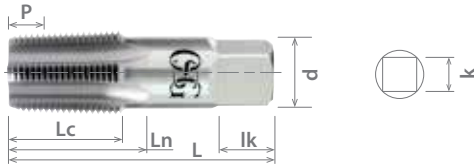


List 12006

HSS

BR

Short Projection, NPTF



Tap Size	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length	Projection
		NPTF, Short Projection								
		Bright								
		L	Lc	Ln	d	k	lk	P		
1/8 - 27 (Lg. Shk)	4	1200600100	1200600600	2.12	0.752	0.988	0.438	0.328	0.374	0.204
										0.167
1/4 - 18		1200600200	1200600700	2.43	1.063	1.319	0.563	0.421	0.437	0.306
3/8 - 18		1200600300	1200600800	2.56			0.700	0.531	0.500	0.306
										0.251
1/2 - 14		1200600400	1200600900	3.12	1.374	-	0.688	0.515	0.626	0.393
							-			
3/4 - 14	1200600500	1200601000	3.25			0.906	0.679	0.689	0.393	
									0.322	

Packed: 1 pc.
Available Bright finish only.



Work Material

List No.	P															M			K	N		S		H			
	Carbon Steels				Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels												
	Low	Med.	High	300			400	17-4 PH	6061 7075		Casting	Inconel			6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC								
	1010 1018	1035 1045	1065	4140 4340																							
12006	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>																
SFM	15-40	10-25	10-20						15-50	15-40	20-35																

good best





GENERAL PURPOSE

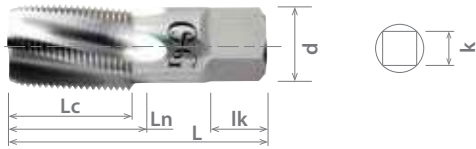
List 12007

HSS

BR

15°

NPT



Tap Size	No. of Flutes	EDP Number		Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		NPT							
		Bright	L						
1/8 - 27 (Lg. Shk)	4	1200700200	2.12	0.751	0.948	0.437	0.327	0.374	
1/4 - 18		1200700400	2.43	1.062	1.279	0.562	0.420	0.437	
3/8 - 18		1200700500	2.56	-	-	0.700	0.531	0.500	
1/2 - 14		1200700600	3.12	-	-	0.687	0.514	0.625	
3/4 - 14	5	1200700700	3.25	1.374	-	0.906	0.679	0.688	

Packed: 1 pc.
Available Bright finish only.



Work Material

List No.	P															M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels													
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC								
	1010	1035	1065	4140	4340																						
12007	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>																	
SFM	15-40	10-25	10-20						15-50	15-40	20-35																

good best

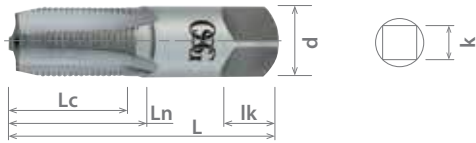




List 109

HSS	<input checked="" type="checkbox"/> S/O	<input type="checkbox"/> BR
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NPS, NPSF



Tap Size	No. of Flutes	NPS			NPSF			Overall Length	Thread Length	Neck Length	Shank Dia.	Square Width	Square Length
		EDP Number	Coating Suffix		EDP Number	Coating Suffix							
			Bright	S/O		Bright	S/O	L	Lc	Ln	d	k	lk
1/8 - 27 (Sm. Shk)	4	13302	00	01	13327	00	01	2.12	0.752	-	0.313	0.234	0.374
1/8 - 27 (Lg. Shk)		13301	00	01	13326	00	01			0.949	0.438	0.328	
1/4 - 18		13303	00	01	13328	00	01	2.43	1.063	1.260	0.563	0.421	0.437
3/8 - 18		13304	00	01	13329	00	01	2.56		0.700	0.531	0.500	
1/2 - 14		13305	00	01	13330	00	01	3.12	1.374	-	0.688	0.515	0.626
3/4 - 14	5	13306	00	01	13331	00	01	3.25	1.752	-	0.906	0.679	0.689
1 - 11,1/2		13307	00	01	13332	00	01	3.75		-	1.125	0.843	0.811

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S Nickel Alloy Inconel	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
109	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							
SFM	15-40	10-25	10-20					15-50	15-40	20-35							

good best





List 134

HSS

BR

Solid Round Dies, Special Alloy Tool Steel



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
0 - 80 UNF	0.060	5/8"	1/4"	2723000
1 - 72 UNF	0.073			2723300
2 - 56 UNC	0.086			2723400
2 - 64 UNF				2723500
3 - 48 UNC				2723600
3 - 56 UNF	0.099			2723700

Packed: 1 pc.
Available Bright finish only.



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
4 - 40 UNC	0.112	5/8"	1/4"	2724000
4 - 48 UNF				2724100
5 - 40 UNC	0.125			2724200
6 - 32 UNC	0.138			2724400
6 - 40 UNF				2724600
8 - 32 UNC				0.164

Packed: 1 pc.
Available Bright finish only.



List 134 (Continued)

HSS

BR

Adjustable Round Split Dies, Special Alloy Tool Steel



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
0 - 80 UNF	0.060	13/16	1/4	2726000
1/16 - 64 UNC	0.062			2700100
1 - 64 UNC	0.073			2726200
1 - 72 UNF				2726300
2 - 56 UNC	0.086			2726400
2 - 64 UNF				2726500
3/32 - 48 UNC	0.093			2700200
3 - 48 UNC				2726600
3 - 56 UNF				2726700
4 - 36 UNS	0.099			2726900
4 - 40 UNC				2727000
4 - 48 UNF				2727100
5 - 40 UNC	0.112			2727200
5 - 44 UNF				2727300
1/8 - 40 UNC				2700300
6 - 32 UNC	0.138	1	3/8	2727400
6 - 40 UNF				2728800
5/32 - 32 UNC	0.156	13/16	1/4	2727600
5/32 - 36 UNF				2700400
				2700500
8 - 32 UNC	0.164	1	3/8	2727700
8 - 36 UNF		13/16	1/4	2729100
				2727800
3/16 - 24 UNC	0.187	1	3/8	2700600
3/16 - 32 UNF		13/16	1/4	2702400
		1	3/8	2700700
10 - 24 UNC	0.190	13/16	1/4	2702500
10 - 32 UNF		1	3/8	2728000
		13/16	1/4	2729400
12 - 24 UNC	0.216	1	3/8	2728200
12 - 28 UNF		1	3/8	2729600
7/32 - 24 UNC		13/16	1/4	2728300
	0.218	13/16	1/4	2729700
				2728400
				2700800
1/4 - 20 UNC	0.250	1	3/8	2701000
		1 - 5/16	7/16	2702800
		1 - 1/2	1/2	2704100
		2	5/8	2706100
		2	5/8	2710000
		1	3/8	2702900
1/4 - 24 UNS	0.250	13/16	1/4	2701200
		1	3/8	2701200
		1 - 5/16	7/16	2703000
		1 - 1/2	1/2	2704300
		2	5/8	2706300
1/4 - 28 UNF	0.250	2	5/8	2710100
		1	3/8	2703100
		1	3/8	2703100

Packed: 1 pc.
Available Bright finish only.



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
5/16 - 18 UNC	0.312	13/16	1/4	2701400
		1	3/8	2703200
		1 - 5/16	7/16	2704500
		1 - 1/2	1/2	2706500
		2	5/8	2710400
5/16 - 24 UNF	0.312	13/16	1/4	2701500
		1	3/8	2703300
		1 - 5/16	7/16	2704600
		1 - 1/2	1/2	2706600
		2	5/8	2710500
5/16 - 32 UNEF	0.375	1	3/8	2703400
		1	3/8	2703500
		1 - 5/16	7/16	2704800
		1 - 1/2	1/2	2706800
		2	5/8	2710700
3/8 - 16 UNC	0.375	1	3/8	2703600
		1 - 5/16	7/16	2704900
		1 - 1/2	1/2	2706900
		2	5/8	2710800
		2	5/8	2710800
7/16 - 14 UNC	0.437	1	3/8	2703700
		1 - 5/16	7/16	2705000
		1 - 1/2	1/2	2707000
		2	5/8	2710900
7/16 - 20 UNF	0.437	1	3/8	2703800
		1 - 5/16	7/16	2705100
		1 - 1/2	1/2	2707100
		2	5/8	2711000
1/2 - 13 UNC	0.500	1 - 5/16	7/16	2705200
		1 - 1/2	1/2	2707200
		2	5/8	2711100
		2	5/8	2711100
1/2 - 20 UNF	0.500	1 - 5/16	7/16	2705300
		1 - 1/2	1/2	2707300
		2	5/8	2711200
		2	5/8	2711200
9/16 - 12 UNC	0.562	1 - 1/2	1/2	2707400
		2	5/8	2711300
		2	5/8	2711300
9/16 - 18 UNF	0.562	1 - 1/2	1/2	2707500
		2	5/8	2711400
		2	5/8	2711400
5/8 - 11 UNC	0.625	1 - 1/2	1/2	2707600
		2	5/8	2711500
		2 - 1/2	3/4	2713400
5/8 - 18 UNF	0.625	1 - 1/2	1/2	2707700
		1 - 1/2	1/2	2711600
		1 - 1/2	1/2	2711600
11/16 - 11 UNS	0.687	2	5/8	2711700
11/16 - 16 UNS		2	5/8	2711800
		2	5/8	2712000
3/4 - 10 UNC	0.750	2 - 1/2	3/4	2713800
3/4 - 16 UNF		2	5/8	2712100
		2 - 1/2	3/4	2713900
7/8 - 9 UNC	0.875	2	5/8	2712200
		2 - 1/2	3/4	2714000
		2	5/8	2712300
7/8 - 14 UNF	0.875	2 - 1/2	3/4	2714100
		2 - 1/2	3/4	2714100

Packed: 1 pc.
Available Bright finish only.

continued on next page





List 134 (Continued)

HSS

BR

Adjustable Round Split Dies, Special Alloy Tool Steel



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
1 - 8 UNC	1.000	2 - 1/2	3/4	2714200
		3	1	2715000
1 - 12 UNF		2 - 1/2	3/4	2714300
		3	1	2715100
1 - 14 UNS		2 - 1/2	3/4	2714400
				2715200
1,1/8 - 7 UNC	1.125	3	1	2715300
1,1/8 - 12 UNF				2715400

Packed: 1 pc.
Available Bright finish only.



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
1,1/4 - 7 UNC	1.250	3	1	2715500
1,1/4 - 12 UNF				2715600
1,3/8 - 6 UNC	1.375			2715700
1,3/8 - 12 UNF				2715800
1,1/2 - 6 UNC	1.500			2715900
1,1/2 - 12 UNF				2716000

Packed: 1 pc.
Available Bright finish only.



List 134P

HSS

BR

Adjustable Round Split Dies, Taper Pipe



Size	Outside Diameter	Thickness	EDP Number
1/8 - 27	1	3/8	2734000
	1-1/2	1/2	2734100
1/4 - 18	2	5/8	2734200
		2734400	

Packed: 1 pc.
Available Bright finish only.



Size	Outside Diameter	Thickness	EDP Number
3/8 - 18	1-1/2	1/2	2734300
	2	5/8	2734500
1/2 - 14			2734600

Packed: 1 pc.
Available Bright finish only.





List 135

HSS

BR

Adjustable Round Split Dies



Size	Outside Diameter	Thickness	EDP Number
M2 X 0.4	20	7	46011
M2.3 X 0.4			46015
M2.5 X 0.45			46017
M2.6 X 0.45			46020
M3 X 0.5			46023
M3.5 X 0.6	25	9	46064
M4 X 0.7	20	7	46029
M4 X 0.7	25	9	46068
M4.5 X 0.75			46070
M5 X 0.8	20	7	46034
M5 X 0.8	25	9	46074
M6 X 1.0	20	7	46038
			46079
M6 X 0.75	25	9	46080
M7 X 1.0			46082
M8 X 1.25			46085
M8 X 1.0			46086
M8 X 0.75			46087
M9 X 1.25			46089
M10 X 1.5			46093
M10 X 1.5			38
M10 X 1.25	46143		
M10 X 1.0	46144		
M11 X 1.5	46147		

Packed: 1 pc.
Available Bright finish only.



Size	Outside Diameter	Thickness	EDP Number		
M12 X 1.75	25	9	1351120		
M12 X 1.75			46152		
M12 X 1.5	38	13	46153		
M12 X 1.25			46154		
M12 X 1.0			46155		
M14 X 2.0			46163		
M14 X 1.5			46164		
M14 X 1.25	50	16	46165		
M16 X 2.0			46227		
M16 X 1.5			46228		
M16 X 1.0			46230		
M18 X 2.5			46239		
M18 X 1.5			46241		
M20 X 2.5			46251		
M20 X 1.5			46253		
M22 X 2.5			46263		
M22 X 1.5			46265		
M24 X 3.0			46276		
M24 X 1.5			46279		
M26 X 3.0			57	20	46329
M26 X 1.5					46331
M28 X 1.5	46341				
M30 X 3.5	46344				
M30 X 1.5	46347				

Packed: 1 pc.
Available Bright finish only.





List 15001

HSS

BR

Go/NoGo, Class 2B



Gage Size	Class of Fit	Gage Length (Inch)		Pitch Diameter (Inch)		EDP Number
		Go	NoGo	Go	NoGo	Short Form*
2 - 56 UNC	2B	1/4	3/16	0.0744	0.0772	1500100100
2 - 64 UNF				0.0759	0.0786	1500100200
3 - 48 UNC				0.0855	0.0885	1500100300
3 - 56 UNF				0.0874	0.0902	1500100400
4 - 40 UNC		5/16	7/32	0.0958	0.0991	1500100500
4 - 48 UNF				0.0985	0.1016	1500100600
5 - 40 UNC				0.1088	0.1121	1500100700
5 - 44 UNF				0.1102	0.1134	1500100800
6 - 32 UNC				0.1177	0.1214	1500100900
6 - 40 UNF				0.1218	0.1252	1500101000
8 - 32 UNC		13/32	9/32	0.1437	0.1475	1500101100
8 - 36 UNF				0.1460	0.1496	1500101200
10 - 24 UNC				0.1629	0.1672	1500101300
10 - 32 UNF				0.1697	0.1736	1500101400
12 - 24 UNC				0.1889	0.1933	1500101500
12 - 28 UNF				0.1928	0.1970	1500101600
1/4 - 20 UNC		1/2	5/16	0.2175	0.2224	1500101700
1/4 - 28 UNF				0.2268	0.2311	1500101800
5/16 - 18 UNC				0.2764	0.2817	1500101900
5/16 - 24 UNF				0.2854	0.2902	1500102000
3/8 - 16 UNC		3/4	3/8	0.3344	0.3401	1500102100
3/8 - 24 UNF				0.3479	0.3528	1500102200
7/16 - 14 UNC				0.3911	0.3972	1500102300
7/16 - 20 UNF				0.4050	0.4104	1500102400
1/2 - 13 UNC				0.4500	0.4565	1500102500
1/2 - 20 UNF				0.4675	0.4731	1500102600
9/16 - 12 UNC		7/8	1/2	0.5084	0.5152	1500102700
9/16 - 18 UNF				0.5264	0.5323	1500102800
5/8 - 11 UNC				0.5660	0.5732	1500102900
5/8 - 18 UNF				0.5889	0.5949	1500103000
3/4 - 10 UNC				0.6850	0.6927	1500103100
3/4 - 16 UNF				0.7094	0.7159	1500103200
7/8 - 9 UNC		1	5/8	0.8028	0.8110	1500103300
7/8 - 14 UNF				0.8286	0.8356	1500103400
1 - 8 UNC				0.9188	0.9276	1500103500
1 - 12 UNF				0.9459	0.9535	1500103600
1 - 14 UNS				0.9536	0.9609	1500103700
1,1/8 - 7 UNC				1.0322	1.0416	1500103800
1,1/8 - 12 UNF		1.0709	1.0787	1500103900		
1,1/4 - 7 UNC		1 1/4	3/4	1.1572	1.1668	1500104000
1,1/4 - 12 UNF		1		1.1959	1.2039	1500104100
1,3/8 - 6 UNC		1 1/4		1.2667	1.2771	1500104200
1,3/8 - 12 UNF		1		1.3209	1.3291	1500104300
1,1/2 - 6 UNC		1 1/4		1.3917	1.4022	1500104400
1,1/2 - 12 UNF		1		1.4459	1.4542	1500104500

Packed: 1 pc.
Available Bright finish only.

EXT

OSG Inch Thread Plug Gages are manufactured to Class X tolerances per ANSI B1.2 (Unified Inch Screw Threads).
OSG Thread Gages are made from High Speed Steel (HSS) to 64 HRC.
Short Form Certificates of Conformance are available with gages for no charge.

*Long Form Certificates available upon request.





Thread Gages

List 15002

HSS

BR

Go/NoGo, Class 6H



Gage Size	Class of Fit	Gage Length (mm)		Pitch Diameter (mm)		EDP Number
		Go	NoGo	Go	NoGo	Short Form*
M3 x 0.5	6H	7.9	5.6	2.675	2.775	1500200100
M3.5 x 0.6				3.110	3.222	1500200200
M4 x 0.7		10.3	7.1	3.545	3.663	1500200300
M5 x 0.8				4.480	4.605	1500200400
M6 x 0.75		12.7	7.9	5.513	5.645	1500200500
M6 x 1.0				5.350	5.500	1500200600
M7 x 1.0				6.350	6.500	1500200700
M8 x 1.0				7.350	7.500	1500200800
M8 x 1.25				7.188	7.348	1500200900
M10 x 1.0				19	9.5	9.350
M10 x 1.25		9.188	9.348			1500201100
M10 x 1.5		9.026	9.206			1500201200
M12 x 1.25		11.188	11.368			1500201300
M12 x 1.5		11.026	11.216			1500201400
M12 x 1.75		10.863	11.063			1500201500
M14 x 1.5		22.2	12.7	13.026	13.216	1500201600
M14 x 2.0				12.701	12.913	1500201700
M16 x 1.5				15.026	15.216	1500201800
M16 x 2.0				14.701	14.913	1500201900
M18 x 1.5				17.026	17.216	1500202000
M18 x 2.5				16.376	16.600	1500202100
M20 x 1.5		25.4	15.9	19.026	19.216	1500202200
M20 x 2.5				18.376	18.600	1500202300
M22 x 1.5				21.026	21.216	1500202400
M22 x 2.5				20.376	20.600	1500202500
M24 x 1.5				23.026	23.226	1500202600
M24 x 2.0				22.701	22.925	1500202700
M24 x 3.0				22.051	22.316	1500202800

Packed: 1 pc.
Available Bright finish only.



OSG Metric Thread Plug Gages are manufactured to Class X tolerances per ANSI B1.16M (Metric M Series Screw Threads).
OSG Thread Gages are made from High Speed Steel (HSS) to 62/64 HRC.
Short Form Certificates of Conformance are available with gages for no charge.

***Long Form Certificates available upon request.**



THREADING

Technical





Tap and Screw Thread Terminology

Allowance: The minimum clearance or maximum interference which is intended between mating parts.

Angle of Thread: The angle included between the flanks of a thread measured in an axial plane.

Back Taper: A slight taper on the threaded portion of the tap, making the pitch diameter near the shank smaller than that at the chamfer.

Basic: The theoretical or nominal standard size from which all variations are made.

Chamfer: The tapered and relieved cutting teeth at the front end of the threaded section. Common types of chamfer are taper, 8 to 10 threads long, plug, 3 to 5 threads, semi (or modified) bottom = 2.5 - 3 threads and bottoming, 1-1/2 threads.

Crest: The top surface joining the two sides or flanks of a thread.

Cutting Face: The leading side of the land.

Flute: The longitudinal channels formed on a tap to create cutting edges on the thread profile.

Heel: The following side of the land.

Height of Thread: In profile, distance between crest and bottom section of thread measured to the axis.

Hook Face: A concave cutting face of the land. This may be varied for different materials and conditions.

Interrupted Thread: Alternate teeth are removed in the thread helix on a tap having an odd number of flutes.

Land: Threaded sections between the flutes of a tap.

Lead of Thread: The distance a screw thread advances axially in one turn.

Major Diameter: The largest diameter of the screw or nut on a straight screw thread.

Minor Diameter: The smallest diameter of the screw or nut on a straight screw thread.

Neck: The reduced diameter, on some taps, between the threaded portion and the shank.

Pitch: The distance from a point on one thread to a corresponding point on the next thread, measured parallel to the axis.

Pitch Diameter: On a straight screw thread, the diameter of an imaginary cylinder where the width of the thread and the width of the space between threads is equal.

Point Diameter: The diameter at the leading end of the chamfered portion.

Radial: The straight face of a land, the plane of which passes through the axis of the tap.

Rake: The angle of the cutting face of the land in relation to an axial plane intersecting the cutting face at the major diameter.

Relief: The removal of metal behind the cutting edge to provide clearance between the part being threaded and a portion of the threaded land. Also, see back taper.

Chamfer Relief: The gradual decrease in land height from cutting edge to heel on the chamfered portion of the tap land to provide radial clearance for the cutting edge.

Con-eccentric Relief: Radial relief in the thread form starting back of a concentric margin.

Eccentric Thread Relief: Radial relief in the thread form starting at the cutting edge and continuing to the heel.

Root: The bottom surface joining the flanks of two adjacent threads.

Side or Flank Thread: The surface of the thread which connects the crest to the root.

Shank: The portion of the tap by which it is held.

Spiral Point: An oblique cutting edge ground into the lands to provide a shear cutting action on the first few threads.

Square: The squared end of the tap shank by which the tap is driven.

Thread: The helical formed portion of the tap which produces the pitch in a pre-existing hole.

Thread Lead Angle: The angle made by the helix of the thread at the pitch diameter, with a plane perpendicular to the axis.

Threads per Inch: The number of threads in one inch of length.

Thread:

Single: A thread in which lead is equal to pitch.

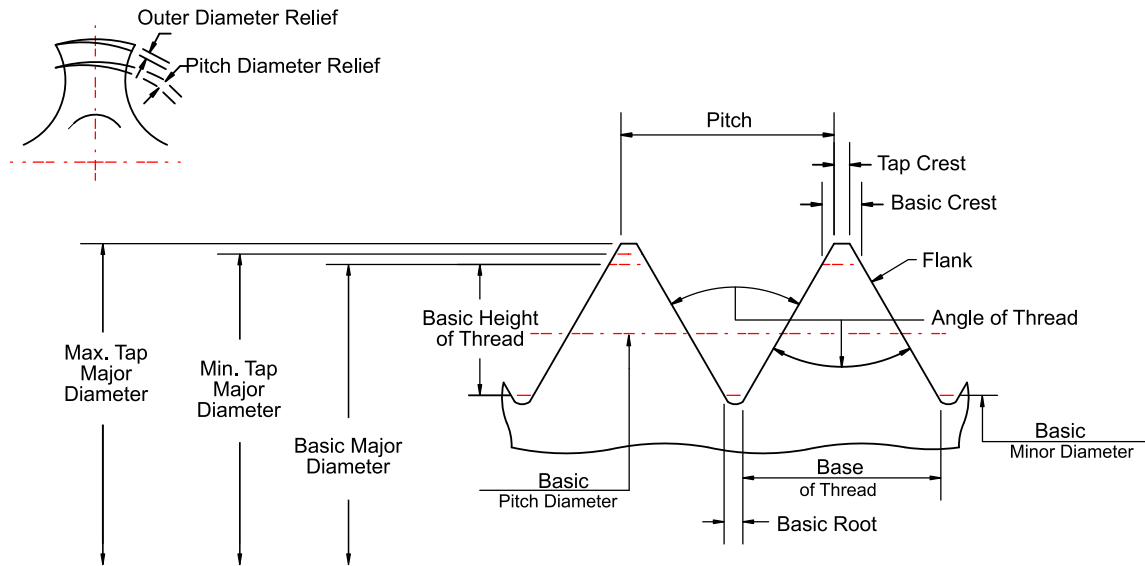
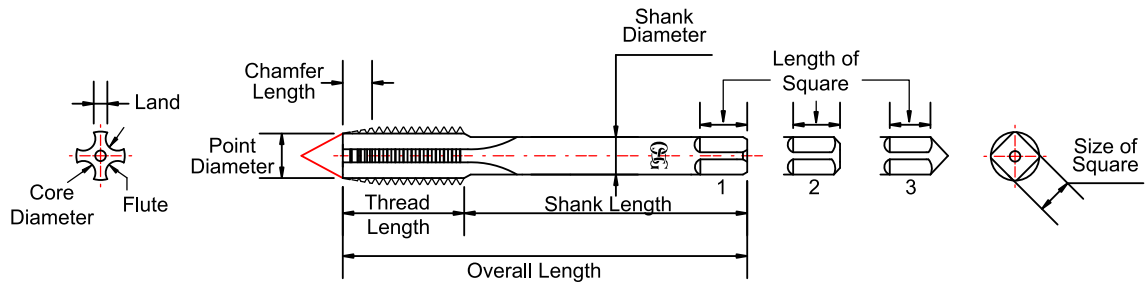
Double: A thread in which lead is equal to twice the pitch.

Triple: A thread in which lead is equal to triple the pitch.

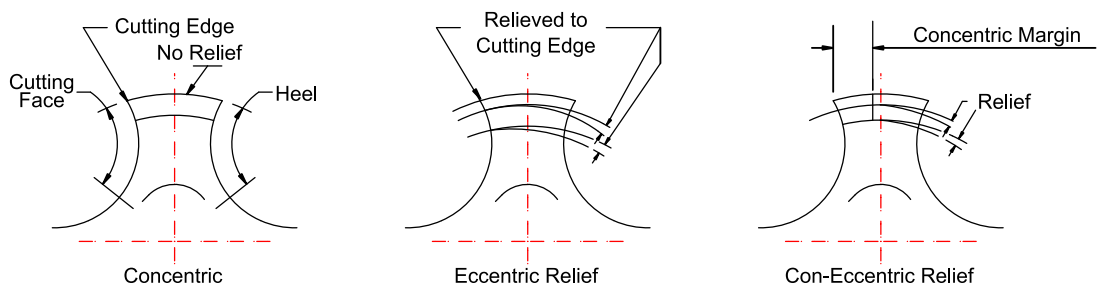




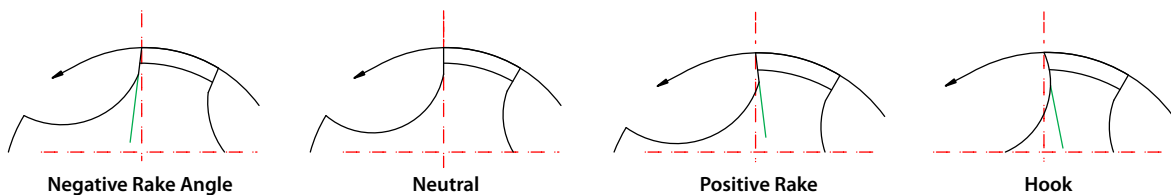
Illustration of Tap Terms



Relief Styles



Cutting Angles





Tapping Speed Guide

SFM to RPM Conversion charts

Surface Footage	Conversion Table - Surface Feet Per Minute (SFM) to Revolutions Per Minute (RPM) - Inch														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
Tap Size	Revolutions Per Minute														
0	318	637	955	1273	1592	1910	2547	3183	3820	4457	5093	5730	6367	7958	9550
1	262	523	785	1047	1308	1570	2093	2616	3140	3663	4186	4710	5233	6541	7849
2	222	444	666	888	1110	1333	1777	2221	2665	3109	3553	3998	4442	5552	6663
3	193	386	579	772	965	1158	1543	1929	2315	2701	3087	3473	3859	4823	5788
4	171	341	512	682	853	1023	1364	1705	2046	2388	2729	3070	3411	4263	5116
5	153	306	458	611	764	917	1222	1528	1834	2139	2445	2750	3056	3820	4584
6	138	277	415	554	692	830	1107	1384	1661	1938	2214	2491	2768	3460	4152
8	116	233	349	466	582	699	932	1165	1398	1630	1863	2086	2329	2912	3494
10	101	201	302	402	503	603	804	1005	1206	1407	1608	1809	2011	2513	3016
12	88	177	265	354	442	531	707	884	1061	1238	1415	1592	1769	2211	2653
1/4	76	153	229	306	382	458	611	764	917	1070	1222	1375	1528	1910	2292
5/16	61	122	183	244	306	367	489	611	733	856	978	1100	1222	1528	1834
3/8	51	102	153	204	255	306	407	509	611	713	815	917	1019	1273	1528
7/16	44	87	131	175	218	262	349	437	524	611	699	786	873	1091	1310
1/2	38	76	115	153	191	229	306	382	458	535	611	688	764	955	1146
9/16	34	68	102	136	170	204	272	340	407	475	543	611	679	849	1019
5/8	31	61	92	122	153	183	244	306	367	428	489	550	611	764	914
3/4	25	51	76	102	127	153	204	255	306	357	407	458	509	637	764
7/8	22	44	65	87	109	131	175	218	262	306	349	393	437	546	655
1	19	38	57	76	96	115	153	191	229	267	306	344	382	478	573
1 1/8	17	34	51	68	85	102	136	170	204	238	272	306	340	424	509
1 1/4	15	31	46	61	76	92	122	153	183	214	244	275	306	382	458
1 3/8	14	28	42	56	69	83	111	139	167	194	222	250	278	347	417
1 1/2	13	25	38	51	64	76	102	127	153	178	204	229	255	318	382
1 5/8	12	24	35	47	59	71	94	118	141	165	188	212	235	294	353
1 3/4	11	22	33	44	55	65	87	109	131	153	175	196	218	273	327
2	10	19	29	38	48	57	76	96	115	134	153	172	191	239	287
2 1/8	9	18	27	36	45	54	72	90	108	126	144	162	180	225	270

Surface Footage	Conversion Table - Surface Feet Per Minute (SFM) to Revolutions Per Minute (RPM) - Metric														
	5	10	15	20	25	30	40	50	60	70	80	90	100	125	150
Tap Size	Revolutions Per Minute														
M2	243	485	728	970	1213	1455	1941	2426	2911	3396	3881	4366	4851	6064	7277
M3	162	323	485	647	809	970	1294	1617	1941	2264	2587	2911	3234	4043	4851
M4	121	243	364	485	606	728	970	1213	1455	1698	1941	2183	2426	3032	3639
M5	97	194	291	388	485	582	776	970	1164	1358	1552	1747	1941	2426	2911
M6	81	162	243	323	404	485	647	809	970	1132	1294	1455	1617	2021	2426
M8	61	121	182	243	303	364	485	606	728	849	970	1092	1213	1516	1819
M10	49	97	146	194	243	291	388	485	582	679	776	873	970	1213	1455
M12	40	81	121	162	202	243	323	404	485	566	647	728	809	1011	1213
M14	35	69	104	139	173	208	277	347	416	485	554	624	693	866	1040
M16	30	61	91	121	152	182	243	303	364	424	485	546	606	758	910
M18	27	54	81	108	135	162	216	270	323	377	431	485	539	674	809
M20	24	49	73	97	121	146	194	243	291	340	388	437	485	606	728
M24	20	40	61	81	101	121	162	202	243	283	323	364	404	505	606
M27	18	36	54	72	90	108	144	180	216	252	287	323	359	449	539
M30	16	32	49	65	81	97	129	162	194	226	259	291	323	404	485
M33	15	29	44	59	74	88	118	147	176	206	235	265	294	368	441
M36	13	27	40	54	67	81	108	135	162	189	216	243	270	337	404
M39	12	25	37	50	62	75	100	124	149	174	199	224	249	311	373
M42	12	23	35	46	58	69	92	116	139	162	185	208	231	289	347
M45	11	22	32	43	54	65	86	108	129	151	172	194	216	270	323
M48	10	20	30	40	51	61	81	101	121	142	162	182	202	253	303
M56	9	19	28	38	47	57	76	95	113	132	151	170	189	236	284

Formulas

SFM (Surface Feet per Minute) = 0.262 x RPM x D

RPM (Revolutions Per Minute) = (3.82 x SFM) / D

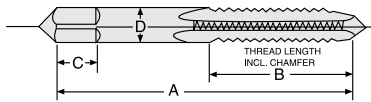
Note: D = Diameter (Must be in inches)



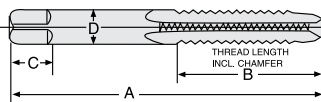


ANSI General Tap Dimensions (USCTI Table 302)

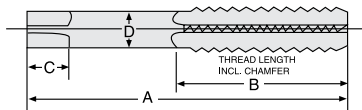
Blank Style 1



Blank Style 2



Blank Style 3



Nominal Diameter Range - Inches		Mach. Screw Size No.	Nominal Fractional Diameter Inches	Nominal Metric Diameter Millimeters	Style	Tap Dimensions - Inches				
Over	To (Incl.)					Overall Length A	Thread Length B	Square Length C	Shank Diameter D	Size of Square
0.052	0.065	0	1/16	-	1	1 5/8	5/16	3/16	0.141	0.110
0.065	0.078	1	-	M1.8	1	1 11/16	3/8	3/16	0.141	0.110
0.078	0.091	2	-	M2, M2.2	1	1 3/4	7/16	3/16	0.141	0.110
0.091	0.104	3	3/32	M2.5	1	1 13/16	1/2	3/16	0.141	0.110
0.104	0.117	4	-	-	1	1 7/8	9/16	3/16	0.141	0.110
0.117	0.130	5	1/8	M3, M3.15	1	1 15/16	5/8	3/16	0.141	0.110
0.130	0.145	6	-	M3.5	1	2	11/16	3/16	0.141	0.110
0.145	0.171	8	5/32	M4	1	2 1/8	3/4	1/4	0.168	0.131
0.171	0.197	10	3/16	M4.5, M5	1	2 3/8	7/8	1/4	0.194	0.152
0.197	0.223	12	7/32	-	1	2 3/8	15/16	9/32	0.220	0.165
0.223	0.260	14	1/4	M6, M6.3	2	2 1/2	1	5/16	0.255	0.191
0.260	0.323	-	5/16	M7, M8	2	2 23/32	1 1/8	3/8	0.318	0.238
0.323	0.385	-	3/8	M10	2	2 15/16	1 1/4	7/16	0.381	0.286
0.385	0.448	-	7/16	-	3	3 5/32	1 7/16	13/32	0.323	0.242
0.448	0.510	-	1/2	M12, M12.5	3	3 3/8	1 21/32	7/16	0.367	0.275
0.510	0.573	-	9/16	M14	3	3 19/32	1 21/32	1/2	0.429	0.322
0.573	0.635	-	5/8	M16	3	3 13/16	1 13/16	9/16	0.480	0.360
0.635	0.709	-	11/16	M18	3	4 1/32	1 13/16	5/8	0.542	0.406
0.709	0.760	-	3/4	-	3	4 1/4	2	11/16	0.590	0.442
0.760	0.823	-	13/16	M20	3	4 15/32	2	11/16	0.652	0.489
0.823	0.885	-	7/8	M22	3	4 11/16	2 7/32	3/4	0.697	0.523
0.885	0.948	-	15/16	M24	3	4 29/32	2 7/32	3/4	0.760	0.570
0.948	1.010	-	1	M25	3	5 1/8	2 1/2	13/16	0.800	0.600
1.010	1.073	-	1 1/16	M27	3	5 1/8	2 1/2	7/8	0.896	0.672
1.073	1.135	-	1 1/8	-	3	5 7/16	2 9/16	7/8	0.896	0.672
1.135	1.198	-	1 3/16	M30	3	5 7/16	2 9/16	1	1.021	0.766
1.198	1.260	-	1 1/4	-	3	5 3/4	2 9/16	1	1.021	0.766
1.260	1.323	-	1 5/16	M33	3	5 3/4	2 9/16	1 1/16	1.108	0.831
1.323	1.385	-	1 3/8	-	3	6 1/16	3	1 1/16	1.108	0.831
1.385	1.448	-	1 7/16	M36	3	6 1/16	3	1 1/8	1.233	0.925
1.448	1.510	-	1 1/2	-	3	6 3/8	3	1 1/8	1.233	0.925
1.510	1.635	-	1 5/8	M39	3	6 11/16	3 3/16	1 1/8	1.305	0.979
1.635	1.760	-	1 3/4	M42	3	7	3 3/16	1 1/4	1.430	1.072
1.760	1.885	-	1 7/8	-	3	7 5/16	3 9/16	1 1/4	1.519	1.139
1.885	2.010	-	2	M48	3	7 5/8	3 9/16	1 3/8	1.644	1.233
2.010	2.135	-	2 1/8	-	3	8	3 9/16	1 3/8	1.769	1.327
2.135	2.260	-	2 1/4	M56	3	8 1/4	3 9/16	1 7/16	1.894	1.420
2.260	2.385	-	2 3/8	-	3	8 1/2	4	1 7/16	2.019	1.514
2.385	2.510	-	2 1/2	-	3	8 3/4	4	1 1/2	2.100	1.575
2.510	2.635	-	2 5/8	M64	3	8 3/4	4	1 1/2	2.250	1.669
2.635	2.760	-	2 3/4	-	3	9 1/4	4	1 9/16	2.350	1.762
2.760	2.885	-	2 7/8	M72	3	9 1/4	4	1 9/16	2.475	1.856
2.885	3.010	-	3	-	3	9 3/4	4 9/16	1 5/8	2.543	1.907
3.010	3.135	-	3 1/8	-	3	9 3/4	4 9/16	1 5/8	2.668	2.001
3.135	3.260	-	3 1/4	M80	3	10	4 9/16	1 3/4	2.793	2.095
3.260	3.385	-	3 3/8	-	3	10	4 9/16	1 3/4	2.883	2.162
3.385	3.510	-	3 1/2	-	3	10 1/4	4 15/16	2	3.008	2.256
3.510	3.635	-	3 5/8	M90	3	10 1/4	4 15/16	2	3.133	2.350
3.635	3.760	-	3 3/4	-	3	10 1/2	5 5/16	2 1/8	3.217	2.413
3.760	3.885	-	3 7/8	-	3	10 1/2	5 5/16	2 1/8	3.342	2.506
3.885	4.010	-	4	M100	3	10 3/4	5 5/16	2 1/2	3.467	2.600

Note: Unless otherwise specified, all OSG taps conform to the dimensions listed above in USCTI Table 302.





Spiral Pointed and Spiral Fluted, JIS (Table 350)

Diameter	Pitch	General Dimensions - Metric					Ground Thread Limits Class	Pitch Diameter Limit		
		Overall Length A	Length of Thread B	Length of Square C	Shank Diam. D	Size of Square E		Basic	Minimum	Maximum
M2	0.4	40	15	5	3	2.5	2	1.740	1.750	1.770
M2.3	0.4	42	15	5	3	2.5	2	2.040	2.050	2.070
M2.6	0.45	44	16	5	3	2.5	2	2.308	2.318	2.333
M3	0.5	46	18	6	4	3.2	2	2.675	2.685	2.700
M3.5	0.6	48	18	6	4	3.2	2	3.110	3.120	3.135
M4	0.7	52	20	7	5	4	2	3.545	3.555	3.575
M4.5	0.75	55	20	7	5	4	2	4.013	4.023	4.043
M5	0.8	60	22	7	5.5	4.5	2	4.480	4.490	4.510
M6	0.75	62	20	7	6	4.5	2	5.513	5.523	5.543
	1	62	24	7	6	4.5	2	5.350	5.360	5.380
M7	1	65	6	8	6.2	5	2	6.350	6.360	6.380
	0.75	62	20	8	6.2	5	2	7.513	7.525	7.550
M8	1	70	30	8	6.2	5	2	7.350	7.360	7.380
	1.25	70	30	8	6.2	5	2	7.188	7.198	7.223
M9	1.25	72	30	8	7	5.5	2	8.188	8.198	8.223
	1	70	30	8	7	5.5	2	9.350	9.362	9.387
M10	1.25	75	32	8	7	5.5	2	9.188	9.198	9.223
	1.5	75	32	8	7	5.5	2	9.026	9.041	9.066
M11	1.5	80	38	9	8	6	2	10.026	10.041	10.066
	1	70	30	9	8.5	6.5	2	11.350	11.365	11.395
M12	1.25	80	38	9	8.5	6.5	2	11.188	11.203	11.233
	1.5	82	38	9	8.5	6.5	2	11.026	11.041	11.071
	1.75	82	38	9	8.5	6.5	2	10.863	10.878	10.908
M14	1.25	80	38	11	10.5	8	2	13.188	13.203	13.233
	1.5	88	42	11	10.5	8	2	13.026	13.041	13.071
	2	88	42	11	10.5	8	2	12.701	12.716	12.746
M16	1	75	30	13	12.5	10	2	15.350	15.365	15.395
	1.5	95	45	13	12.5	10	2	15.026	15.041	15.071
	2	95	45	13	12.5	10	2	14.701	14.716	14.746
M18	1.5	95	45	14	14	11	2	17.026	17.041	17.071
	2	95	45	14	14	11	2	16.701	16.716	16.751
M20	2.5	100	48	14	14	11	2	16.376	16.396	16.431
	1.5	95	45	15	15	12	2	19.026	19.041	19.076
M22	2.5	100	48	15	15	12	2	18.376	19.396	18.431
	1.5	95	45	16	17	13	2	21.026	21.041	21.076
M24	2.5	115	55	16	17	13	2	20.376	20.396	20.431
	1.5	95	45	18	19	15	2	23.026	23.041	23.076
M26	3	120	58	18	19	15	2	22.051	22.071	22.111
	1.5	95	45	18	20	15	2	25.026	25.041	25.076
M28	3	130	62	18	20	15	2	24.051	24.071	24.076
	1.5	105	45	8	21	17	2	27.026	27.041	27.076
M30	1.5	105	45	20	23	17	2	29.026	29.041	29.076
	3.5	135	65	20	23	17	2	27.727	27.747	27.787
M32	1.5	105	45	22	24	19	2	31.026	31.041	31.076
M33	1.5	110	45	22	25	19	2	32.026	32.041	32.076
M34	1.5	110	45	24	26	21	2	33.026	33.041	33.076
M36	1.5	110	45	24	28	21	2	35.026	35.041	35.076

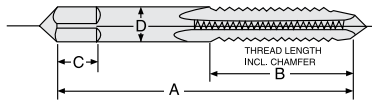
Note: Dimensions are in millimeters



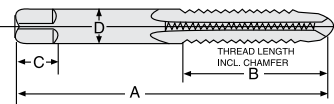


Screw Thread Inserts General Tap Dimensions - Inch (USCTI Table 322)

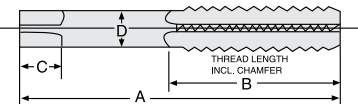
Blank Style 1



Blank Style 2



Blank Style 3



Nominal Size	Threads Per Inch		Blank Design No.	Tap Dimensions (Inch)					Table 302 Blank Equivalent
	UNC	UNF		A	B	C	D	Size of Square	
1	64	–	1	1.810	0.500	0.190	0.141	0.110	No. 3
2	56	–	1	1.880	0.560	0.190	0.141	0.110	No. 4
	–	64	1	1.880	0.560	0.190	0.141	0.110	No. 4
3	48	–	1	1.940	0.630	0.190	0.141	0.110	No. 5
	–	56	1	1.940	0.630	0.190	0.141	0.110	No. 5
4	40	–	1	2.000	0.690	0.190	0.141	0.110	No. 6
	–	48	1	2.000	0.690	0.190	0.141	0.110	No. 6
5	40	–	1	2.130	0.750	0.250	0.168	0.131	No. 8
6	32	–	1	2.380	0.880	0.250	0.194	0.152	No. 10
	–	40	1	2.130	0.750	0.250	0.168	0.131	No. 8
8	32	–	1	2.380	0.940	0.280	0.220	0.165	No. 12
	–	36	1	2.380	0.940	0.280	0.220	0.165	No. 12
10	24	–	2	2.500	1.000	0.310	0.255	0.191	1/4
	–	32	2	2.500	1.000	0.310	0.255	0.191	1/4
12	12	–	2	2.720	1.130	0.380	0.318	0.238	5/16
	–	–	2	2.720	1.130	0.380	0.318	0.238	5/16
1/4	20	–	2	2.720	1.130	0.380	0.318	0.238	5/16
	–	28	2	2.720	1.130	0.380	0.318	0.238	5/16
5/16	18	–	2	2.940	1.250	0.440	0.381	0.286	3/8
	–	24	2	2.940	1.250	0.440	0.381	0.286	3/8
3/8	16	–	3	3.380	1.660	0.440	0.367	0.275	1/2
	–	24	3	3.160	1.440	0.410	0.323	0.242	7/16
7/16	14	–	3	3.590	1.660	0.500	0.429	0.322	9/16
	–	20	3	3.380	1.660	0.440	0.367	0.275	1/2
1/2	13	–	3	3.810	1.810	0.560	0.480	0.360	5/8
	–	20	3	3.590	1.660	0.500	0.429	0.322	9/16
9/16	12	–	3	4.030	1.810	0.630	0.542	0.406	11/16
	–	18	3	3.810	1.810	0.560	0.480	0.360	5/8
5/8	11	–	3	4.250	2.000	0.690	0.590	0.442	3/4
	–	18	3	4.030	1.810	0.630	0.542	0.406	11/16
3/4	10	–	3	4.690	2.220	0.750	0.697	0.523	7/8
	–	16	3	4.470	2.000	0.690	0.652	0.489	13/16
7/8	9	–	3	5.130	2.500	0.810	0.800	0.600	1"
	–	14	3	5.130	2.500	0.810	0.800	0.600	1"
1	8	–	3	5.750	2.560	1.000	1.021	0.766	1 1/4
	–	12	3	5.440	2.560	0.880	0.896	0.672	1 1/8

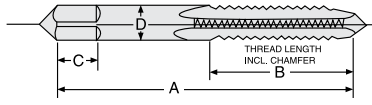
These taps are oversize to the extent that the internal thread they produce will accommodate a helical coil screw thread insert, which at final assembly will accept a screw thread of the normal size and pitch.



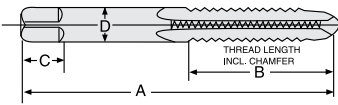


Screw Thread Inserts General Tap Dimensions - Metric (USCTI Table 322A)

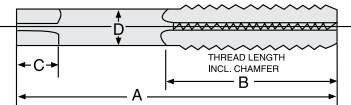
Blank Style 1



Blank Style 2



Blank Style 3



Nominal Size	Pitch		Blank Design No.	Tap Dimensions (Inch)					Table 302 Blank Equivalent
	M	MF		A	B	C	D	Size of Square	
M2.2	0.45	-	1	1.880	0.560	0.190	0.141	0.110	No. 4
M2.5	0.45	-	1	1.940	0.630	0.190	0.141	0.110	No. 5
M3	0.5	-	1	2.000	0.690	0.190	0.141	0.110	No. 6
M3.5	0.6	-	1	2.130	0.750	0.250	0.117	0.131	No. 8
M4	0.7	-	1	2.380	0.880	0.250	0.194	0.152	No. 10
M5	0.8	-	2	2.500	1.000	0.310	0.255	0.191	1/4
M6	1	-	2	2.720	1.130	0.380	0.318	0.238	5/16
M7	1	-	2	2.940	1.250	0.440	0.381	0.286	3/8
M8	1.25	-	2	2.940	1.250	0.440	0.381	0.286	3/8
	-	1	2	2.940	1.250	0.440	0.381	0.286	3/8
M10	1.5	-	3	3.380	1.660	0.440	0.367	0.275	1/2
	-	1.25	3	3.380	1.660	0.440	0.367	0.275	1/2
	-	1	3	3.160	1.440	0.410	0.323	0.242	7/16
M12	1.75	-	3	3.590	1.660	0.500	0.429	0.322	9/16
	-	1.5	3	3.590	1.660	0.500	0.429	0.322	9/16
	-	1.25	3	3.590	1.660	0.500	0.429	0.322	9/16
M14	2	-	3	4.030	1.810	0.630	0.542	0.406	11/16
	-	1.5	3	3.810	1.810	0.560	0.480	0.360	5/8
M16	2	-	3	4.250	2.000	0.690	0.590	0.442	3/4
	-	1.5	3	4.030	1.810	0.630	0.542	0.406	11/16
M18	2.5	-	3	4.690	2.220	0.750	0.697	0.523	7/8
	-	2	3	4.470	2.000	0.690	0.652	0.489	13/16
	-	1.5	3	4.470	2.000	0.690	0.652	0.489	13/16
M20	2.5	-	3	4.910	2.220	0.750	0.760	0.570	15/16
	-	2	3	4.910	2.220	0.750	0.760	0.570	15/16
	-	1.5	3	4.690	2.220	0.750	0.697	0.523	7/8
M22	2.5	-	3	5.130	2.500	0.810	0.800	0.600	1"
	-	2	3	5.130	2.500	0.810	0.800	0.600	1"
	-	1.5	3	4.910	2.220	0.750	0.760	0.570	15/16
M24	3	-	3	5.440	2.560	0.880	0.896	0.672	1 1/8
	-	2	3	5.130	2.500	0.880	0.896	0.672	1 1/16

These taps are oversize to the extent that the internal thread they produce will accommodate a helical coil screw thread insert, which at final assembly will accept a screw thread of the normal size and pitch.





Classes and Tap Recommendations

Size	Threads Per Inch		Basic Pitch Diameter	Unified Classes of Thread				American National Classes of Thread			
				CLASS 2B For General Applications		CLASS 3B For Closer Fits		CLASS 2		CLASS 3	
	NC UNC	NF UNF	All Classes Minimum	Pitch Diam. Limits Maximum	Rec.* Taps	Pitch Diam. Limits Maximum	Rec.* Taps	Pitch Diam. Limits Maximum	Rec.* Taps	Pitch Diam. Limits Maximum	Rec.* Taps
0	—	80	0.0519	0.0542	H2	0.0536	H1	0.0536	H1	0.0532	H1
1	64	—	0.0629	0.0655	H2	0.0648	H1	0.0648	H1	0.0643	H1
1	—	72	0.0640	0.0665	H2	0.0659	H1	0.0658	H1	0.0653	H1
2	56	—	0.0744	0.0772	H2	0.0765	H1	0.0764	H1	0.0759	H1
2	—	64	0.0759	0.0786	H2	0.0779	H1	0.0778	H1	0.0773	H1
3	48	—	0.0855	0.0885	H2	0.0877	H1	0.0877	H1	0.0871	H1
3	—	56	0.0874	0.0902	H2	0.0895	H1	0.0894	H1	0.0889	H1
4	40	—	0.0958	0.0991	H2	0.0982	H2	0.0982	H2	0.0975	H1
4	—	48	0.0985	0.1016	H2	0.1008	H1	0.1007	H1	0.1001	H1
5	40	—	0.1088	0.1121	H2	0.1113	H2	0.1112	H2	0.1105	H1
5	—	44	0.1102	0.1134	H2	0.1126	H1	0.1125	H1	0.1118	H1
6	32	—	0.1177	0.1214	H3	0.1204	H2	0.1204	H2	0.1196	H1
6	—	40	0.1218	0.1252	H2	0.1243	H2	0.1242	H2	0.1235	H1
8	32	—	0.1437	0.1475	H3	0.1465	H2	0.1464	H2	0.1456	H1
8	—	36	0.1460	0.1496	H2	0.1487	H2	0.1485	H2	0.1478	H1
10	24	—	0.1629	0.1672	H3	0.1661	H3	0.1662	H3	0.1653	H1
10	—	32	0.1697	0.1736	H3	0.1726	H2	0.1724	H2	0.1716	H1
12	24	—	0.1889	0.1933	H3	0.1922	H3	0.1922	H3	0.1913	H1
12	—	28	0.1928	0.1970	H3	0.1959	H3	0.1959	H3	0.1950	H1
1/4	20	—	0.2175	0.2224	H5	0.2211	H3	0.2211	H3	0.2201	H2
1/4	—	28	0.2268	0.2311	H4	0.2300	H3	0.2299	H3	0.2290	H1
5/16	18	—	0.2764	0.2817	H5	0.2803	H3	0.2805	H3	0.2794	H2
5/16	—	24	0.2854	0.2902	H4	0.2890	H3	0.2887	H3	0.2878	H1
3/8	16	—	0.3344	0.3401	H5	0.3387	H3	0.3389	H3	0.3376	H2
3/8	—	24	0.3479	0.3528	H4	0.3516	H3	0.3512	H3	0.3503	H1
7/16	14	—	0.3911	0.3972	H5	0.3957	H3	0.3960	H5	0.3947	H3
7/16	—	20	0.4050	0.4104	H5	0.4091	H3	0.4086	H3	0.4076	H1
1/2	13	—	0.4500	0.4565	H5	0.4548	H3	0.4552	H5	0.4537	H3
1/2	—	20	0.4675	0.4731	H5	0.4717	H3	0.4711	H3	0.4701	H1
9/16	12	—	0.5084	0.5152	H5	0.5135	H3	0.5140	H5	0.5124	H3
9/16	—	18	0.5264	0.5333	H5	0.5308	H3	0.5305	H3	0.5294	H2
5/8	11	—	0.5660	0.5732	H5	0.5714	H3	0.5719	H5	0.5702	H3
5/8	—	18	0.5889	0.5949	H5	0.5934	H3	0.5930	H3	0.5919	H2
3/4	10	—	0.6850	0.6927	H5	0.6907	H5	0.6914	H5	0.6895	H3
3/4	—	16	0.7094	0.7159	H5	0.7143	H3	0.7139	H3	0.7126	H2
7/8	9	—	0.8028	0.8110	H6	0.8089	H4	0.8098	H6	0.8077	H4
7/8	—	14	0.8286	0.8356	H6	0.8339	H4	0.8335	H4	0.8322	H2
1	8	—	0.9188	0.9276	H6	0.9254	H4	0.9264	H4	0.9242	H4
1	—	12	0.9459	0.9535	H6	0.9516	H4	0.9515	H4	0.9499	H4
1	—	14	0.9536	0.9609	H6	0.9590	H4	0.9585	H4	0.9572	H4
1-1/8	7	—	1.0322	1.0416	H8	1.0393	H4	1.0407	H4	1.0381	H4
1-1/8	—	12	1.0709	1.0787	H6	1.0768	H4	1.0765	H4	1.0749	H4
1-1/4	7	—	1.1572	1.1668	H8	1.1644	H4	1.1657	H4	1.1631	H4
1-1/4	—	12	1.1959	1.2039	H6	1.2019	H4	1.2015	H4	1.1999	H4
1-3/8	6	—	1.2667	1.2771	H8	1.2745	H4	1.2768	H4	1.2738	H4
1-3/8	—	12	1.3209	1.3291	H6	1.3270	H4	1.3265	H4	1.3249	H4
1-1/2	6	—	1.3917	1.4022	H8	1.3996	H4	1.4018	H4	1.3988	H4
1-1/2	—	12	1.4459	1.4542	H6	1.4522	H4	1.4515	H4	1.4499	H4
1-1/2	—	8	1.4188	1.4283	H7	1.4259	H5	1.4278	H7	1.4251	H5
1-5/8	—	8	1.5438	1.5535	H8	1.5510	H6	1.5531	H7	1.5503	H5
1-3/4	5	—	1.6201	1.6317	H9	1.6288	H7	1.6317	H9	1.6283	H7
1-3/4	8	8	1.6688	1.6786	H8	1.6762	H6	1.6785	H8	1.6756	H5
1-7/8	8	8	1.7938	1.8037	H8	1.8013	H6	1.8038	H8	1.8008	H6
2	4.5	—	1.8557	1.8681	H10	1.8650	H7	1.8684	H10	1.8646	H7
2	—	8	1.9188	1.9289	H8	1.9264	H6	1.9292	H8	1.9261	H6

ISO Metric Class of Threads				
CLASS 6H For Commercial Threads				
Size mm	Pitch mm	Pitch Dia. Limits (Inch)		Rec. Taps
		Min.	Max.	
M1.6	0.35	0.0541	0.0574	D3
M2	0.4	0.0686	0.0720	D3
M2.5	0.45	0.0870	0.0906	D3
M3	0.5	0.1054	0.1092	D3
M3.5	0.6	0.1225	0.1268	D4
M4	0.7	0.1396	0.1442	D4
M5	0.8	0.1764	0.1812	D4
M6	1.0	0.2107	0.2165	D5
M8	1.25	0.2830	0.2892	D5
M10	1.5	0.3554	0.3624	D6
M12	1.75	0.4277	0.4355	D6
M14	2.0	0.5001	0.5083	D7
M16	2.0	0.5788	0.5871	D7
M20	2.5	0.7235	0.7322	D7
M24	3.0	0.8682	0.8785	D8
M30	3.5	1.0917	1.1026	D9
M36	4.0	1.3151	1.3268	D9
M39	4.0	1.4331	1.4450	D9
M42	4.5	1.5385	1.5509	D10
M42	3.0	1.5768	1.5873	D8
M42	2.0	1.6024	1.6112	D7
M42	1.5	1.6152	1.6231	D6
M45	4.5	1.6566	1.6690	D10
M45	3.0	1.6949	1.7054	D8
M48	5.0	1.7619	1.7751	D10
M48	3.0	1.8130	1.8241	D9
M48	2.0	1.8386	1.8479	D7
M48	1.5	1.8514	1.8598	D6
M56	5.5	2.0641	2.0781	D11

FORMULAS

- D3 = Basic PD + 0.0009" to Basic PD + 0.0015"
- D4 = Basic PD + 0.0012" to Basic PD + 0.0020"
- D5 = Basic PD + 0.0015" to Basic PD + 0.0025"
- D6 = Basic PD + 0.0018" to Basic PD + 0.0030"
- D7 = Basic PD + 0.0019" to Basic PD + 0.0035"
- D8 = Basic PD + 0.0024" to Basic PD + 0.0040"
- D9 = Basic PD + 0.0025" to Basic PD + 0.0045"

Sizes Through 1" Dia.

- H1 = Basic PD to Basic PD + 0.0005"
- H2 = Basic PD + 0.0005" to Basic PD + 0.0010"
- H3 = Basic PD + 0.0010" to Basic PD + 0.0015"
- H4 = Basic PD + 0.0015" to Basic PD + 0.0020"
- H5 = Basic PD + 0.0020" to Basic PD + 0.0025"
- H6 = Basic PD + 0.0025" to Basic PD + 0.0030"

Sizes Above 1" Through 1-1/2" Dia.

- H4 = Basic PD + 0.0010" to Basic PD + 0.0020"





Pitch Diameter Limits

For External and Internal Screw Threads

Classes 2A, 3A and 2B, 3B, Unified Thread Form Classes 2 and 3, American National Thread Form

Size	Threads Per Inch		External Thread (Bolt)							Internal Thread (Nut)				
			Unified				American National			Basic Pitch Dia.	Unified		American National	
	NC UNC	NF UNF	Maximum		Minimum		Max.	Minimum			All Classes Min. Size No.	Maximum		Minimum
			Class 2A	Class 3A Basic No.	Class 2A	Class 3A	Classes 2, 3 Basic Size No.	Class 2 No.	Class 3	2B Size No.		3B Size No.	2 Size No.	3 Size No.
0	-	80	0.0514	0.0519	0.0496	0.0506	0.0519	0.0502	0.0506	0.0519	0.0542	0.0536	0.0536	0.0532
1	64	-	0.0623	0.0629	0.0603	0.0614	0.0629	0.0610	0.0615	0.0629	0.0655	0.0648	0.0648	0.0643
	-	72	0.0634	0.0640	0.0615	0.0626	0.0640	0.0622	0.0627	0.0640	0.0665	0.0659	0.0658	0.0653
2	56	-	0.0738	0.0744	0.0717	0.0728	0.0744	0.0724	0.0729	0.0744	0.0772	0.0765	0.0764	0.0759
	-	64	0.0753	0.0759	0.0733	0.0744	0.0759	0.0740	0.0745	0.0759	0.0786	0.0779	0.0778	0.0773
3	48	-	0.0848	0.0855	0.0825	0.0838	0.0855	0.0833	0.0839	0.0855	0.0885	0.0877	0.0877	0.0871
	-	56	0.0867	0.0874	0.0845	0.0858	0.0874	0.0854	0.0859	0.0874	0.0902	0.0895	0.0894	0.0889
4	40	-	0.0950	0.0958	0.0925	0.0939	0.0958	0.0934	0.0941	0.0958	0.0991	0.0982	0.0982	0.0975
	-	48	0.0978	0.0985	0.0954	0.0967	0.0985	0.0963	0.0969	0.0985	0.1016	0.1008	0.1007	0.1001
5	40	-	0.1080	0.1088	0.1054	0.1069	0.1088	0.1064	0.1071	0.1088	0.1121	0.1113	0.1112	0.1105
	-	44	0.1095	0.1102	0.1070	0.1083	0.1102	0.1079	0.1086	0.1102	0.1134	0.1126	0.1125	0.1118
6	32	-	0.1169	0.1177	0.1141	0.1156	0.1177	0.1150	0.1158	0.1177	0.1214	0.1204	0.1204	0.1196
	-	40	0.1210	0.1218	0.1184	0.1198	0.1218	0.1194	0.1201	0.1218	0.1252	0.1243	0.1242	0.1235
8	32	-	0.1428	0.1437	0.1399	0.1415	0.1437	0.1410	0.1418	0.1437	0.1475	0.1465	0.1464	0.1456
	-	36	0.1452	0.1460	0.1424	0.1439	0.1460	0.1435	0.1442	0.1460	0.1496	0.1487	0.1485	0.1478
10	24	-	0.1619	0.1629	0.1586	0.1604	0.1629	0.1596	0.1605	0.1629	0.1672	0.1661	0.1662	0.1653
	-	32	0.1688	0.1697	0.1658	0.1674	0.1697	0.1670	0.1678	0.1697	0.1736	0.1726	0.1724	0.1716
12	24	-	0.1879	0.1889	0.1845	0.1863	0.1889	0.1856	0.1865	0.1889	0.1933	0.1922	0.1922	0.1913
	-	28	0.1918	0.1928	0.1886	0.1904	0.1928	0.1897	0.1906	0.1928	0.1970	0.1959	0.1959	0.1950
1/4	20	-	0.2164	0.2175	0.2127	0.2147	0.2175	0.2139	0.2149	0.2175	0.2224	0.2211	0.2211	0.2201
	-	28	0.2258	0.2268	0.2225	0.2243	0.2268	0.2237	0.2246	0.2268	0.2311	0.2300	0.2299	0.2290
5/16	18	-	0.2752	0.2764	0.2712	0.2734	0.2764	0.2723	0.2734	0.2764	0.2817	0.2803	0.2805	0.2794
	-	24	0.2843	0.2854	0.2806	0.2827	0.2854	0.2821	0.2830	0.2854	0.2902	0.2890	0.2887	0.2878
3/8	16	-	0.3331	0.3344	0.3287	0.3311	0.3344	0.3299	0.3312	0.3344	0.3401	0.3387	0.3389	0.3376
	-	24	0.3468	0.3479	0.3430	0.3450	0.3479	0.3446	0.3455	0.3479	0.3528	0.3516	0.3512	0.3503
7/16	14	-	0.3897	0.3911	0.3850	0.3876	0.3911	0.3862	0.3875	0.3911	0.3972	0.3957	0.3960	0.3947
	-	20	0.4037	0.4050	0.3995	0.4019	0.4050	0.4014	0.4024	0.4050	0.4104	0.4091	0.4086	0.4076
1/2	13	-	0.4485	0.4500	0.4435	0.4463	0.4500	0.4448	0.4463	0.4500	0.4565	0.4548	0.4552	0.4537
	-	20	0.4662	0.4675	0.4619	0.4643	0.4675	0.4639	0.4649	0.4675	0.4731	0.4717	0.4711	0.4701
9/16	12	-	0.5068	0.5084	0.5016	0.5045	0.5084	0.5028	0.5044	0.5084	0.5152	0.5135	0.5140	0.5124
	-	18	0.5250	0.5264	0.5205	0.5230	0.5264	0.5223	0.5234	0.5264	0.5323	0.5308	0.5305	0.5294
5/8	11	-	0.5644	0.5660	0.5589	0.5619	0.5660	0.5601	0.5618	0.5660	0.5732	0.5714	0.5719	0.5702
	-	18	0.5875	0.5889	0.5828	0.5854	0.5889	0.5848	0.5859	0.5889	0.5949	0.5934	0.5930	0.5919
3/4	10	-	0.6832	0.6850	0.6773	0.6806	0.6850	0.6786	0.6805	0.6850	0.6927	0.6907	0.6914	0.6985
	-	16	0.7079	0.7094	0.7029	0.7056	0.7094	0.7049	0.7062	0.7094	0.7159	0.7143	0.7139	0.7126
7/8	9	-	0.8009	0.8028	0.7946	0.7981	0.8028	0.7958	0.7979	0.8028	0.8110	0.8089	0.8098	0.8077
	-	14	0.8270	0.8286	0.8216	0.8245	0.8286	0.8237	0.8250	0.8286	0.8356	0.8339	0.8335	0.8322
1	8	-	0.9168	0.9188	0.9100	0.9137	0.9188	0.9112	0.9134	0.9188	0.9276	0.9254	0.9264	0.9242
	-	12	0.9441	0.9459	0.9382	0.9415	0.9459	0.9403	0.9419	0.9459	0.9535	0.9516	0.9515	0.9499
-	14NS	0.9519	0.9536	0.9463	0.9494	0.9536	0.9487	0.9500	0.9536	0.9609	0.9590	0.9585	0.9572	
1 1/8	7	-	1.0300	1.0322	1.0228	1.0268	1.0322	1.0237	1.0263	1.0322	1.0416	1.0393	1.0407	1.0381
	-	12	1.0691	1.0709	1.0631	1.0664	1.0709	1.0653	1.0669	1.0709	1.0787	1.0768	1.0765	1.0749
1 1/4	7	-	1.1550	1.1572	1.1476	1.1517	1.1572	1.1487	1.1513	1.1572	1.1668	1.1644	1.1657	1.1631
	-	12	1.1941	1.1959	1.1879	1.1913	1.1959	1.1903	1.1919	1.1959	1.2039	1.2019	1.2015	1.1999
1 3/8	6	-	1.2643	1.2667	1.2563	1.2607	1.2667	1.2566	1.2596	1.2667	1.2771	1.2745	1.2768	1.2738
	-	12	1.3190	1.3321	1.3127	1.3162	1.3209	1.3153	1.3169	1.3209	1.3291	1.3270	1.3265	1.3249
1 1/2	6	-	1.3893	1.3917	1.3812	1.3856	1.3917	1.3816	1.3846	1.3917	1.4022	1.3996	1.4018	1.3988
	-	12	1.4440	1.4459	1.4376	1.4411	1.4459	1.4403	1.4419	1.4459	1.4542	1.4522	1.4515	1.4499





Classes and Tap Recommendations

Size	Threads Per Inch		Tap Major Diameter		Unified Classes of Thread					
					Class 2B For General Applications			Class 3B For Closer Fits		
	NC UNC	NF UNF	Minimum	Maximum	H Limit	Minimum	Maximum	H Limit	Minimum	Maximum
2	56	-	0.1107	0.1117	H2	0.9810	0.9860	H1	0.0976	0.0981
3	48	-	0.1279	0.1289	H2	0.1131	0.1136	H1	0.1126	0.1131
4	40	-	0.1463	0.1473	H2	0.1288	0.1293	H1	0.1283	0.1288
4	-	48	0.1409	0.1419	H2	0.1261	0.1266	H1	0.1256	0.1261
6	32	-	0.1807	0.1817	H3	0.1593	0.1598	H2	0.1588	0.1593
6	-	40	0.1723	0.1733	H2	0.1548	0.1553	H1	0.1543	0.1548
8	32	-	0.2067	0.2077	H3	0.1853	0.1858	H2	0.1848	0.1853
8	-	36	0.2022	0.2032	H2	0.1826	0.1831	H1	0.1821	0.1826
10	24	-	0.2465	0.2475	H3	0.2180	0.2185	H2	0.2175	0.2180
10	-	32	0.2327	0.2337	H3	0.2113	0.2118	H2	0.2108	0.2113
1/4	20	-	0.3177	0.3187	H3	0.2835	0.2840	H2	0.2830	0.2835
1/4	-	28	0.2985	0.2995	H3	0.2742	0.2747	H2	0.2737	0.2742
5/16	18	-	0.3874	0.3884	H4	0.3501	0.3506	H3	0.3496	0.3501
5/16	-	24	0.3690	0.3700	H3	0.3405	0.3410	H2	0.3400	0.3405
3/8	16	-	0.4592	0.4602	H4	0.4171	0.4176	H3	0.4166	0.4171
3/8	-	24	0.4315	0.4325	H3	0.4030	0.4035	H2	0.4025	0.4030
7/16	14	-	0.5333	0.5343	H4	0.4854	0.4859	H3	0.4849	0.4854
7/16	-	20	0.5052	0.5062	H4	0.4715	0.4720	H3	0.4710	0.4715
1/2	13	-	0.6032	0.6042	H4	0.5514	0.5519	H3	0.5509	0.5514
1/2	-	20	0.5677	0.5687	H4	0.5340	0.5345	H3	0.5335	0.5340
9/16	12	-	0.6741	0.6751	H4	0.6182	0.6187	H3	0.6177	0.6182
9/16	-	18	0.6374	0.6384	H4	0.6001	0.6006	H3	0.5996	0.6001
5/8	11	-	0.7467	0.7477	H4	0.6856	0.6861	H3	0.6851	0.6856
5/8	-	18	0.6999	0.7009	H4	0.6626	0.6631	H3	0.6621	0.6626
3/4	10	-	0.8835	0.8850	H5	0.8169	0.8174	H3	0.8159	0.8164
3/4	-	16	0.8342	0.8352	H4	0.7921	0.7926	H3	0.7916	0.7921
7/8	9	-	1.0232	1.0247	H5	0.9491	0.9496	H3	0.9481	0.9486
7/8	-	14	0.9708	0.9718	H4	0.9234	0.9239	H3	0.9224	0.9229
1	8	-	1.1666	1.1681	H6	1.0832	1.0842	H4	1.0822	1.0832
1	-	12	1.1116	1.1126	H6	1.0562	1.0572	H4	1.0552	1.0562

ISO Metric Class of Threads				
Class 6H For Commercial Threads				
Size mm	Pitch mm	Pitch Diameter Limits		Recommended Taps
		Min.	Max	
M2	0.40	0.0889	0.0909	D2
M2.5	0.45	0.1099	0.1120	D2
M3	0.50	0.1309	0.1332	D2
M4	0.70	0.1753	0.1783	D3
M5	0.80	0.2173	0.2203	D3
M6	1.00	0.2618	0.2654	D3
M8	1.25	0.3469	0.3508	D3
M10	1.50	0.4320	0.4357	D4
M12	1.75	0.5172	0.5224	D4
M14	2.00	0.6023	0.6078	D5
M16	2.00	0.6810	0.6867	D5
M18	2.50	0.7725	0.7786	D5
M20	2.50	0.8371	0.8574	D5
M22	2.50	0.9300	0.9361	D5
M24	3.00	1.0216	1.0289	D6





Machine Screw Taps - Ground Thread Unified and American National Form (Table 329)

Tap Size In	Threads Per Inch			Major Diameter			Basic Pitch Diam.	Pitch Diameter Limits							
	NC UNC	UF UNF	NS	Basic	Min.	Max.		H1 Limit		H2 Limit		H3 Limit		H7 Limit*	
								Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
0	-	80	-	0.0600	0.0605	0.0616	0.0519	0.0519	0.0524	0.0524	0.0529	-	-	-	-
1	64	-	-	0.0730	0.0736	0.0750	0.0629	0.0629	0.0634	0.0634	0.0639	-	-	-	-
1	-	72	-	0.0730	0.0736	0.0748	0.0640	0.0640	0.0645	0.0645	0.0650	-	-	-	-
2	56	-	-	0.0860	0.0867	0.0883	0.0744	0.0744	0.0749	0.0749	0.0754	-	-	-	-
2	-	64	-	0.0860	0.0866	0.0880	0.0759	0.0759	0.0764	0.0764	0.0769	-	-	-	-
3	48	-	-	0.0990	0.0999	0.1017	0.0855	0.0855	0.0860	0.0860	0.0865	-	-	-	-
3	-	56	-	0.0990	0.0997	0.1013	0.0874	0.0874	0.0879	0.0879	0.0884	-	-	-	-
4	-	-	36	0.1120	0.1135	0.1156	0.0940	-	-	0.0945	0.0950	-	-	-	-
4	40	-	-	0.1120	0.1133	0.1152	0.0958	0.0958	0.0963	0.0963	0.0968	-	-	-	-
4	-	48	-	0.1120	0.1129	0.1147	0.0985	0.0985	0.0990	0.0990	0.0995	-	-	-	-
5	40	-	-	0.1250	0.1263	0.1282	0.1088	0.1088	0.1093	0.1093	0.1098	-	-	-	-
5	-	44	-	0.1250	0.1263	0.1280	0.1102	-	-	0.1107	0.1112	-	-	-	-
6	32	-	-	0.1380	0.1401	0.1421	0.1177	0.1177	0.1182	0.1182	0.1187	0.1187	0.1192	0.1207	0.1212
6	-	40	-	0.1380	0.1393	0.1412	0.1218	0.1218	0.1223	0.1223	0.1228	-	-	-	-
8	32	-	-	0.1640	0.1661	0.1681	0.1437	0.1437	0.1442	0.1442	0.1447	0.1447	0.1452	0.1467	0.1472
8	-	36	-	0.1640	0.1655	0.1676	0.1460	0.1460	0.1465	0.1465	0.1470	-	-	-	-
10	24	-	-	0.1900	0.1927	0.1954	0.1629	0.1629	0.1634	0.1634	0.1639	0.1639	0.1644	0.1659	0.1664
10	-	32	-	0.1900	0.1921	0.1941	0.1697	0.1697	0.1702	0.1702	0.1707	0.1707	0.1712	0.1727	0.1732
12	24	-	-	0.2160	0.2187	0.2214	0.1889	0.1889	0.1894	-	-	0.1899	0.1904	-	-
12	-	28	-	0.2160	0.2183	0.2206	0.1928	0.1928	0.1933	-	-	0.1938	0.1943	-	-

LEAD TOLERANCE

A maximum lead deviation of plus or minus 0.0005" within any two threads not farther apart than one inch is permitted.

ANGLE TOLERANCE

6 to 9 threads per inch incl. = ±25° in 1/2 angle.
10 to 80 threads per inch incl., = ±30° in 1/2 angle.

FORMULA

Maximum major diameter = Basic +A.

Minimum major diameter = Basic +B.

For values of A and B see table 331.

PITCH DIAMETER LIMITS FOR TAPS THROUGH 1" DIAMETER

H1 Limit = Basic PD to basic PD + 0.0005".

H2 Limit = Basic PD + 0.0005" to Basic PD + 0.0010".

H3 Limit = Basic PD + 0.0010" to Basic PD + 0.0015".

H4 Limit = Basic PD + 0.0015" to Basic PD + 0.0020".

H5 Limit = Basic PD + 0.0020" to Basic PD + 0.0025".

H6 Limit = Basic PD + 0.0025" to Basic PD + 0.0030".

PITCH DIAMETER LIMITS FOR TAPS OVER 1" DIAMETER THROUGH 1-1/2" DIAMETER

H4 Limit = Basic PD + 0.0010" to Basic PD + 0.0020".

*Major diameter for H7 Limit Taps is 0.002" larger than values shown in min. and max. columns.

Fractional Size Taps - Ground Thread Unified and American National Form (Table 327)

Tap Size Inches	Threads Per Inch			Major Diameter			Basic Pitch Diam.	Pitch Diameter Limits											
	NC UNC	UF UNF	NS	Basic	Min.	Max.		H1 Limit		H2 Limit		H3 Limit		H4 Limit		H5 Limit		H6 Limit	
								Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1/4	20	-	-	0.2500	0.2533	0.2565	0.2175	0.2175	0.2180	0.2180	0.2185	0.2185	0.2190	-	-	0.2195	0.2200	-	-
1/4	-	28	-	0.2500	0.2523	0.2546	0.2268	0.2268	0.2273	0.2273	0.2278	0.2278	0.2283	0.2283	0.2288	-	-	-	-
5/16	18	-	-	0.3125	0.3161	0.3197	0.2764	0.2764	0.2769	0.2769	0.2774	0.2774	0.2779	-	-	0.2784	0.2789	-	-
5/16	-	24	-	0.3125	0.3152	0.3179	0.2854	0.2854	0.2859	0.2859	0.2864	0.2864	0.2869	0.2869	0.2874	-	-	-	-
3/8	16	-	-	0.3750	0.3790	0.3831	0.3344	0.3344	0.3349	0.3349	0.3354	0.3354	0.3359	-	-	0.3364	0.3369	-	-
3/8	-	24	-	0.3750	0.3777	0.3804	0.3479	0.3479	0.3484	0.3484	0.3489	0.3489	0.3494	0.3494	0.3499	-	-	-	-
7/16	14	-	-	0.4375	0.4422	0.4468	0.3911	0.3911	0.3916	0.3916	0.3921	0.3921	0.3926	-	-	0.3931	0.3936	-	-
7/16	-	20	-	0.4375	0.4408	0.4440	0.4050	0.4050	0.4055	0.4055	0.4060	0.4060	0.4065	-	-	0.4070	0.4075	-	-
1/2	13	-	-	0.5000	0.5050	0.5100	0.4500	0.4500	0.4505	0.4505	0.4510	0.4510	0.4515	-	-	0.4520	0.4525	-	-
1/2	-	20	-	0.5000	0.5033	0.5065	0.4675	0.4675	0.4680	0.4680	0.4685	0.4685	0.4690	-	-	0.4695	0.4700	-	-
9/16	12	-	-	0.5625	0.5679	0.5733	0.5084	0.5084	0.5089	0.5089	0.5094	0.5094	0.5099	-	-	0.5104	0.5109	-	-
9/16	-	18	-	0.5625	0.5661	0.5697	0.5264	0.5264	0.5269	0.5269	0.5274	0.5274	0.5279	-	-	0.5284	0.5289	-	-
5/8	11	-	-	0.6250	0.6309	0.6368	0.5660	0.5660	0.5665	0.5665	0.5670	0.5670	0.5675	-	-	0.5680	0.5685	-	-
5/8	-	18	-	0.6250	0.6286	0.6322	0.5889	0.5889	0.5894	0.5894	0.5899	0.5899	0.5904	-	-	0.5909	0.5914	-	-
11/16	-	-	11	0.6875	0.6934	0.6993	0.6285	-	-	-	-	0.6295	0.6300	-	-	-	-	-	-
11/16	-	-	16	0.6875	0.6915	0.6956	0.6469	-	-	-	-	0.6479	0.6484	-	-	-	-	-	-
3/4	10	-	-	0.7500	0.7565	0.7630	0.6850	0.6850	0.6855	0.6855	0.6860	0.6860	0.6865	-	-	0.6870	0.6875	-	-
3/4	-	16	-	0.7500	0.7540	0.7581	0.7094	0.7094	0.7099	0.7099	0.7104	0.7104	0.7109	-	-	0.7114	0.7119	-	-
7/8	9	-	-	0.8750	0.8822	0.8894	0.8028	0.8028	0.8033	0.8033	0.8038	-	-	0.8043	0.8048	-	-	0.8053	0.8058
7/8	-	14	-	0.8750	0.8797	0.8843	0.8286	0.8286	0.8291	0.8291	0.8296	-	-	0.8301	0.8306	-	-	0.8311	0.8316
1	8	-	-	1.0000	1.0081	1.0162	0.9188	0.9188	0.9193	0.9193	0.9198	-	-	0.9203	0.9208	-	-	0.9213	0.9218
1	-	12	-	1.0000	1.0054	1.0108	0.9459	-	-	-	-	-	-	0.9464	0.9469	-	-	-	-
1	-	-	14	1.0000	1.0047	1.0093	0.9536	-	-	0.9541	0.9546	-	-	0.9551	0.9556	-	-	0.9561	0.9566
1 1/8	7	-	-	1.1250	1.1343	1.1436	1.0322	-	-	-	-	-	-	1.0332	1.0337	-	-	-	-
1 1/8	-	12	-	1.1250	1.1304	1.1358	1.0709	-	-	-	-	-	-	1.0719	1.0724	-	-	-	-
1 1/4	7	-	-	1.2500	1.2593	1.2686	1.1572	-	-	-	-	-	-	1.1582	1.1587	-	-	-	-
1 1/4	-	12	-	1.2500	1.2554	1.2608	1.1959	-	-	-	-	-	-	1.1969	1.1974	-	-	-	-
1 3/8	6	-	-	1.3750	1.3859	1.3967	1.2667	-	-	-	-	-	-	1.2677	1.2682	-	-	-	-
1 3/8	-	12	-	1.3750	1.3804	1.3858	1.3209	-	-	-	-	-	-	1.3219	1.3224	-	-	-	-
1 1/2	6	-	-	1.5000	1.5109	1.5217	1.3917	-	-	-	-	-	-	1.3927	1.3932	-	-	-	-
1 1/2	-	12	-	1.5000	1.5054	1.5108	1.4459	-	-	-	-	-	-	1.4469	1.4474	-	-	-	-





Ground Thread Taps (USCTI Table 331)

The following tables and formula are used in determining the limits and tolerances for ground thread taps having a thread lead angle not in excess of 5°, unless otherwise specified.

LEAD TOLERANCE

A maximum lead deviation of $\pm 0.0005''$, within any two threads not farther apart than 1" is permitted.

ANGLE TOLERANCE

Threads Per Inch	Deviation in Half Angle
4 to 5-1/2 incl.	$\pm 20'$
6 to 9 incl.	$\pm 25'$
10 to 80 incl.	$\pm 30'$

FORMULA

Max. Major Dia. = Basic + A

Max. Pitch Dia. = Min. + D

Min. Major Dia. = Basic + B

Min. Pitch Dia. = Basic + C

In the above formula:

A = Constant to add = 0.130P for all Pitches

B = Major Diameter Tolerance = 0.087P for 48 Through 80 TPI
 = 0.076P for 36 Through 47 TPI
 = 0.065P for 4 Through 35 TPI

C = Amount over basic for minimum pitch diameter

D = Pitch diameter tolerance

Note: When the tap major diameter must be determined from a specified tap pitch diameter, the maximum major diameter equals the minimum specified pitch diameter minus Constant C, plus 0.64952P, plus Constant A.

Threads Per Inch	A	B	C			D			
			To 5/8" Incl.	Over 5/8" to 2 1/2" Incl.	Over 2 1/2"	To 1" Incl.	Over 1" to 1 1/2" Incl.	Over 1 1/2" to 2 1/2" Incl.	Over 2 1/2"
80	0.0016	0.0011	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
72	0.0018	0.0012	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
64	0.0020	0.0014	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
56	0.0023	0.0016	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
48	0.0027	0.0018	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
44	0.0030	0.0017	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
40	0.0032	0.0019	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
36	0.0036	0.0021	0.0005	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
32	0.0041	0.0020	0.0010	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
28	0.0046	0.0023	0.0010	0.0010	0.0015	0.0005	0.0010	0.0010	0.0015
24	0.0054	0.0027	0.0010	0.0010	0.0015	0.0005	0.0010	0.0015	0.0015
20	0.0065	0.0032	0.0010	0.0010	0.0015	0.0005	0.0010	0.0015	0.0015
18	0.0072	0.0036	0.0010	0.0010	0.0015	0.0005	0.0010	0.0015	0.0015
16	0.0081	0.0041	0.0010	0.0010	0.0015	0.0005	0.0010	0.0015	0.0020
14	0.0093	0.0046	0.0010	0.0015	0.0015	0.0005	0.0010	0.0015	0.0020
13	0.0100	0.0050	0.0010	0.0015	0.0015	0.0005	0.0010	0.0015	0.0020
12	0.0108	0.0054	0.0010	0.0015	0.0015	0.0005	0.0010	0.0015	0.0020
11	0.0118	0.0059	0.0010	0.0015	0.0020	0.0005	0.0010	0.0015	0.0020
10	0.0130	0.0065	-	0.0015	0.0020	0.0005	0.0010	0.0015	0.0020
9	0.0144	0.0072	-	0.0015	0.0020	0.0005	0.0010	0.0015	0.0020
8	0.0162	0.0081	-	0.0015	0.0020	0.0005	0.0010	0.0015	0.0020
7	0.0186	0.0093	-	0.0015	0.0020	0.0010	0.0010	0.0020	0.0025
6	0.0217	0.0108	-	0.0015	0.0020	0.0010	0.0010	0.0020	0.0025
5 1/2	0.0236	0.0118	-	0.0015	0.0020	0.0010	0.0015	0.0020	0.0025
5	0.0260	0.0130	-	0.0015	0.0020	0.0010	0.0015	0.0020	0.0025
4 1/2	0.0289	0.0144	-	0.0015	0.0020	0.0010	0.0015	0.0020	0.0025
4	0.0325	0.0162	-	0.0015	0.0020	0.0010	0.0015	0.0020	0.0025

For intermediate pitches, use values for next coarser pitch for C and D, but use formulas for A and B.





Metric Size Taps - Ground Thread (Table 337)

Nom- inal Size	Pitch	Major Diameter Inches			Standard Pitch Diameter Limits Inches														
		Basic	Min.	Max.	Basic Pitch Diam.	D3 Limits		D4 Limits		D5 Limits		D6 Limits		D7 Limits		D8 Limits		D9 Limits	
						Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
1.6	0.35	0.062992	0.0641	0.0651	0.054042	0.0550	0.0556	-	-	-	-	-	-	-	-	-	-	-	-
2.0	0.4	0.078740	0.0801	0.0811	0.068511	0.0695	0.0701	-	-	-	-	-	-	-	-	-	-	-	-
2.5	0.45	0.098425	0.0999	0.1009	0.086918	0.0879	0.0885	-	-	-	-	-	-	-	-	-	-	-	-
3.0	0.5	0.118110	0.1198	0.1208	0.105324	0.1063	0.1069	-	-	-	-	-	-	-	-	-	-	-	-
3.5	0.6	0.137795	0.1397	0.1407	0.122452	-	-	0.1237	0.1245	-	-	-	-	-	-	-	-	-	-
4.0	0.7	0.157480	0.1597	0.1613	0.139580	-	-	0.1408	0.1416	-	-	-	-	-	-	-	-	-	-
5.0	0.8	0.196850	0.1994	0.2010	0.176393	-	-	0.1776	0.1784	-	-	-	-	-	-	-	-	-	-
6.0	1.0	0.236220	0.2395	0.2411	0.210648	-	-	-	-	0.2122	0.2132	-	-	-	-	-	-	-	-
8.0	1.25	0.314960	0.3189	0.3214	0.282995	-	-	-	-	0.2843	0.2855	-	-	-	-	-	-	-	-
10	1.5	0.393700	0.3985	0.4010	0.355343	-	-	-	-	-	-	0.3572	0.3584	-	-	-	-	-	-
12	1.75	0.472440	0.4780	0.4805	0.427690	-	-	-	-	-	-	0.4295	0.4307	-	-	-	-	-	-
14	2.0	0.551180	0.5575	0.5600	0.500037	-	-	-	-	-	-	-	-	0.5020	0.5036	-	-	-	-
16	2.0	0.629920	0.6363	0.6388	0.578777	-	-	-	-	-	-	-	-	0.5807	0.5823	-	-	-	-
20	2.5	0.787400	0.7954	0.7979	0.723471	-	-	-	-	-	-	-	-	0.7254	0.7270	-	-	-	-
24	3.0	0.944880	0.9544	0.9583	0.868165	-	-	-	-	-	-	-	-	-	-	0.8706	0.8722	-	-
30	3.5	1.181100	1.1922	1.1961	1.091599	-	-	-	-	-	-	-	-	-	-	-	-	1.0942	1.0962
36	4.0	1.417320	1.4300	1.4339	1.315034	-	-	-	-	-	-	-	-	-	-	-	-	1.3176	1.3196

LEAD TOLERANCE

A maximum lead deviation of ± 0.013 mm within any two threads not farther apart than 25 mm is permitted.

ANGLE TOLERANCE

Pitch (mm)

Over 0.25 to 2.5 Incl.

Over 2.5 to 4 Incl.

Over 4 to 6 Incl.

Deviation in Half Angle

$\pm 30'$

$\pm 25'$

$\pm 20''$

FORMULA

Min. Major Dia. = Basic + W

Max. Major Dia. = Min. + X

For Values of W, Y & Z, See Table 341

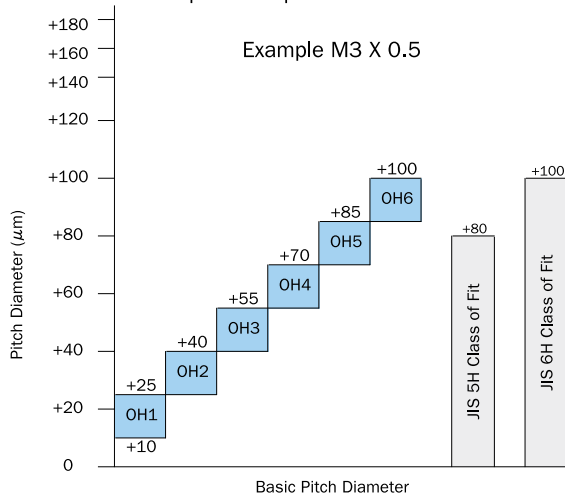
Max. Pitch Dia. = Basic + Y

Min. Pitch Dia. = Max. - Z

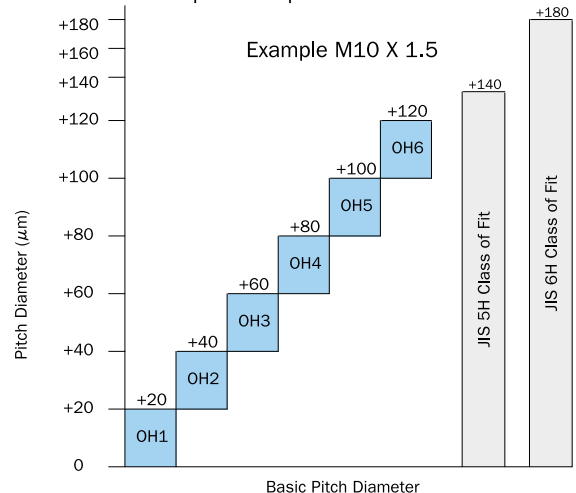
In all cases, the tap major and pitch diameter inch conversions have been rounded upwards to the next ten thousandth of an inch. Basic values agree with B1 Report—ISO Metric Screw Threads, Table 9B.

OH Tap Limits

OH Limits for Taps with a pitch ≤ 0.6



OH Limits for Taps with a pitch ≥ 0.7





Ground Thread Tap Limits (Table 341)

The following tables and formula are used in determining the limits and tolerances for ground thread metric taps unless otherwise specified. They apply only to metric threads having a 60° form with a P/8 flat at the major diameter of the basic thread form.

LEAD TOLERANCE

A maximum lead deviation of ±0.013 mm within any two threads not farther apart than 25 mm is permitted.

ANGLE TOLERANCE

Pitch (mm)	Deviation in Half Angle
Over 0.25 to 2.5 incl.	±30'
Over 2.5 to 4. incl.	±25'
Over 4 to 6 incl.	±20'

FORMULA

Min. Major Dia = Basic + W	Max. Pitch Dia. = Basic + Y
Max. Major Dia. = Min. + X	Min. Pitch Dia. = Max. - Z

W = Constant to add to Basic Major Diameter*

X = Major Diameter Tolerance

Y = Amount over Basic for Maximum Pitch Diameter

Z = Pitch Diameter Tolerance

*W = .080P Converted to inches

Note: When the tap major diameter must be determined from a specified tap pitch diameter, the minimum major diameter equals the maximum specified tap pitch diameter minus constant Y, plus the basic single height of thread, plus constant W.

Pitch		Symmetrical Thread Height	Tap Limits for Metric Threads (inch)									
			W	X	Y				Z			
					M1.6 To M6.3 Incl.	Over M6.3 to M25 Incl.	Over M25 To M90 Incl.	Over M90	M1.6 To M6.3 Incl.	Over M6.3 to M25 Incl.	Over M25 To M90 Incl.	Over M90
mm	Inch Equiv.	0.64952P (Inch)										
0.3	0.011811	0.007671	0.0009	0.0010	0.0015	0.0015	0.0020	0.0020	0.0006	0.0006	0.0008	0.0008
0.35	0.013779	0.008950	0.0011	0.0010	0.0015	0.0015	0.0020	0.0020	0.0006	0.0006	0.0008	0.0008
0.4	0.015748	0.010229	0.0013	0.0010	0.0015	0.0020	0.0020	0.0020	0.0006	0.0006	0.0008	0.0010
0.45	0.017716	0.011507	0.0014	0.0010	0.0015	0.0020	0.0020	0.0020	0.0006	0.0008	0.0008	0.0010
0.5	0.019685	0.012786	0.0016	0.0010	0.0015	0.0020	0.0020	0.0025	0.0006	0.0008	0.0010	0.0010
0.6	0.236220	0.015343	0.0019	0.0010	0.0020	0.0020	0.0025	0.0025	0.0008	0.0008	0.0010	0.0010
0.7	0.027559	0.017900	0.0022	0.0016	0.0020	0.0020	0.0025	0.0025	0.0008	0.0008	0.0010	0.0010
0.75	0.029527	0.019178	0.0024	0.0016	0.0020	0.0025	0.0025	0.0030	0.0008	0.0010	0.0010	0.0012
0.8	0.031496	0.020457	0.0025	0.0016	0.0020	0.0025	0.0025	0.0030	0.0008	0.0010	0.0010	0.0012
0.9	0.035433	0.023014	0.0028	0.0016	0.0020	0.0025	0.0025	0.0030	0.0008	0.0010	0.0010	0.0012
1.0	0.039370	0.025572	0.0032	0.0016	0.0025	0.0025	0.0030	0.0030	0.0010	0.0010	0.0012	0.0012
1.25	0.049212	0.031964	0.0039	0.0025	0.0025	0.0025	0.0030	0.0035	0.0010	0.0012	0.0012	0.0016
1.5	0.059055	0.038357	0.0047	0.0025	0.0025	0.0030	0.0030	0.0035	0.0010	0.0012	0.0012	0.0016
1.75	0.068897	0.044750	0.0055	0.0025	-	0.0030	0.0035	0.0040	-	0.0012	0.0016	0.0016
2.0	0.078740	0.051143	0.0063	0.0025	-	0.0035	0.0035	0.0040	-	0.0016	0.0016	0.0016
2.5	0.098425	0.063929	0.0079	0.0025	-	0.0035	0.0040	0.0045	-	0.0016	0.0016	0.0020
3.0	0.118110	0.076715	0.0095	0.0039	-	0.0040	0.0040	0.0050	-	0.0016	0.0020	0.0020
3.5	0.137795	0.089501	0.0110	0.0039	-	0.0040	0.0045	0.0050	-	0.0016	0.0020	0.0020
4.0	0.157480	0.102286	0.0126	0.0039	-	0.0040	0.0045	0.0055	-	0.0020	0.0020	0.0025
4.5	0.177165	0.115072	0.0142	0.0039	-	-	0.0050	0.0055	-	0.0020	0.0020	0.0025
5.0	0.196850	0.127858	0.0158	0.0039	-	-	0.0050	0.0060	-	-	0.0025	0.0025
5.5	0.216535	0.140644	0.0173	0.0039	-	-	0.0055	0.0060	-	-	0.0025	0.0025
6.0	0.236220	0.153430	0.0189	0.0039	-	-	0.0055	0.0060	-	-	0.0025	0.0025

For intermediate pitches use value for next coarser pitch.

Symmetrical Thread Height; Equivalent to the basic height, h, of the original American National Form.





ISO TOLERANCE SYSTEM

The ISO Metric Screw Thread Tolerance System provides for tolerance grades and tolerance positions (allowances) for the pitch diameter and crest diameter.

TOLERANCE GRADES

A series of numbers, 3 through 9, were established as symbols, to reflect the size of the tolerance; the higher the number the larger the tolerance.

FOR EXTERNAL THREADS - (LOWER CASE LETTER SYMBOLS)

- Tolerance Position "e" has a large allowance. The upper limit is below basic by a large amount.
- Tolerance Position "g" has a small allowance. The upper limit is below basic by a small amount.
- Tolerance Position "h" has no allowance and the upper limit is basic.

FOR INTERNAL THREADS - (CAPITAL LETTER SYMBOLS)

- Tolerance Position "G" has a small allowance. The lower limit is above basic by a small amount.
- Tolerance Position "H" has no allowance and the lower limit is basic.

SELECTION OF TOLERANCE CLASSES

Two factors determine the selection of a suitable tolerance class:

1. Length of thread engagement (short, normal or long)
2. Quality requirement (fine, medium or coarse) See table below for preferred tolerance classes.

TOLERANCE POSITIONS

They define the maximum-material limits of the pitch and crest diameters and indicate their relationship to the basic profile. For plating requirements and ease of assembly, a series of tolerance positions were established.

PREFERRED TOLERANCE CLASSES

Quality Requirement	External Thread (Bolts)									Internal Thread (Nuts)					
	Tolerance Position e (Large Allowance)			Tolerance Position g (Small Allowance)			Tolerance Position h (No Allowance)			Tolerance Position G (Small Allowance)			Tolerance Position H (No Allowance)		
	Length of Thread Engagement			Length of Thread Engagement			Length of Thread Engagement			Length of Thread Engagement			Length of Thread Engagement		
	Short	Normal	Long	Short	Normal	Long	Short	Normal	Long	Short	Normal	Long	Short		
FINE Close Fit Applications							3h-4h	4h	5h-4h				4H		
MEDIUM General Purpose Applications		6e	7e-6e	5g-6g	6g	7g-6g	5h-6h	6h	7h-6h	5G	6G	7G	5H		
COARSE Difficult Manufacturing Applications					8g	9g-8g					7G	8G			

Tolerance Position "e" is not to be applied to pitches finer than 0.5 mm. Tolerance classes 6g and 6H are for commercial screw, bolt and nut threads.

THREAD DESIGNATIONS

Basic Designations: The letter "M" and the nominal size (basic major diameter in millimeters) followed by "X" and the pitch in millimeters, designates metric screw threads. For coarse series thread, the "X" and pitch may be omitted.

Example: Coarse series threads; M6
other threads; M8 x 1

A complete designation comprises, in addition to the basic designation, the tolerance class symbol separated by a dash. When the pitch and crest diameter tolerance classes are identical, the symbol need only be given once.
Example: M20 x 2—6H

When the pitch and crest diameters have different tolerance classes, the pitch diameter symbol is followed by the crest diameter symbol.

Example: M6 x 0.75—5g—6g

To indicate a specified thread fit between mating parts, the internal thread tolerance class symbol is followed by that of the external thread, separated by a slash.

Example: M20 x 2—6H/5g—6g

When rounded root external threads are to be specified, the minimum root radius value shall be added to the tolerance class designation.

Example: M6—5g —6g 0.100R





Limiting Dimensions of Standard Series Threads for Commercial Screws, Bolts and Nuts (Inches)

Nominal Size Diam	Pitch P	Basic Thread Designation	External Thread (Bolt)								Internal Thread (Nut)							
			Tol Cl.	Allowance	Major Diameter		Pitch Diameter			Minor Diameter		Tol Cl.	Minor Diameter		Pitch Diameter		Major Dia.	
					Max.	Min.	Max.	Min.	Tol.	Max.	Min.		Min.	Max.	Min.	Max.		
1.6	0.35	M1.6	6g	0.0008	0.0622	0.0589	0.0533	0.0509	0.0024	0.0453	0.0419	6H	0.0481	0.0520	0.0541	0.0574	0.0033	0.0630
1.8	0.35	M1.8	6g	0.0008	0.0701	0.0668	0.0611	0.0588	0.0023	0.0531	0.0498	6H	0.0560	0.0598	0.0620	0.0652	0.0032	0.0709
2	0.4	M2.0	6g	0.0009	0.0779	0.0743	0.0677	0.0652	0.0025	0.0586	0.0549	6H	0.0617	0.0661	0.0686	0.0720	0.0034	0.0788
2.2	0.45	M2.2	6g	0.0009	0.0858	0.0819	0.0743	0.0716	0.0027	0.0640	0.0601	6H	0.0675	0.0723	0.0752	0.0788	0.0036	0.0867
2.5	0.45	M2.5	6g	0.0009	0.0976	0.0938	0.0861	0.0834	0.0027	0.0759	0.0719	6H	0.0793	0.0841	0.0870	0.0906	0.0036	0.0985
3	0.5	M3.0	6g	0.0009	0.1173	0.1132	0.1045	0.1016	0.0029	0.0931	0.0889	6H	0.0969	0.1023	0.1054	0.1092	0.0038	0.1182
3.5	0.6	M3.5	6g	0.0009	0.1369	0.1321	0.1216	0.1183	0.0033	0.1079	0.1030	6H	0.1123	0.1185	0.1225	0.1268	0.0043	0.1378
4	0.7	M4.0	6g	0.0009	0.1566	0.1512	0.1387	0.1352	0.0034	0.1227	0.1173	6H	0.1277	0.1347	0.1396	0.1442	0.0046	0.1575
4.5	0.75	M4.5	6g	0.0010	0.1762	0.1708	0.1571	0.1536	0.0035	0.1400	0.1345	6H	0.1452	0.1526	0.1580	0.1626	0.0046	0.1772
5	0.8	M5.0	6g	0.0010	0.1959	0.1900	0.1754	0.1717	0.0037	0.1572	0.1513	6H	0.1628	0.1706	0.1764	0.1812	0.0048	0.1969
6	1.0	M6.0	6g	0.0012	0.2351	0.2282	0.2096	0.2052	0.0044	0.1868	0.1797	6H	0.1936	0.2028	0.2107	0.2165	0.0058	0.2363
7	1.0	M7.0	6g	0.0011	0.2745	0.2675	0.2489	0.2446	0.0043	0.2262	0.2191	6H	0.2330	0.2422	0.2501	0.2559	0.0058	0.2756
8	1.25	M8.0	6g	0.0012	0.3138	0.3056	0.2818	0.2773	0.0045	0.2535	0.2454	6H	0.2617	0.2721	0.2830	0.2892	0.0062	0.3150
8	1.0	M8 x 1.0	6g	0.0011	0.3139	0.3069	0.2883	0.2840	0.0043	0.2656	0.2584	6H	0.2724	0.2816	0.2894	0.2952	0.0058	0.3150
10	1.5	M10	6g	0.0013	0.3924	0.3832	0.3540	0.3489	0.0051	0.3199	0.3102	6H	0.3298	0.3415	0.3554	0.3624	0.0070	0.3937
10	1.25	M10 x 1.25	6g	0.0012	0.3925	0.3843	0.3606	0.3560	0.0046	0.3322	0.3241	6H	0.3404	0.3508	0.3618	0.3680	0.0062	0.3937
12	1.75	M12	6g	0.0014	0.4711	0.4607	0.4263	0.4205	0.0058	0.3865	0.3758	6H	0.3979	0.4110	0.4277	0.4355	0.0078	0.4725
12	1.25	M12 x 1.25	6g	0.0012	0.4713	0.4630	0.4393	0.4342	0.0051	0.4109	0.4023	6H	0.4192	0.4295	0.4405	0.4475	0.0070	0.4725
14	2.0	M14	6g	0.0016	0.5496	0.5387	0.4985	0.4923	0.0062	0.4530	0.4412	6H	0.4660	0.4807	0.5001	0.5083	0.0082	0.5512
14	1.5	M14 x 1.5	6g	0.0013	0.5499	0.5407	0.5115	0.5061	0.0054	0.4774	0.4677	6H	0.4873	0.4990	0.5129	0.5203	0.0074	0.5512
16	2.0	M16	6g	0.0016	0.6284	0.6175	0.5772	0.5710	0.0062	0.5318	0.5199	6H	0.5447	0.5594	0.5788	0.5871	0.0083	0.6300
16	1.5	M16 x 1.5	6g	0.0014	0.6286	0.6194	0.5903	0.5849	0.0054	0.5561	0.5465	6H	0.5660	0.5777	0.5916	0.5990	0.0074	0.6300
18	2.5	M18	6g	0.0017	0.7070	0.6939	0.6430	0.6364	0.0066	0.5862	0.5725	6H	0.6022	0.6198	0.6448	0.6535	0.0087	0.7087
18	1.5	M18 x 1.5	6g	0.0013	0.7074	0.6982	0.6690	0.6636	0.0054	0.6349	0.6252	6H	0.6448	0.6565	0.6704	0.6777	0.0073	0.7087
20	2.5	M20	6g	0.0018	0.7857	0.7726	0.7218	0.7152	0.0066	0.6649	0.6513	6H	0.6809	0.6985	0.7235	0.7322	0.0087	0.7875
20	1.5	M20 x 1.5	6g	0.0014	0.7861	0.7769	0.7477	0.7423	0.0054	0.7136	0.7039	6H	0.7235	0.7352	0.7491	0.7565	0.0074	0.7875
22	2.5	M22	6g	0.0018	0.8644	0.8513	0.8005	0.7939	0.0066	0.7437	0.7300	6H	0.7597	0.7773	0.8023	0.8110	0.0087	0.8662
22	1.5	M22 x 1.5	6g	0.0014	0.8648	0.8556	0.8265	0.8211	0.0054	0.7924	0.7827	6H	0.8023	0.8140	0.8278	0.8352	0.0074	0.8662
24	3.0	M24	6g	0.0020	0.9429	0.9283	0.8662	0.8584	0.0078	0.7980	0.7817	6H	0.8171	0.8366	0.8682	0.8785	0.0103	0.9449
24	2.0	M24 x 2.0	6g	0.0016	0.9433	0.9324	0.8922	0.8856	0.0066	0.8467	0.8345	6H	0.8597	0.8744	0.8938	0.9025	0.0087	0.9449
27	3.0	M27	6g	0.0019	1.0611	1.0464	0.9843	0.9765	0.0078	0.9161	0.8999	6H	0.9352	0.9548	0.9863	0.9966	0.0103	1.0630
27	2.0	M27 x 2.0	6g	0.0016	1.0614	1.0505	1.0103	1.0037	0.0066	0.9648	0.9526	6H	0.9778	0.9925	1.0119	1.0206	0.0087	1.0630
30	3.5	M30	6g	0.0022	1.1790	1.1623	1.0895	1.0812	0.0083	1.0099	0.9917	6H	1.0320	1.0539	1.0917	1.1026	0.0109	1.1812
30	2.0	M30 x 2.0	6g	0.0016	1.1796	1.1686	1.1284	1.1218	0.0066	1.0829	1.0707	6H	1.0959	1.1106	1.1300	1.1387	0.0087	1.1812
33	3.5	M33	6g	0.0022	1.2971	1.2804	1.2076	1.1993	0.0083	1.1280	1.1099	6H	1.1501	1.1720	1.2098	1.2207	0.0109	1.2993
33	2.0	M33 x 2.0	6g	0.0016	1.2977	1.2867	1.2465	1.2399	0.0066	1.2011	1.1888	6H	1.2140	1.2287	1.2481	1.2568	0.0087	1.2993
36	4.0	M36	6g	0.0025	1.4149	1.3963	1.3126	1.3039	0.0087	1.2217	1.2017	6H	1.2469	1.2704	1.3151	1.3268	0.0117	1.4174
36	3.0	M36 x 3.0	6g	0.0020	1.4154	1.4007	1.3386	1.3309	0.0077	1.2705	1.2542	6H	1.2895	1.3091	1.3406	1.3510	0.0104	1.4174
39	4.0	M39	6g	0.0025	1.5330	1.5144	1.4307	1.4220	0.0087	1.3398	1.3198	6H	1.3650	1.3885	1.4332	1.4449	0.0117	1.5355
39	3.0	M39 x 3.0	6g	0.0020	1.5335	1.5188	1.4568	1.4490	0.0078	1.3886	1.3723	6H	1.4076	1.4272	1.4587	1.4691	0.0104	1.5355

Excerpt from American National Standard B1. 16-1972, American Gaging Practices for Metric Screw Threads; "In all cases the inch conversion values have been rounded toward the interior of the tolerance zone, that is, maximum limits have been rounded downward and minimum limits have been rounded upward. Due to the fact that the majority of machinery and measuring equipment in the United States is based on the inch system, all gages should be made to the inch conversions."

TAP RECOMMENDATIONS: The pitch diameter high limits of the recommended tap for 6H tolerance class is 40% of the product tolerance rounded to the nearest .0005."

Example: M10 x 1.5; product tolerance = .00070" x .40 = .0028" rounded to .0030". This is the amount over basic pitch diameter. Based on .0005" increments over basic pitch diameter, the recommended tap has a D6 high limit (.0030 ÷ .0005").





Straight & Taper Pipe Taps

Standards & Dimensions

General Dimensions (Table 311)

Nominal Size (inch)	Dimensions (inch)				
	Overall Length A	Thread Length B	Length of Square C	Shank Diameter D	Size of Square E
1/16	2-1/8	11/16	3/8	0.3125	0.234
1/8	2-1/8	3/4	3/8	0.3125	0.234
1/8	2-1/8	3/4	3/8	0.4375	0.328
1/4	2-7/16	1-1/16	7/16	0.5625	0.421
3/8	2-9/16	1-1/16	1/2	0.7000	0.531
1/2	3-1/8	1-3/8	5/8	0.6875	0.515
3/4	3-1/4	1-3/8	11/16	0.9063	0.679
1	3-3/4	1-3/4	13/16	1.1250	0.843
1-1/4	4	1-3/4	15/16	1.3125	0.984
1-1/2	4-1/4	1-3/4	1	1.5000	1.125
2	4-1/2	1-3/4	1-1/8	1.8750	1.406

Tolerances

Element	Range (inch)	Direction	Tolerance (inch)	
			Cut Thread	Ground Thread
Overall Length-A	1/16 to 3/4 incl.	Plus or Minus	1/32	1/32
	1 to 4 incl.	Plus or Minus	1/16	1/16
Thread Length-B	1/16 to 3/4 incl.	Plus or Minus	1/16	1/16
	1 to 1-1/4 incl.	Plus or Minus	3/32	3/32
Length of Square-C	1-1/2 to 4 incl.	Plus or Minus	1/8	1/8
	1/16 to 3/4 incl.	Plus or Minus	1/32	1/32
Shank Diameter-D	1 to 4 incl.	Plus or Minus	1/16	1/16
	1/16 to 1/8 incl.	Minus	0.0070	0.0015
	1/4 to 1/2 incl.	Minus	0.0070	0.0020
Size of Square-E	3/4 to 1 incl.	Minus	0.0090	0.0020
	1-1/4 to 4 incl.	Minus	0.0090	0.0030
Size of Square-E	1/16 to 1/8 incl.	Minus	0.0040	0.0040
	1/4 to 3/4 incl.	Minus	0.0060	0.0060
	1 to 4 incl.	Minus	0.0080	0.0080

Thread Limits

Nominal Size (inch)	Threads per Inch NPT	*Gage Measurement (inch)			Taper per Foot (inch)			
		Projection	Tolerance (+/-)		Cut Thread		Ground Thread	
			Cut Thread	Ground Thread	Min.	Max.	Min.	Max.
1/16	27	.312	1/16	1/16	23/32	27/32	23/32	25/32
1/8	27	.312	1/16	1/16	23/32	27/32	23/32	25/32
1/4	18	.459	1/16	1/16	23/32	27/32	23/32	25/32
3/8	18	.454	1/16	1/16	23/32	27/32	23/32	25/32
1/2	14	.579	1/16	1/16	23/32	13/16	23/32	25/32
3/4	14	.565	1/16	1/16	23/32	13/16	23/32	25/32
1	11-1/2	.678	3/32	3/32	23/32	13/16	23/32	25/32
1-1/4	11-1/2	.686	3/32	3/32	23/32	13/16	23/32	25/32
1-1/2	11-1/2	.699	3/32	3/32	23/32	13/16	23/32	25/32
2	11-1/2	.667	3/32	3/32	23/32	13/16	23/32	25/32

*Distance small end of tap projects through American Standard Pipe Thread Ring Gage.



Taper Pipe Taps Ground Thread (Table 338)

American National Standard Taper Pipe Thread Form (NPT)
 Aeronautical National Taper Pipe Thread Form (ANPT)
 Dryseal American National Standard Taper Pipe Thread Form (NPTF)

Thread Limits

Nominal Size (inch)	Threads per Inch NPT	*Gage Measurement (inch)		Taper per Foot (inch)	
		Projection	Tolerance (+/-)	Min.	Max.
1/16	27	0.312	1/16	23/32	25/32
1/8	27	0.312	1/16	23/32	25/32
1/4	18	0.459	1/16	23/32	25/32
3/8	18	0.454	1/16	23/32	25/32
1/2	14	0.579	1/16	23/32	25/32
3/4	14	0.565	1/16	23/32	25/32
1	11-1/2	0.678	3/32	23/32	25/32
1 1/4	11-1/2	0.686	3/32	23/32	25/32
1 1/2	11-1/2	0.699	3/32	23/32	25/32
2	11-1/2	0.667	3/32	23/32	25/32
2 1/2	8	0.925	3/32	47/64	25/32
3	8	0.925	3/32	47/64	25/32
3 1/2	8	0.938	1/8	47/64	25/32
4	8	0.950	1/8	47/64	25/32

*Distance small end of tap projects through an L1 American Standard Taper Pipe Thread Ring Gage (See Table 357 page 668).

Width of Flats - Taps

Threads Per Inch	Element	Width of Flats at Tap Crest and Roots			
		NPT		NPTF	
		Min.	Max.	Min.	Max.
27	Major Dia.	0.0014	.0041	0.0040	.0055
	Minor Dia.		.0041		.0040
18	Major Dia.	0.0021	.0057	0.0050	.0065
	Minor Dia.		.0057		.0050
14	Major Dia.	0.0027	.0064	0.0050	.0065
	Minor Dia.		.0064		.0050
11 1/2	Major Dia.	0.0033	.0073	0.0060	.0083
	Minor Dia.		.0073		.0060
8	Major Dia.	0.0048	.0090	0.0080	.0103
	Minor Dia.		.0090		.0030

Minimum minor diameter flats are not specified. May be as sharp as practicable. Ground Thread Taps marked NPT may be used for NPT and ANPT applications.

Angle Tolerance

Threads Per Inch	Tolerance Half Angle
8	±25'
11-1/2 to 27 inclusive	±30'

Formula Values

Threads Per Inch	A	B	C	D	E
27	0.0267	0.0296	0.0257	0.0234	0.0251
18	0.0408	0.0444	0.0401	0.0377	0.0395
14	0.0535	0.0571	0.0525	0.0515	0.0533
11 1/2	0.0658	0.0696	0.0647	0.0614	0.0649
8	0.0966	0.1000	0.0946		

For essential dimensions of American National Standard Pipe Threads (See Table 357 page 440).

Ground Thread American Standard Pipe Form Taps made to this table are to be marked NPT. Ground Thread Dryseal American National Standard Pipe Taps made to this table are to be marked NPTF. Ground Thread Taps, Aeronautical National Thread Form, made to this table are marked ANPT.

LEAD TOLERANCE

A maximum lead deviation of ±.0005" within any two threads not farther apart than one inch is permitted.

FORMULA FOR AMERICAN NATIONAL STANDARD PIPE FORM

Minimum major diameter = Measured pitch diameter +A.
 Maximum major diameter = Measured pitch diameter +B.
 Minimum minor diameter = Measured pitch diameter -B.
 Maximum minor diameter = Measured pitch diameter -C.

FORMULA FOR DRYSEAL AMERICAN NATIONAL STANDARD PIPE FORM

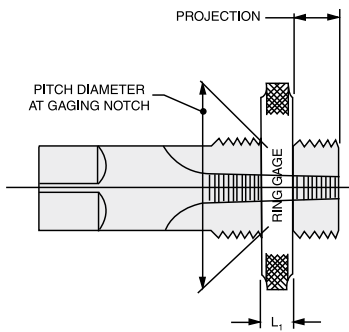
Minimum major diameter = Measured pitch diameter +D.
 Maximum major diameter = Measured pitch diameter +E.
 Minimum minor diameter = Maximum or smaller.
 Maximum minor diameter = Measured pitch diameter -E.



Measurement of Taper Pipe Taps, Reaming Data and Tap Drill Sizes (Table 357)

Size	Projection				Ream Dia. Large End	Gage Width L1	Reamed Length L1 + L3	Tap Drill for Use w/ Reaming	Tap Drill for Use w/o Reaming
	NPT & NTF		SAE-SHORT						
	Min.	Max.	Min.	Max.					
1/16-27	0.250	0.375	0.222	0.259	0.2515	0.1600	0.2711	15/64	C
1/8-27	0.250	0.375	0.222	0.259	0.3340	0.1615	0.2726	21/64	Q
1/4-18	0.397	0.521	0.333	0.389	0.4472	0.2278	0.3945	27/64	7/16
3/8-18	0.392	0.516	0.333	0.389	0.5826	0.240	0.4067	9/16	9/16
1/2-14	0.517	0.641	0.429	0.500	0.7213	0.320	0.5343	11/16	45/64
3/4-14	0.503	0.627	0.429	0.500	0.9317	0.339	0.5533	57/64	29/32
1-11½	0.584	0.772	-	-	1.1691	0.400	0.6609	1-1/8	1-9/64
1¼-11½	0.592	0.780	-	-	1.1538	0.420	0.6809	1-15/32	1-31/64
1½-11½	0.606	0.792	-	-	1.7528	0.420	0.6809	1-45/64	1-23/32
2-11½	0.574	0.760	-	-	2.2267	0.436	0.6969	2-3/16	2-3/16

Projection Thru Ring Gage



Reamed Hole Data

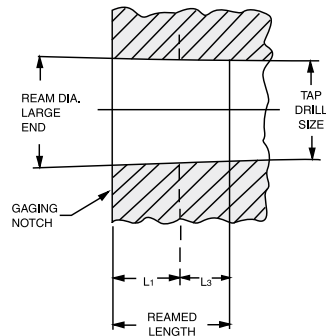




TABLE 335-STRAIGHT PIPE TAPS

Ground Threads

American National Standard Straight Pipe Thread Form (NPS) (NPSC) (NPSM)

Thread Limits

Nominal Sizes (inch)	Threads Per Inch	Major Diameter			Pitch Diameter		
		Plug at Gaging Notch	Min. G	Max. H	Plug at Gaging Notch E	Min. K	Max. L
1/8	27	0.3983	0.4022	0.4032	0.3736	0.3746	0.3751
1/4	18	0.5286	0.5347	0.5357	0.4916	0.4933	0.4938
3/8	18	0.6640	0.6701	0.6711	0.6270	0.6287	0.6292
1/2	14	0.8260	0.8347	0.8357	0.7784	0.7806	0.7811
3/4	14	1.0364	1.0447	1.0457	0.9889	0.9906	0.9916
1	11-1/2	1.2966	1.3062	1.3077	1.2386	1.2402	1.2412
1-1/4	11-1/2	1.6413	1.6507	1.6522	1.5834	1.5847	1.5862
1-1/2	11-1/2	1.8803	0.1890	1.8912	1.8223	1.8237	1.8252
2	11-1/2	2.3542	2.3639	2.3654	2.2963	2.2979	2.2994
2-1/2	8	2.8454	2.8604	2.8619	2.7622	2.7640	2.7660
3	8	3.4718	3.4868	3.4883	3.3885	3.3904	3.3924
3-1/2	8	3.9721	3.9872	3.9887	3.8888	3.8908	3.8928
4	8	4.4704	4.4855	4.4870	4.3871	4.3891	4.3911

LEAD TOLERANCE

A maximum lead deviation of plus or minus .0005" within any two threads not farther apart than one inch is permitted.

Note

Taps made to these specifications are marked NPS and used for NPS, NPSC, and NPSM.

Angle Tolerance

Threads Per Inch	Deviation in Half Angle
8	± 25'
11 1/2 to 27 Incl.	± 30'

Formula for American National Standard Dryseal Pipe Form (NPS)

The maximum Pitch Diameter of tap is based upon an allowance deducted from the maximum product pitch diameter of NPSC or NPSM, whichever is smaller. The minimum Pitch Diameter of tap is derived by subtracting the ground thread pitch diameter tolerance for actual equivalent size as shown in Table 331, page 433, Col. D.

Nominal Size (inch)	Major Diameter		Minor Diameter
	Min. G	Max. H	Max.
1/8	H - 0.0010	K + A - 0.0010	M - B
1/4 to 3/4 Incl.	H - 0.0010	K + A - 0.0020	M - B
1 to 4 Incl.	H - 0.0015	K + A - 0.0021	M - B

Formula Values

Threads Per Inch	A	B	M
27	0.0296	0.0257	Actual
18	0.0444	0.0401	Measured
14	0.0571	0.0525	Pitch
11-1/2	0.0696	0.0647	Diameter
8	0.1000	0.0946	

TABLE 335-A-STRAIGHT PIPE TAPS

Ground Thread

American National Standard Straight Dryseal Pipe Thread Form (NPSF)

Thread Limits

Nominal Size (inch)	Threads Per Inch	Major Diameter			Pitch Diameter		
		Min. G	Max. H	Plug at Gaging Notch E	Min. K	Max. L	Minor* Diam. Flat Max.
1/16	27	0.3008	0.3018	0.2812	0.2772	0.2777	0.004
1/8	27	0.3932	0.3942	0.3736	0.3696	0.3701	0.004
1/4	18	0.5239	0.5249	0.4916	0.4859	0.4864	0.005
3/8	18	0.6593	0.6603	0.6270	0.6213	0.6218	0.005
1/2	14	0.8230	0.8240	0.7784	0.7712	0.7717	0.005
3/4	14	1.0335	1.0345	0.9889	0.9817	0.9822	0.005
1	11-1/2	1.2933	1.2943	1.2386	1.2295	1.2305	0.006

*As specified or sharper.

The major diameter of standard taper pipe plug gages and the minor diameter of standard taper pipe ring gages used for gaging dryseal threads will be truncated .20p minimum to .25p maximum for all pitches.

Angle Tolerance

Threads Per Inch	Deviation in Half Angles
11-1/2 to 27 Incl.	± 30'

Formula for American National Standard Dryseal Pipe Form (NPSF)

Nominal Size (inch)	Major Diameter		Pitch Diameter		Max. Minor Diam.
	Min. G	Max. H	Min. K	Max. L	
1/6	H - 0.0010	K + Q - 0.0005	L - 0.0005	E - F	M - Q
1/8	H - 0.0010	K + Q - 0.0005	L - 0.0005	E - F	M - Q
1/4	H - 0.0010	K + Q - 0.0005	L - 0.0005	E - F	M - Q
3/8	H - 0.0010	K + Q - 0.0005	L - 0.0005	E - F	M - Q
1/2	H - 0.0010	K + Q - 0.0005	L - 0.0005	E - F	M - Q
3/4	H - 0.0010	K + Q - 0.0005	L - 0.0005	E - F	M - Q
1	H - 0.0010	K + Q - 0.0001	L - 0.0010	E - F	M - Q

Formula Values

Threads Per Inch	E	F	M	Q
27	Pitch Diameter	0.0035	Actual	0.0251
18	of plug	0.0052	Measured	0.0395
14	at gaging	0.0067	Pitch	0.0533
11-1/2	notch	0.0081	Diameter	0.0649

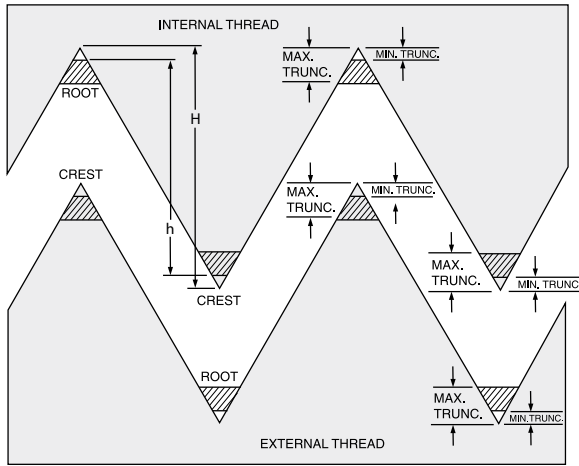
LEAD TOLERANCE

A maximum lead deviation of ±.0005" within any two threads not farther apart than one inch is permitted.





American National General Pipe Threads (Table 357)

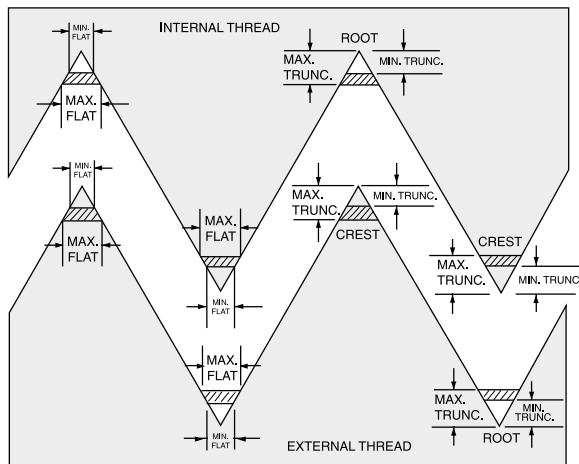


Crest and root limits for American National Standard External and Internal Taper Pipe Thread (NPT)

Threads Per Inch	Height Sharp V Thread (inch)	Height Pipe Thread Max (inch)	Truncation (inch)		Equivalent Width of Flat (inch)	
	H	h	Min	Max.	Min.	Max.
27	0.03208	0.02963	0.0012	0.0036	0.0014	0.0041
18	0.04811	0.04444	0.0018	0.0049	0.0021	0.0057
14	0.06186	0.05714	0.0024	0.0056	0.0027	0.0064
11 1/2	0.07531	0.06957	0.0029	0.0063	0.0033	0.0073
8	0.10825	0.10000	0.0041	0.0078	0.0048	0.0090

The limits specified above are intended to serve as a guide for establishing limits for the thread elements of taps, dies, and thread chasers. These limits may be required on the product. For complete specifications see latest edition of USE Standard B2.1. The Military Aeronautical Specification MIL-P-7105 agrees with all values given in this table.

Dryseal American National Standard Pipe Threads



Crest and root limits for Dryseal American National Standard External and Internal Pipe Threads (NPTF)

Threads Per Inch		Height Sharp V Thread (inch)	Truncation (inch)		Equivalent Width of Flat (inch)	
		H	Min	Max.	Min.	Max.
27	Crest	0.03208	0.0017	0.0035	0.0020	0.0040
	Root		0.0035	0.0052	0.0040	0.0060
18	Crest	0.04811	0.0026	0.0043	0.0030	0.0050
	Root		0.0043	0.0061	0.0050	0.0070
14	Crest	0.06186	0.0026	0.0043	0.0030	0.0050
	Root		0.0043	0.0061	0.0050	0.0070
11 1/2	Crest	0.07531	0.0035	0.0052	0.0040	0.0060
	Root		0.0052	0.0078	0.0060	0.0090
8	Crest	0.10825	0.0052	0.0069	0.0060	0.0080
	Root		0.0069	0.0095	0.0080	0.0110

The major diameter of standard taper pipe plug gages and the minor diameter of standard taper pipe ring gages used for gaging dryseal threads will be truncated .20p minimum to .25p maximum for all pitches.



Tap Drill Sizes - Fractional Cut Taps

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

* Generally, deeper than 1-1/2 times the hole diameter.

Suggested Percentage of Full Thread in Tapped Holes

Material		*Deep Hole Tapping	Average Commercial Work	Thin Sheet Stock or Stamping
Free Cutting	Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel	60% - 70%	65% - 70%	75% - 85%
Hard or Tough Cutting	Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel	55% - 65%	60% - 70%	

Tap Size	Threads Per Inch			Minor Diameter		Tap Drill Diameter - Cut Taps				
	UNC	UNF	8-Pitch	Min. 2B	Max. 2B	80% Thread	75% Thread	70% Thread	65% Thread	60% Thread
						(in)	(in)	(in)	(in)	(in)
0	-	80	-	0.0465	0.0514	0.0470	0.0478	0.0486	0.0494	0.0503
1	64	-	-	0.0561	0.0623	0.0568	0.0578	0.0588	0.0598	0.0608
	-	72	-	0.0580	0.0635	0.0586	0.0595	0.0604	0.0613	0.0622
2	56	-	-	0.0667	0.0737	0.0674	0.0686	0.0698	0.0709	0.0721
	-	64	-	0.0691	0.0752	0.0698	0.0708	0.0718	0.0728	0.0738
3	48	-	-	0.0764	0.0845	0.0774	0.0787	0.0801	0.0814	0.0828
	-	56	-	0.0797	0.0865	0.0804	0.0816	0.0828	0.0839	0.0851
4	40	-	-	0.0849	0.0939	0.0860	0.0876	0.0893	0.0909	0.0925
	-	48	-	0.0894	0.0968	0.0904	0.0917	0.0931	0.0944	0.0958
5	40	-	-	0.0979	0.1062	0.0990	0.1006	0.1023	0.1039	0.1055
	-	44	-	0.1004	0.1079	0.1014	0.1029	0.1043	0.1058	0.1073
6	32	-	-	0.1040	0.1140	0.1055	0.1076	0.1096	0.1116	0.1136
	-	40	-	0.1110	0.1190	0.1120	0.1136	0.1153	0.1169	0.1185
8	32	-	-	0.1300	0.1390	0.1315	0.1336	0.1356	0.1376	0.1396
	-	36	-	0.1340	0.1420	0.1351	0.1369	0.1387	0.1405	0.1424
10	24	-	-	0.1450	0.1560	0.1467	0.1494	0.1521	0.1548	0.1575
	-	32	-	0.1560	0.1640	0.1575	0.1596	0.1616	0.1636	0.1656
12	24	-	-	0.1710	0.1810	0.1727	0.1754	0.1781	0.1808	0.1835
	-	28	-	0.1770	0.1860	0.1789	0.1812	0.1835	0.1858	0.1882
1/4	20	-	-	0.1960	0.2070	0.1980	0.2013	0.2045	0.2078	0.2110
	-	28	-	0.2110	0.2200	0.2129	0.2152	0.2175	0.2198	0.2222
5/16	18	-	-	0.2520	0.2650	0.2548	0.2584	0.2620	0.2656	0.2692
	-	24	-	0.2670	0.2770	0.2692	0.2719	0.2746	0.2773	0.2800
3/8	16	-	-	0.3070	0.3210	0.3101	0.3141	0.3182	0.3222	0.3263
	-	24	-	0.3300	0.3400	0.3317	0.3344	0.3371	0.3398	0.3425
7/16	14	-	-	0.3600	0.3760	0.3633	0.3679	0.3726	0.3772	0.3818
	-	20	-	0.3830	0.3950	0.3855	0.3888	0.3920	0.3953	0.3985
1/2	13	-	-	0.4170	0.4340	0.4201	0.4251	0.4301	0.4351	0.4400
	-	20	-	0.4460	0.4570	0.4480	0.4513	0.4545	0.4578	0.4610
9/16	12	-	-	0.4720	0.4900	0.4759	0.4813	0.4867	0.4921	0.4976
	-	18	-	0.5020	0.5150	0.5048	0.5084	0.5120	0.5156	0.5192
5/8	11	-	-	0.5270	0.5460	0.5305	0.5364	0.5423	0.5482	0.5541
	-	18	-	0.5650	0.5780	0.5673	0.5709	0.5745	0.5781	0.5817
3/4	10	-	-	0.6420	0.6630	0.6461	0.6526	0.6591	0.6656	0.6721
	-	16	-	0.6820	0.6960	0.6851	0.6891	0.6932	0.6972	0.7013
7/8	9	-	-	0.7550	0.7780	0.7595	0.7668	0.7740	0.7812	0.7884
	-	14	-	0.7980	0.8140	0.8008	0.8054	0.8101	0.8147	0.8193
1	8	-	-	0.8650	0.8900	0.8701	0.8782	0.8863	0.8945	0.9026
	-	12	-	0.9100	0.9280	0.9134	0.9188	0.9242	0.9296	0.9351
1-1/8	7	-	-	0.9700	0.9980	0.9765	0.9858	0.9951	1.0044	1.0137
	-	12	-	1.0350	1.0530	1.0384	1.0438	1.0492	1.0546	1.0601
	-	-	8	0.9900	1.0150	0.9951	1.0032	1.0113	1.0195	1.0276
1-1/4	7	-	-	1.0950	1.1230	1.1015	1.1108	1.1201	1.1294	1.1387
	-	12	-	1.1600	1.1780	1.1634	1.1688	1.1742	1.1796	1.1851
	-	-	8	1.1150	1.1400	1.1201	1.1282	1.1363	1.1445	1.1526
1-3/8	6	-	-	1.1950	1.2250	1.2018	1.2126	1.2235	1.2343	1.2451
	-	12	-	1.2850	1.3030	1.2884	1.2938	1.2992	1.3046	1.3101
	-	-	8	1.2400	1.2650	1.2451	1.2532	1.2613	1.2695	1.2776
1-1/2	6	-	-	1.3200	1.3500	1.3268	1.3376	1.3485	1.3593	1.3701
	-	12	-	1.4100	1.4280	1.4134	1.4188	1.4242	1.4296	1.4351
	-	-	8	1.3650	1.3900	1.3701	1.3782	1.3863	1.3945	1.4026
1-5/8	-	-	-	1.4900	1.5150	1.4951	1.5032	1.5113	1.5195	1.5276
1-3/4	5	-	-	1.5330	1.5670	1.5422	1.5551	1.5681	1.5811	1.5941
	-	-	8	1.6150	1.6400	1.6201	1.6282	1.6363	1.6445	1.6526
1-7/8	-	-	-	1.7400	1.7650	1.7451	1.7532	1.7613	1.7695	1.7776
	-	-	8	1.7590	1.7950	1.7691	1.7835	1.7979	1.8124	1.8268
2	-	-	-	1.8650	1.8900	1.8701	1.8782	1.8863	1.8945	1.9026
	-	-	8	2.0090	2.0450	2.0191	2.0335	2.0479	2.0624	2.0768
2-1/4	4-1/2	-	-	2.1150	2.1400	2.1201	2.1282	2.1363	2.1445	2.1526
	-	-	8	2.2290	2.2670	2.2402	2.2564	2.2727	2.2889	2.3051
2-1/2	4	-	-	2.3650	2.3900	2.3701	2.3782	2.3863	2.3945	2.4026

FORMULA: TAP DRILL SIZE

Drill Size = Tap Major Dia - $\frac{0.01299 \times \% \text{ of Full Thread}}{\# \text{ of Threads Per Inch}}$
 Example: Determine Drill Size for 2" —12N Tap, 70% Full Thread.
 Basic Major Diameter of Tap = 2.0000"
 $0.01299 \times 70 = 0.9093 \div 12 = 0.0758$ "
 Drill Size = 1.9242"

FORMULA: PERCENTAGE OF FULL THREAD

% of Full Thread = Threads Per Inch x $\frac{\text{Tap Major Dia} - \text{Drill Dia}}{0.01299}$
 Example: Determine the % of Full Thread for 2" —12N Tap, using 1.9242" Drill.
 Threads Per Inch = 12
 $2.000 - 1.9242 = 0.0758 \div 0.01299 = 5.835$
 Percentage of Full Threads = 70%

Tap Drill Sizes - Fractional Form Taps

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

* Generally, deeper than 1 1/2 times the hole diameter.

Suggested Percentage of Full Thread in Tapped Holes

Material		*Deep Hole Tapping	Average Commercial Work	Thin Sheet Stock or Stamping
Free Cutting	Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel	60% - 70%	65% - 70%	75% - 85%
Hard or Tough Cutting	Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel	55% - 65%	60% - 70%	

Tap Size	Threads Per Inch			Minor Diameter		Tap Drill Diameter - Form Taps				
	UNC	UNF	8-Pitch	Min. 2B	Max. 2B	75% Thread	70% Thread	65% Thread	60% Thread	55% Thread
						(in)	(in)	(in)	(in)	(in)
0	-	80	-	0.0465	0.0514	0.0536	0.0540	0.0545	0.0549	0.0554
1	64	-	-	0.0561	0.0623	0.0650	0.0655	0.0661	0.0666	0.0672
	-	72	-	0.0580	0.0635	0.0659	0.0663	0.0669	0.0673	0.0679
2	56	-	-	0.0667	0.0737	0.0769	0.0774	0.0781	0.0787	0.0794
	-	64	-	0.0691	0.0752	0.0780	0.0785	0.0791	0.0796	0.0802
3	48	-	-	0.0764	0.0845	0.0884	0.0890	0.0898	0.0905	0.0913
	-	56	-	0.0797	0.0865	0.0899	0.0904	0.0911	0.0917	0.0924
4	40	-	-	0.0849	0.0939	0.0993	0.1000	0.1010	0.1018	0.1028
	-	48	-	0.0894	0.0968	0.1014	0.1020	0.1028	0.1035	0.1043
5	40	-	-	0.0979	0.1062	0.1123	0.1130	0.1140	0.1148	0.1158
	-	44	-	0.1004	0.1079	0.1134	0.1141	0.1150	0.1157	0.1166
6	32	-	-	0.1040	0.1140	0.1221	0.1230	0.1243	0.1252	0.1264
	-	40	-	0.1110	0.1190	0.1253	0.1260	0.1270	0.1278	0.1288
8	32	-	-	0.1300	0.1390	0.1481	0.1490	0.1503	0.1512	0.1524
	-	36	-	0.1340	0.1420	0.1498	0.1507	0.1518	0.1526	0.1537
10	24	-	-	0.1450	0.1560	0.1688	0.1700	0.1716	0.1729	0.1746
	-	32	-	0.1560	0.1640	0.1741	0.1750	0.1762	0.1772	0.1784
12	24	-	-	0.1710	0.1810	0.1948	0.1960	0.1976	0.1989	0.2006
	-	28	-	0.1770	0.1860	0.1978	0.1990	0.2002	0.2014	0.2028
1/4	20	-	-	0.1960	0.2070	0.2245	0.2260	0.2279	0.2295	0.2315
	-	28	-	0.2110	0.2200	0.2318	0.2329	0.2342	0.2354	0.2389
5/16	18	-	-	0.2520	0.2650	0.2842	0.2861	0.2879	0.2898	0.2917
	-	24	-	0.2670	0.2770	0.2912	0.2927	0.2941	0.2955	0.2969
3/8	16	-	-	0.3070	0.3210	0.3431	0.3452	0.3474	0.3495	0.3516
	-	24	-	0.3300	0.3400	0.3537	0.3552	0.3566	0.3580	0.3594
7/16	14	-	-	0.3600	0.3760	0.4011	0.4035	0.4059	0.4084	0.4108
	-	20	-	0.3830	0.3950	0.4120	0.4137	0.4154	0.4171	0.4188
1/2	13	-	-	0.4170	0.4340	0.4608	0.4634	0.4660	0.4686	0.4712
	-	20	-	0.4460	0.4570	0.4745	0.4762	0.4779	0.4796	0.4813
9/16	12	-	-	0.4720	0.4900	0.5200	0.5229	0.5257	0.5285	0.5313
	-	18	-	0.5020	0.5150	0.5342	0.5361	0.5379	0.5398	0.5417
5/8	11	-	-	0.5270	0.5460	0.5787	0.5817	0.5848	0.5879	0.5910
	-	18	-	0.5650	0.5780	0.5967	0.5986	0.6004	0.6023	0.6042
3/4	10	-	-	0.6420	0.6630	0.6990	0.7024	0.7058	0.7092	0.7126
	-	16	-	0.6820	0.6960	0.7181	0.7202	0.7224	0.7245	0.7266
7/8	9	-	-	0.7550	0.7780	0.8183	0.8221	0.8259	0.8297	0.8334
	-	14	-	0.7980	0.8140	0.8386	0.8410	0.8434	0.8459	0.8483
1	8	-	-	0.8650	0.8900	0.9363	0.9405	0.9448	0.9490	0.9533
	-	12	-	0.9100	0.9280	0.9575	0.9603	0.9632	0.9660	0.9866

FORMULA: TAP DRILL SIZE

$$\text{Drill Size} = \text{Tap Major Dia} - \frac{0.0068 \times \% \text{ of Full Thread}}{\# \text{ of Threads Per Inch}}$$

Example: Determine Drill Size for 2" - 12N Tap, 70% Full Thread.
 Basic Major Diameter of Tap = 2.0000"
 $0.0068 \times 70 = 0.4760 \div 12 = 0.0397"$
 Drill Size = 1.9603"

FORMULA: PERCENTAGE OF FULL THREAD

$$\% \text{ of Full Thread} = \text{Threads Per Inch} \times \frac{\text{Tap Major Dia} - \text{Drill Dia}}{0.0068}$$

Example: Determine the % of Full Thread for 2" - 12N Tap, using 1.9603" Drill.
 Threads Per Inch = 12
 $2.0000 - 1.9603 = 0.0397 \div 0.0068 = 5.838$
 Percentage of Full Threads = 70%

Suggested Pipe Tap Drill Sizes

Tap Size		1/16	1/8	1/4	3/8	1/2	3/4	1	1-1/4	1-1/2	2	2-1/2	3	3-1/2	4
Drill Sizes	Taper Pipe Tap*	C	Q	7/16	9/16	45/64	29/32	1-9/64	1-31/64	1-23/32	2-3/16	2-5/8	3-1/4	3-3/4	4-1/4
	Straight Pipe Tap†	1/4	11/32	7/16	37/64	23/32	59/64	1-5/32	1-1/2	1-3/4	2-7/32	2-21/32			

*Sizes given permit direct tapping without reaming the hole, but only give a full thread for the first two or three threads.

†For Dryseal Straight Pipe Threads suggested drill sizes are as shown, except; 1/4" pipe, use .444 drill size.



Tap Drill Sizes - Metric Cut Taps

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

* Generally, deeper than 1 1/2 times the hole diameter.

Suggested Percentage of Full Thread in Tapped Holes

Material		*Deep Hole Tapping	Average Commercial Work	Thin Sheet Stock or Stamping
Free Cutting	Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel	60% - 70%	65% - 70%	75% - 85%
Hard or Tough Cutting	Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel	55% - 65%	60% - 70%	

Tap Size	Pitch		Minor Dia. (mm)		Tap Drill Diameter - Cut Taps									
	M	MF	Min. 6H	Max. 6H	80% Thread		75% Thread		70% Thread		65% Thread		60% Thread	
					(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
M1.6	0.35	-	1.221	1.321	1.24	0.0488	1.26	0.0496	1.28	0.0504	1.30	0.0512	1.33	0.0524
M1.7	0.35	-	1.321	1.421	1.33	0.0524	1.36	0.0535	1.38	0.0543	1.40	0.0551	1.42	0.0559
M1.8	0.35	-	1.422	1.519	1.44	0.0567	1.46	0.0575	1.48	0.0583	1.50	0.0591	1.53	0.0602
M2	0.4	-	1.567	1.679	1.58	0.0622	1.61	0.0634	1.64	0.0646	1.66	0.0654	1.69	0.0665
M2.2	0.45	-	1.715	1.836	1.73	0.0681	1.76	0.0693	1.79	0.0705	1.82	0.0717	1.85	0.0728
M2.5	0.45	-	2.013	2.138	2.03	0.0799	2.06	0.0811	2.09	0.0823	2.12	0.0835	2.15	0.0846
M2.6	0.45	-	2.113	2.238	2.13	0.0839	2.16	0.0850	2.19	0.0862	2.22	0.0874	2.25	0.0886
M3	0.5	-	2.459	2.599	2.48	0.0976	2.51	0.0988	2.55	0.1004	2.58	0.1016	2.61	0.1028
M3	-	0.35	2.621	2.721	2.63	0.1035	2.66	0.1047	2.68	0.1055	2.70	0.1063	2.72	0.1071
M3.5	0.6	-	2.850	3.010	2.88	0.1134	2.92	0.1150	2.95	0.1161	2.99	0.1177	3.03	0.1193
M4	0.7	-	3.242	3.422	3.27	0.1287	3.32	0.1307	3.36	0.1323	3.41	0.1343	3.45	0.1358
M4	-	0.5	3.459	3.599	3.48	0.1370	3.51	0.1382	3.54	0.1394	3.58	0.1409	3.61	0.1421
M4.5	0.75	-	3.688	3.876	3.72	0.1465	3.77	0.1484	3.82	0.1504	3.87	0.1524	3.92	0.1543
M5	0.8	-	4.134	4.334	4.17	0.1642	4.22	0.1661	4.27	0.1681	4.32	0.1701	4.38	0.1724
M5	-	0.5	4.458	4.600	4.48	0.1764	4.51	0.1776	4.54	0.1787	4.58	0.1803	4.61	0.1815
M6	1	-	4.917	5.153	4.96	0.1953	5.03	0.1980	5.09	0.2004	5.16	0.2031	5.22	0.2055
M6	-	0.75	5.187	5.377	5.22	0.2055	5.27	0.2075	5.32	0.2094	5.37	0.2114	5.41	0.2130
M7	1	-	5.918	6.152	5.96	0.2346	6.03	0.2374	6.09	0.2398	6.16	0.2425	6.22	0.2449
M8	1.25	-	6.647	6.912	6.70	0.2638	6.78	0.2669	6.86	0.2701	6.94	0.2732	7.03	0.2768
M8	-	1	6.917	7.153	6.96	0.2740	7.03	0.2768	7.09	0.2791	7.16	0.2819	7.22	0.2843
M8	-	0.75	7.187	7.377	7.22	0.2843	7.27	0.2862	7.32	0.2882	7.37	0.2902	7.41	0.2917
M10	1.5	-	8.376	8.676	8.44	0.3323	8.54	0.3362	8.64	0.3402	8.73	0.3437	8.83	0.3476
M10	-	1.25	8.647	8.912	8.70	0.3425	8.78	0.3457	8.86	0.3488	8.94	0.3520	9.03	0.3555
M10	-	1	8.917	9.153	8.96	0.3528	9.03	0.3555	9.09	0.3579	9.16	0.3606	9.22	0.3630
M10	-	0.75	9.188	9.378	9.22	0.3630	9.27	0.3650	9.32	0.3669	9.37	0.3689	9.41	0.3705
M12	1.75	-	10.106	10.441	10.18	0.4008	10.30	0.4055	10.41	0.4098	10.52	0.4142	10.64	0.4189
M12	-	1.5	10.376	10.676	10.44	0.4110	10.54	0.4150	10.64	0.4189	10.73	0.4224	10.83	0.4264
M12	-	1.25	10.647	10.912	10.70	0.4213	10.78	0.4244	10.86	0.4276	10.94	0.4307	11.03	0.4343
M12	-	1	10.917	11.153	10.96	0.4315	11.03	0.4343	11.09	0.4366	11.16	0.4394	11.22	0.4417
M14	2	-	11.835	12.210	11.92	0.4693	12.05	0.4744	12.18	0.4795	12.31	0.4846	12.44	0.4898
M14	-	1.5	12.376	12.676	12.44	0.4898	12.54	0.4937	12.64	0.4976	12.73	0.5012	12.83	0.5051
M16	2	-	13.835	14.210	13.92	0.5480	14.05	0.5531	14.18	0.5583	14.31	0.5634	14.44	0.5685
M16	-	1.5	14.376	14.676	14.44	0.5685	14.54	0.5724	14.64	0.5764	14.73	0.5799	14.83	0.5839
M18	2.5	-	15.296	15.743	15.40	0.6063	15.56	0.6126	15.73	0.6193	15.89	0.6256	16.05	0.6319
M18	-	1.5	16.376	16.676	16.44	0.6472	16.54	0.6512	16.64	0.6551	16.73	0.6587	16.83	0.6626
M20	2.5	-	17.294	17.744	17.40	0.6850	17.56	0.6913	17.73	0.6980	17.89	0.7043	18.05	0.7106
M20	-	1.5	18.376	18.676	18.44	0.7260	18.54	0.7299	18.64	0.7339	18.73	0.7374	18.83	0.7413
M20	-	1	18.917	19.153	18.96	0.7465	19.03	0.7492	19.09	0.7516	19.16	0.7543	19.22	0.7567
M22	2.5	-	19.294	19.744	19.40	0.7638	19.56	0.7701	19.73	0.7768	19.89	0.7831	20.05	0.7894
M22	-	2	19.835	20.210	19.92	0.7843	20.05	0.7894	20.18	0.7945	20.31	0.7996	20.44	0.8047
M22	-	1.5	20.376	20.676	20.44	0.8047	20.54	0.8087	20.64	0.8126	20.73	0.8161	20.83	0.8201
M24	3	-	20.752	21.252	20.88	0.8220	21.08	0.8299	21.27	0.8374	21.47	0.8453	21.66	0.8528
M24	-	2	21.835	22.210	21.92	0.8630	22.05	0.8681	22.18	0.8732	22.31	0.8783	22.44	0.8835
M24	-	1.5	22.376	22.676	22.44	0.8835	22.54	0.8874	22.64	0.8913	22.73	0.8949	22.83	0.8988
M27	3	-	23.752	24.252	23.88	0.9402	24.08	0.9480	24.27	0.9555	24.47	0.9634	24.66	0.9709
M27	-	2	24.835	25.210	24.92	0.9811	25.05	0.9862	25.18	0.9913	25.31	0.9965	25.44	1.0016
M27	-	1.5	25.376	25.676	25.44	1.0016	25.54	1.0055	25.64	1.0094	25.73	1.0130	25.83	1.0169
M30	3.5	-	26.211	26.771	26.36	1.0378	26.59	1.0469	26.82	1.0559	27.04	1.0646	27.27	1.0736
M30	-	2	27.835	28.210	27.92	1.0992	28.05	1.1043	28.18	1.1094	28.31	1.1146	28.44	1.1197
M30	-	1.5	28.376	28.676	28.44	1.1197	28.54	1.1236	28.64	1.1276	28.73	1.1311	28.83	1.1350
M33	3.5	-	29.211	29.771	29.36	1.1559	29.59	1.1650	29.82	1.1740	30.04	1.1827	30.27	1.1917
M33	-	2	30.835	31.210	30.92	1.2173	31.05	1.2224	31.18	1.2276	31.31	1.2327	31.44	1.2378
M36	4	-	31.670	32.270	31.84	1.2535	32.10	1.2638	32.36	1.2740	32.62	1.2843	32.88	1.2945
M36	-	3	32.752	33.252	32.88	1.2945	33.08	1.3024	33.27	1.3098	33.47	1.3177	33.66	1.3252
M36	-	2	33.835	34.210	33.92	1.3354	34.05	1.3406	34.18	1.3457	34.31	1.3508	34.44	1.3559
M39	4	-	34.670	35.270	34.84	1.3717	35.10	1.3819	35.36	1.3921	35.62	1.4024	35.88	1.4126
M39	-	2	36.835	37.210	36.92	1.4535	37.05	1.4587	37.18	1.4638	37.31	1.4689	37.44	1.4740
M42	4.5	-	37.129	37.799	37.32	1.4693	37.62	1.4811	37.91	1.4925	38.20	1.5039	38.49	1.5154
M42	-	3	38.752	39.252	38.88	1.5307	39.08	1.5386	39.27	1.5461	39.47	1.5539	39.66	1.5614
M42	-	2	39.835	40.210	39.92	1.5717	40.05	1.5768	40.18	1.5819	40.31	1.5870	40.44	1.5921

FORMULA: TAP DRILL SIZE

$$\text{Drill Size} = \text{Tap Major Dia.} - \frac{\text{Pitch} \times \% \text{ of Full Thread}}{76.980}$$

Example: Determine Drill Size for M12 x 1.75 Tap, 70% Full Thread.
Basic Major Diameter of Tap = 12mm
 $1.75 \times 70 = 122.5 \div 76.980 = 1.59\text{mm}$
Drill Size = 10.41mm

FORMULA: PERCENTAGE OF FULL THREAD

$$\% \text{ of Full Thread} = (\text{Tap Major Dia.} - \text{Drill Dia.}) \times \frac{76.980}{\text{Pitch}}$$

Example: Determine the % of Full Thread for M12 x 1.75 Tap, using 10.41mm Drill.
Pitch = 1.75
 $12 - 10.41 = 1.59\text{mm} \times 76.980 \div 1.75 = 70$
Percentage of Full Thread = 70%



Tap Drill Sizes - Metric Form Taps

To minimize tapping problems and lengthen tool life, use the largest drill possible to produce a minor diameter that will result in the lowest percentage of full thread consistent with adequate strength. A minor diameter that provides a 55% to 65% thread is sufficient for most requirements, but in some cases a higher percentage of thread may be necessary to conform with the minor diameter limits of the thread class specified.

* Generally, deeper than 1-1/2 times the hole diameter.

Suggested Percentage of Full Thread in Tapped Holes

Material		*Deep Hole Tapping	Average Commercial Work	Thin Sheet Stock or Stamping
Free Cutting	Aluminum, Brass, Bronze, Cast Iron, Copper, Mild Steel, Tool Steel	60% - 70%	65% - 70%	75% - 85%
Hard or Tough Cutting	Cast Steel, Drop Forging, Monel Metal, Nickel Steel, Stainless Steel	55% - 65%	60% - 70%	

Tap Size	Pitch		Minor Diameter (mm)		Tap Drill Diameter - Form Taps									
	M	MF	Min. 6H	Max. 6H	75% Thread		70% Thread		65% Thread		60% Thread		55% Thread	
					(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)	(mm)	(in)
M1.6	0.35	-	1.221	1.321	1.42	0.0559	1.43	0.0563	1.45	0.0571	1.46	0.0575	1.47	0.0579
M1.7	0.35	-	1.321	1.421	1.56	0.0617	1.57	0.0620	1.58	0.0623	1.59	0.0627	1.60	0.0630
M1.8	0.35	-	1.422	1.519	1.62	0.0638	1.63	0.0642	1.65	0.0650	1.66	0.0654	1.67	0.0657
M2	0.4	-	1.567	1.679	1.80	0.0709	1.81	0.0713	1.82	0.0717	1.84	0.0724	1.85	0.0728
M2.2	0.45	-	1.715	1.836	1.97	0.0776	1.99	0.0783	2.00	0.0787	2.02	0.0795	2.03	0.0799
M2.5	0.45	-	2.013	2.138	2.27	0.0894	2.29	0.0902	2.30	0.0906	2.32	0.0913	2.33	0.0917
M2.6	0.45	-	2.113	2.238	2.41	0.0949	2.42	0.0953	2.43	0.0957	2.44	0.0962	2.45	0.0966
M3	0.5	-	2.459	2.599	2.75	0.1083	2.76	0.1087	2.78	0.1094	2.80	0.1102	2.81	0.1106
M3	-	0.35	2.621	2.721	2.86	0.1126	2.87	0.1130	2.88	0.1134	2.89	0.1138	2.90	0.1142
M3.5	0.6	-	2.850	3.010	3.19	0.1256	3.21	0.1264	3.23	0.1272	3.26	0.1283	3.28	0.1291
M4	0.7	-	3.242	3.422	3.64	0.1433	3.67	0.1445	3.69	0.1453	3.71	0.1461	3.74	0.1472
M4	-	0.5	3.459	3.599	3.75	0.1476	3.76	0.1480	3.78	0.1488	3.80	0.1496	3.81	0.1500
M4.5	0.75	-	3.688	3.876	4.12	0.1622	4.14	0.1630	4.17	0.1642	4.19	0.1650	4.22	0.1661
M5	0.8	-	4.134	4.334	4.59	0.1807	4.62	0.1819	4.65	0.1831	4.67	0.1839	4.70	0.1850
M5	-	0.5	4.458	4.600	4.75	0.1870	4.76	0.1874	4.78	0.1882	4.80	0.1890	4.81	0.1894
M6	1	-	4.917	5.153	5.49	0.2161	5.52	0.2173	5.56	0.2189	5.59	0.2201	5.63	0.2217
M6	-	0.75	5.187	5.377	5.62	0.2213	5.64	0.2220	5.67	0.2232	5.69	0.2240	5.72	0.2252
M7	1	-	5.918	6.152	6.49	0.2555	6.52	0.2567	6.56	0.2583	6.59	0.2594	6.63	0.2610
M8	1.25	-	6.647	6.912	7.36	0.2898	7.41	0.2917	7.45	0.2933	7.49	0.2949	7.53	0.2965
M8	-	1	6.917	7.153	7.49	0.2949	7.52	0.2961	7.56	0.2976	7.59	0.2988	7.63	0.3004
M8	-	0.75	7.187	7.377	7.62	0.3000	7.64	0.3008	7.67	0.3020	7.69	0.3028	7.72	0.3039
M10	1.5	-	8.376	8.676	9.24	0.3638	9.29	0.3657	9.34	0.3677	9.39	0.3697	9.44	0.3717
M10	-	1.25	8.647	8.912	9.36	0.3685	9.41	0.3705	9.45	0.3720	9.49	0.3736	9.53	0.3752
M10	-	1	8.917	9.153	9.49	0.3736	9.52	0.3748	9.56	0.3764	9.59	0.3776	9.63	0.3791
M10	-	0.75	9.188	9.378	9.62	0.3787	9.64	0.3795	9.67	0.3807	9.69	0.3815	9.72	0.3827
M12	1.75	-	10.106	10.441	11.11	0.4374	11.17	0.4398	11.23	0.4421	11.29	0.4445	11.35	0.4469
M12	-	1.5	10.376	10.676	11.24	0.4425	11.29	0.4448	11.34	0.4465	11.39	0.4484	11.44	0.4504
M12	-	1.25	10.647	10.912	11.36	0.4472	11.41	0.4492	11.45	0.4508	11.49	0.4524	11.53	0.4539
M12	-	1	10.917	11.153	11.49	0.4524	11.52	0.4535	11.56	0.4551	11.59	0.4563	11.63	0.4579
M14	2	-	11.835	12.210	12.98	0.5110	13.05	0.5138	13.12	0.5165	13.18	0.5189	13.25	0.5217
M14	-	1.5	12.376	12.676	13.24	0.5213	13.29	0.5232	13.34	0.5252	13.39	0.5272	13.44	0.5291
M16	2	-	13.835	14.210	14.98	0.5898	15.05	0.5925	15.12	0.5953	15.18	0.5976	15.25	0.6004
M16	-	1.5	14.376	14.676	15.24	0.6000	15.29	0.6020	15.34	0.6039	15.39	0.6059	15.44	0.6079
M18	2.5	-	15.296	15.743	16.73	0.6587	16.81	0.6618	16.90	0.6654	16.98	0.6685	17.07	0.6720
M18	-	1.5	16.376	16.676	17.24	0.6787	17.29	0.6807	17.34	0.6827	17.39	0.6846	17.44	0.6866
M20	2.5	-	17.294	17.744	18.73	0.7374	18.81	0.7406	18.90	0.7441	18.98	0.7472	19.07	0.7508
M20	-	1.5	18.376	18.676	19.24	0.7575	19.29	0.7594	19.34	0.7614	19.39	0.7634	19.44	0.7654
M20	-	1	18.917	19.153	19.49	0.7673	19.52	0.7685	19.56	0.7701	19.59	0.7713	19.63	0.7728
M22	2.5	-	19.294	19.744	20.73	0.8161	20.81	0.8193	20.90	0.8228	20.98	0.8260	21.07	0.8295
M22	-	2	19.835	20.210	20.98	0.8260	21.05	0.8287	21.12	0.8315	21.18	0.8339	21.25	0.8366
M22	-	1.5	20.376	20.676	21.24	0.8362	21.29	0.8382	21.34	0.8402	21.39	0.8421	21.44	0.8441
M24	3	-	20.752	21.252	22.47	0.8846	22.57	0.8886	22.67	0.8925	22.78	0.8969	22.88	0.9008
M24	-	2	21.835	22.210	22.98	0.9047	23.05	0.9075	23.12	0.9102	23.18	0.9126	23.25	0.9154
M24	-	1.5	22.376	22.676	23.24	0.9150	23.29	0.9169	23.34	0.9189	23.39	0.9209	23.44	0.9228

FORMULA: TAP DRILL SIZE

$$\text{Drill Size} = \text{Tap Major Dia} - \frac{\text{Pitch} \times \% \text{ of Full Thread}}{147.059}$$

Example: Determine Drill Size for M12 x 1.75 Tap, 70% Full Thread.
Basic Major Diameter of Tap = 12mm
 $1.75 \times 70 = 119 \div 147.059 = 0.083\text{mm}$
Drill Size = 11.17mm

FORMULA: PERCENTAGE OF FULL THREAD

$$\% \text{ of Full Thread} = (\text{Tap Major Dia} - \text{Drill Dia}) \times \frac{147.059}{\text{Pitch}}$$

Example: Determine the % of Full Thread for M12 x 1.75 Tap, using 11.17mm Drill.
Pitch = 1.75
 $12 - 11.17 = 0.83\text{mm} \times 147.059 \div 1.75 = 70$
Percentage of Full Thread = 70%



Tap Drill Sizes - STI Taps - Inch

Tap Size	Threads Per Inch		Minor Diameter (in) (After Tapping)		Tap Drill Diameter (in)	
	UNC	UNF	Min	Max	Aluminum	Steel, Magnesium, Plastic
2	56	–	0.0899	0.0961	0.0938	0.0960
3	48	–	0.1036	0.1104	0.1065	0.1094
	–	56	0.1029	0.1086	0.1040	0.1065
4	40	–	0.1175	0.1252	0.1200	0.1200
	–	48	0.1166	0.1229	0.1181	0.1200
5	40	–	0.1305	0.1373	0.1339	0.1360
6	32	–	0.1448	0.1527	0.1470	0.1495
	–	40	0.1435	0.1503	0.1470	0.1495
8	32	–	0.1708	0.1781	0.1730	0.1770
	–	36	0.1701	0.1771	0.1730	0.1770
10	24	–	0.1990	0.2000	0.2031	0.2055
	–	32	0.1968	0.2041	0.2010	0.2031
12	24	–	0.2250	0.2340	0.2280	0.2280
1/4	20	–	0.2608	0.2704	0.2660	0.2660
	–	28	0.2577	0.2646	0.2610	0.2638
5/16	18	–	0.3245	0.3342	0.3320	0.3320
	–	24	0.3215	0.3288	0.3281	0.3281
3/8	16	–	0.3885	0.3987	0.3970	0.3970
	–	24	0.3840	0.3910	0.3906	0.3906
7/16	14	–	0.4530	0.4639	0.4531	0.4531
	–	20	0.4483	0.4561	0.4531	0.4531
1/2	13	–	0.5166	0.5273	0.5156	0.5156
	–	20	0.5108	0.5186	0.5156	0.5156
9/16	12	–	0.5806	0.5918	0.5781	0.5938
	–	18	0.5745	0.5826	0.5781	0.5781
5/8	11	–	0.6447	0.6564	0.6562	0.6562
	–	18	0.6370	0.6451	0.6406	0.6406
3/4	10	–	0.7716	0.7838	0.7812	0.7812
	–	16	0.7635	0.7720	0.7656	0.7656
7/8	9	–	0.8990	0.9119	0.9062	0.9062
	–	14	0.8905	0.8994	0.8906	0.8906
1"	8	–	1.0271	1.0421	1.0312	1.0312
	–	12	1.0181	1.0281	1.0156	1.0312

The suggested drill sizes for aluminum listed in the table are within the minor diameter limits for STI tapped holes specified in MS 33537. Alternate drill sizes are suggested in many instances for magnesium, steel and plastics to provide for maximum tap wear life. In the case of magnesium, the larger size is recommended to allow for material close-in. There are suggested drill sizes and any special requirements or specifications will supersede these recommendations.



Tap Drill Sizes - STI Taps - Metric

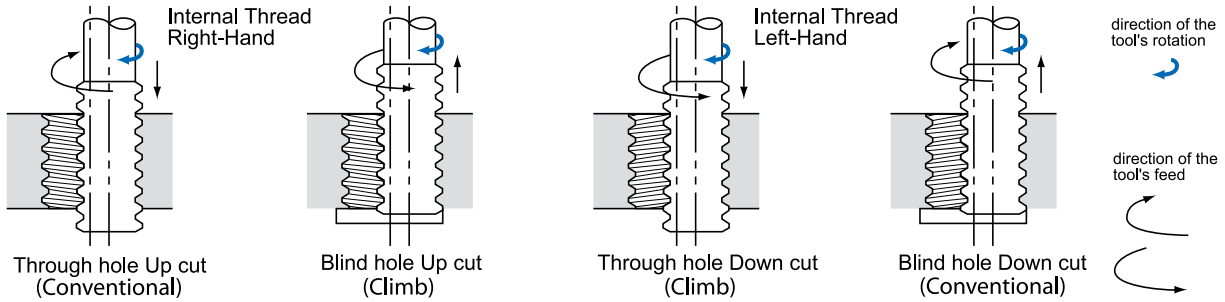
Tap Size	Pitch	Minor Diameter (in) (After Tapping)		Tap Drill Diameter (Metric)	
		Min	Max	Aluminum	Steel, Magnesium, Plastic
M2	0.4	2.087	2.199	2.1	2.1
M2.5	0.45	2.597	2.722	2.3	2.35
M3	0.5	3.108	3.248	3.15	3.2
M4	0.7	4.152	4.332	4.2	4.25
M5	0.8	5.174	5.374	5.2	5.3
M6	1.0	6.217	6.407	6.25	6.3
M8	1.25	8.271	8.483	8.3	8.4
M10	1.5	10.324	10.560	10.5	10.5
M12	1.75	12.379	12.644	12.5	12.5
M14	2	14.433	14.733	14.5	14.5
M16	2	16.433	16.733	16.5	16.5
M18	2.5	18.541	18.896	18.75	18.75
M20	2.5	20.541	20.896	20.75	20.75
M22	2.5	22.541	22.896	22.75	22.75
M24	3	22.649	25.049	24.75	24.75

The suggested drill sizes for aluminum listed in the table are within the minor diameter limits for STI tapped holes specified in MS 33537. Alternate drill sizes are suggested in many instances for magnesium, steel and plastics to provide for maximum tap wear life. In the case of magnesium, the larger size is recommended to allow for material close-in. There are suggested drill sizes and any special requirements or specifications will supersede these recommendations.



Machining Technique

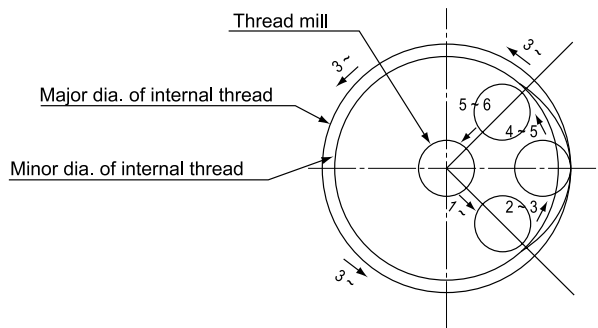
OSG's A Brand® & EXOCARB® Thread Mills have been developed for thread milling on a 3-Axis CNC controlled machine tool. Threads are produced by advancing one pitch feed per revolution in the axial direction, utilizing the planet-like rotation and revolution movements of the tool. Internal/external and right/left hand threads can all be produced with this one tool by simply changing the direction of rotation and/or feed.



Threading Process

- 1-2 Move to edge (maintain clearance)
- 2-3 Cut with helical milling
- 3-4 Mill the circumference of the circle
- 4-5 Pull away from the edge
- 5-6 Remove tool

The transition between the start and finish of the milling operation must be smooth, and the appropriate amount of feed is essential for minimizing milling resistance. There are many different methods for using this tool, but our research has shown that this technique provides the most precise and efficient operation.



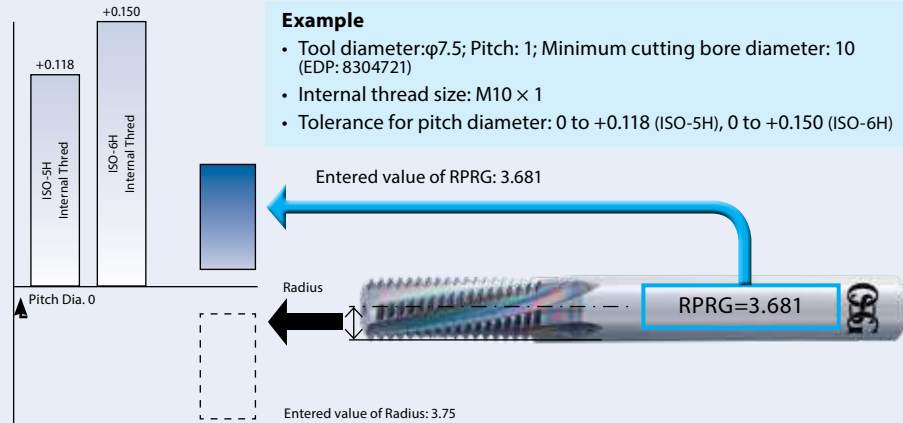
Thread Milling Process (view from above)



Radius Offset (RPRG)

RPRG is the reference value of tool radius offset.

Conventionally, the tool radius was entered during setup as a parameter of the NC system, which was corrected by checking the thread with a gauge. However, it has become possible to reduce the checking and correction simply by entering the RPRG value indicated on the tool shank.



Example

- Tool diameter: $\phi 7.5$; Pitch: 1; Minimum cutting bore diameter: 10 (EDP: 8304721)
- Internal thread size: M10 \times 1
- Tolerance for pitch diameter: 0 to +0.118 (ISO-5H), 0 to +0.150 (ISO-6H)

NOTES:

1. RPRG are reference values. Determine optimal values after trial cutting as values depend on machining environment.
2. RPRG values are optimally established to achieve ISO:5H (formerly Grade 1) internal thread limits for metric threads and ANSI:3B internal thread limits for unified threads. RPRG values established for taper pipes (R/Rc) are effective when using the thread milling NC code generator software ThreadPro available on our website.
3. For diameters of thread mills, RPRG values are calculated based on the minimum cutting bore diameter (the minimum cutting internal thread size of the tool diameter). To cut other diameters, it is necessary to use a smaller value than RPRG.

ThreadPro (Thread Milling NC Code Generator Software)

www.osgtool.com/threadpro



- Available in 12 different languages
- Supports 8 NC programming languages
- Incorporates RPRG* value to further simplify process



ThreadPro

* RPRG = reference value of tool radius offset

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List 16620/16625 - A Brand® AT-1 List 16630/16631 - A Brand® AT-1 NPT/NPTF

Work Material		Cutting Speed SFM	Feed Rate (in/t)
Low Carbon Steel	~C0.25%	260 - 525	0.0004 - 0.002
Medium Carbon Steel	C0.25%~0.45%	260 - 525	0.0004 - 0.002
High Carbon Steel	C0.45%~	260 - 525	0.0004 - 0.002
Alloy Steel	SCM	200 - 400	0.0004 - 0.002
Hardened Steel	25-45 HRC	260 - 650	0.0004 - 0.002
	45-55 HRC	-	-
	50-60 HRC	-	-
Stainless Steel	SUS	200 - 400	0.0004 - 0.002
Tool Steel	SKD	-	-
Cast Steel	SC	200 - 400	0.0004 - 0.002
Cast Iron	FC	260 - 525	0.0004 - 0.002
Ductile Cast Iron	FCD	200 - 400	0.0004 - 0.002
Copper	Cu	260 - 525	0.001 - 0.004
Brass	Bs	260 - 525	0.001 - 0.004
Brass Casting	BsC	260 - 525	0.001 - 0.004
Bronze	PB	260 - 525	0.001 - 0.004
Aluminum	Al	260 - 525	0.001 - 0.004
Aluminum Alloy Casting	AD, ADC	330 - 1000	0.002 - 0.008
Magnesium Alloy Casting	MC	330 - 1000	0.002 - 0.008
Zinc Alloy Casting	ZDC	330 - 1000	0.002 - 0.008
Titanium Alloy	Ti-6Al-4V	-	-
Nickel Alloy	Inconel	-	-
Thermosetting Plastic	-	260 - 525	0.001 - 0.004
Thermo Plastic	-	260 - 525	0.001 - 0.004

1. The indicated speeds and feeds are for water-soluble coolant.
2. Water-soluble coolant is not suitable for threading magnesium alloy.
3. Please adjust the cutting conditions depending on the rigidity of the machine, tool holders, and workpiece clamping.
4. If the threading length is long, or when machining a large-pitch thread, reduce the feed rate and take multiple passes.
5. If a machined parallel internal thread is tapered and prevents the go-gauge from going through, add a zero cut/spring pass.





List 41000/41100 - EXOCARB® Thread Mill
List 41050/41150 - EXOCARB® Thread Mill Oil
List 42000/42001 - EXOCARB® Thread Mill NPT/NPTF

Work Material	SFM	Feed Rate (Inch/Tooth)	No. of Passes
Low Carbon Steel	300 - 420	0.0016 - 0.0050	1
Medium Carbon Steel	300 - 420	0.0016 - 0.0050	1
High Carbon Steel	250 - 420	0.0016 - 0.0050	1
Alloy Steel	180 - 350	0.0008 - 0.0040	1-2
Heat Treated Steel (28-34HRC)	160 - 300	0.0008 - 0.0040	1
Heat Treated Steel (34-40HRC)	130 - 260	0.0004 - 0.0040	1-2
Heat Treated Steel (40-50HRC)	65 - 250	0.0004 - 0.0040	2-4
Stainless Steel (SUS3**,SUS2**)	200 - 450	0.0016 - 0.0060	1-2
Stainless Steel (SUS405,410L,430)	165 - 400	0.0016 - 0.0060	1-2
Stainless Steel (15-5, 17-4PH)	130 - 350	0.0016 - 0.0060	2
Cast Iron	300 - 450	0.0012 - 0.0040	1
Cast Iron	250 - 400	0.0008 - 0.0035	1
Ductile Cast Iron	210 - 310	0.0012 - 0.0040	1
Ductile Cast Iron	210 - 280	0.0012 - 0.0040	1
Aluminum Alloy	300 - 500	0.0012 - 0.0040	1
Aluminum Alloy Casting Si [12]%	280 - 550	0.0012 - 0.0050	1
Aluminum Alloy Casting Si [12-16]%	250 - 460	0.0012 - 0.0040	1
Aluminum Alloy Casting with Si [16-20]%	210 - 400	0.0012 - 0.0040	1
Aluminum Alloy Casting with Si [20-25]%	200 - 350	0.0012 - 0.0040	1
Copper,Copper Casting	300 - 510	0.0012 - 0.0040	1
Brass, Brass Casting	300 - 510	0.0012 - 0.0040	1
Bronze,Bronze Casting (C6**,PB,PBC)	300 - 500	0.0012 - 0.0040	1
Magnesium Alloy Casting	210 - 410	0.0012 - 0.0050	1
Zinc Alloy Casting	180 - 380	0.0012 - 0.0050	1
Titanium Alloy (Ti-6Al-4V)	100 - 330	0.0012 - 0.0025	2
High Heat Resistance Alloy (Inconel)	65 - 260	0.0008 - 0.0020	2
High Heat Resistance Alloy (Inconel >40HRC)	65 - 200	0.0008 - 0.0020	4
Thermoplastic	220 - 510	0.0012 - 0.0050	1
Cobalt/Chrome Alloy (Stellite)	65 - 200	0.0016 - 0.0060	3

For chip loads, the smaller cutter diameters use a smaller chip load per tooth within a given range.
 Larger cutter diameters use the larger chip load per tooth within the given range.
 For programming help or other information, please contact our Engineering Department at 800-837-2223.





List 41200/41300 - EXOCARB® Thread Mill Mini

Work Material	Thread Sizes Under #2/M2			Thread Sizes #2/M2 & Larger		
	SFM	Feed Rate (Inch/Tooth)	No. of Passes	SFM	Feed Rate (Inch/Tooth)	No. of Passes
Low Carbon Steel	200 - 300	0.0008 - 0.0020	2	200 - 300	0.0008 - 0.0030	1
Medium Carbon Steel	200 - 300	0.0008 - 0.0020	2	200 - 300	0.0008 - 0.0030	1
High Carbon Steel	200 - 300	0.0008 - 0.0020	2	200 - 300	0.0008 - 0.0030	1
Alloy Steel	—	—	—	100 - 200	0.0004 - 0.0012	1-2
Heat Treated Steel (28-34HRC)	—	—	—	100 - 200	0.0004 - 0.0012	1
Heat Treated Steel (34-40HRC)	—	—	—	100 - 200	0.0004 - 0.0012	1-2
Heat Treated Steel (40-50HRC)	—	—	—	100 - 200	0.0004 - 0.0012	2-4
Stainless Steel (SUS3**,SUS2**)	200 - 300	0.0008 - 0.0020	2-3	200 - 300	0.0008 - 0.0030	1-2
Stainless Steel (SUS405,410L,430)	200 - 300	0.0008 - 0.0020	2-3	200 - 300	0.0008 - 0.0030	1-2
Stainless Steel (15-5, 17-4PH)	200 - 300	0.0008 - 0.0020	3	200 - 300	0.0008 - 0.0030	2
Cast Iron	130 - 200	0.0008 - 0.0020	2	165 - 330	0.0012 - 0.0040	1
Cast Iron	130 - 200	0.0008 - 0.0020	2	165 - 330	0.0012 - 0.0040	1
Ductile Cast Iron	130 - 200	0.0008 - 0.0020	2	165 - 230	0.0012 - 0.0040	1
Ductile Cast Iron	130 - 300	0.0008 - 0.0020	2	165 - 230	0.0012 - 0.0040	1
Aluminum Alloy	230 - 330	0.0015 - 0.0030	2	165 - 330	0.0008 - 0.0025	1
Aluminum Alloy Casting	230 - 330	0.0015 - 0.0030	2	165 - 330	0.0008 - 0.0025	1
Copper,Copper Casting	—	—	—	—	—	—
Brass, Brass Casting	200 - 330	0.0015 - 0.0030	2	165 - 330	0.0008 - 0.0025	1
Bronze,Bronze Casting	—	—	—	165 - 330	0.0008 - 0.0025	1
Magnesium Alloy Casting	230 - 330	0.0015 - 0.0030	2	165 - 330	0.0008 - 0.0025	1
Zinc Alloy Casting	230 - 330	0.0015 - 0.0030	2	165 - 330	0.0008 - 0.0025	1
Titanium Alloy (Ti-6Al-4V)	65 - 130	0.0004 - 0.0012	3	65 - 200	0.0004 - 0.0012	2
High Heat Resistance Alloy (Inconel)	—	—	—	65 - 200	0.0004 - 0.0012	2
High Heat Resistance Alloy (Inconel >40HRC)	—	—	—	65 - 200	0.0004 - 0.0012	4
Thermoplastic	165 - 330	0.0015 - 0.0030	2	165 - 330	0.0008 - 0.0025	1
Cobalt/Chrome Alloy (Stellite)	—	—	—	—	—	—








For chip loads, the smaller cutter diameters use a smaller chip load per tooth within a given range.

Larger cutter diameters use the larger chip load per tooth within the given range.

For programming help or other information, please contact our Engineering Department at 800-837-2223.













PROBLEM	CAUSE	SOLUTION
Chip Packing (Back Threaded Portion) 	Inappropriate spindle speed	Adjust RPM (lower or higher) for proper chip form
	Helix angle too large	Decrease helix angle or choose tap with low helix angle
	Chips not coiling / breaking properly	Use alternate coating
Chip Packing (Single Thread) 	*Occurs predominantly in horizontal applications*	
	Weak rake angle (positive)	Decrease rake angle
	Chips not evacuating properly	Use a POT style tap or a LHH / RHF
Chipping During Reversal 	Chips left behind in flute during tap reversal	Improve wear resistance of tap
		Improve / add surface treatment / coating
	Material shrinkage	Increase coolant volume / concentration to control heat
Chipping Due to Wear 	Tap substrate not suitable for work material	Improve wear resistance of tap
		Improve / add surface treatment / coating
	Cutting action work hardened material	Shorten chamfer length
Chipping of Land Edge 	Occurs when tap either hits bottom or entrance of hole	Avoid hitting the bottom of the hole, check stroke length, alignment and hole size
Chipping of Land Axially 	Occurs when tap either hits bottom or entrance of hole	Avoid hitting the bottom of the hole, check stroke length, alignment and hole size
Chipping of Chamfer 	Tap substrate not suitable for work material	Improve wear resistance of tap
	Inappropriate pre-drill size	Select suitable pre-drill size





PROBLEM	CAUSE	SOLUTION
Premature Tap Wear 	Inappropriate spindle speed	Reduce spindle speed
	Possible work hardening of pre-drilled hole	Prevent work hardening of pre-drilled hole
	Inappropriate thread relief	Use proper thread relief
	Inappropriate chamfer length	Adjust chamfer length
	Inappropriate lubrication	Change coolant method Increase volume / concentration Apply surface coating / treatment
Welding / Galling 	Inappropriate spindle speed	Reduce spindle speed
	Inappropriate lubrication	Change coolant method
		Increase volume / concentration
		Apply surface coating / treatment
Deformed Lobes 	Possible work hardening of pre-drilled hole	Prevent work hardening of pre-drilled hole
	Inappropriate spindle speed	Reduce spindle speed
	Inappropriate pre-drill size	Increase pre-drill hole size as much as possible
	Inappropriate lubrication	Change coolant method
		Increase volume / concentration
		Apply surface coating / treatment
Tap substrate not suitable for material	Improve wear resistance of tap	
Tap Breakage 	Possible chip packing	Avoid chip packing
	Inappropriate pre-drill size	Increase pre-drill hole size as much as possible
	Inappropriate spindle speed	Reduce spindle speed
	Possible runout or tapered hole	Reduce runout and assure hole is straight
	Too high of torque generated	Use tap holder with torque adjustment / limiting feature
	Possible tap collision with bottom of hole	Avoid hitting the bottom of the hole, check stroke length, alignment and hole size
Overcutting / Oversized Threads 	Inconsistent feed of spiral fluted style tap	Use compensating tension / compression tap holder
		Adjust feed rate appropriately
		Check CNC program
	Inconsistent feed of spiral pointed style tap	Use compensating tension / compression tap holder
		Adjust feed rate appropriately
		Check CNC program
Tearing on Flanks 	Inappropriate thread relief / rake angle	Use sharper / freer cutting relief and angle
	Inappropriate lubrication	Change coolant method
		Increase volume / concentration
		Apply surface coating / treatment
Extremely Torn Threads 	Possible welding / galling	Select appropriate cutting conditions
	Possible chip packing	Select appropriate cutting conditions
	Inappropriate thread relief	Use sharper thread relief
	Inappropriate lubrication	Change coolant method
		Increase volume / concentration
Apply surface coating / treatment		
Chips Remain at Bottom 	Inappropriate geometry of tap	Reduce chamfer relief angle
		Use thinner land width
		Reduce chamfer length
		Reduce cutting angle





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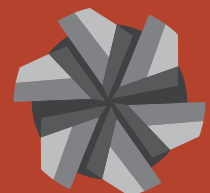
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Inch/Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
Size Range	3/16 - 1"	3 - 12mm	1/4 - 1"	-	-	0.06-20mm	1/2 - 1-1/4"	12 - 25mm
Number of Flutes	4		5		3, 4		5	
Square	✓	✓					✓	✓
Corner Radius/Chamfer	✓	✓	✓			✓	✓	✓
Ball Nose						✓		
Long Neck, Pencil Neck, Rib	✓					✓	✓	✓
Coolant-Through								
Unequal Index, Variable Helix	✓	✓	✓				✓	✓
Substrate	Carbide		Carbide		Carbide		Carbide	
Coating	DUARISE		EXO®		WXS®/EXO®		EXO®	

P	Carbon Steels (1010, 1018)				
	Mild Steels, Alloy Steels (1050, 4140)				
	Die Steels (H13, D2)				
M	Stainless Steel (304SS, 420SS)				
K	Cast Iron				
	Ductile Cast Iron				
N	Aluminum Alloys (6061, 7075)				
S	Heat Resistant Alloys (Inconel 718)				
	Titanium Alloy (Ti-6Al-4V)				
H	Pre-Hardened Steel (P20)				
	Die Cast Steels (A2, S7)				
	Hardened Steels (D2)				



Featured Milling Products



EXOCARB® WXL® Series		EXOCARB® WXS® Series		EXOCARB® AERO DLC		EXOCARB® AERO UVX Silent Rougher		EXOCARB® AERO BLIZZARD®		HY-PRO® CARB VGX Series	
P737-765		P766-784		P812-821		P801-803		P822-830		P840-848	
											
Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
1/64 - 3/4"	0.1 - 26mm	1/32 - 3/4"	0.1 - 13mm	1/2 - 1"	12 - 25mm	1/4 - 1"	6 - 25mm	1/8 - 1"	-	1/8 - 1 1/4"	-
2, 4		2, 3, 4, 6		2, 3		4		2, 3		4, 5	
✓	✓	✓	✓	✓	✓			✓		✓	
✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
✓	✓	✓	✓					✓		✓	
✓	✓		✓			✓	✓	✓		✓	
				✓	✓						
						✓	✓			✓	
Carbide		Carbide		Carbide		Carbide		Carbide		Carbide	
WXL®		WXS®		DLC		WXL®		Bright/DLC		TiAlN	






For OSG's complete end mill offering please refer to the Illustrated Index starting on page 688.

1st Choice 2nd Choice Recommended











List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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A Brand[®]

8200		NEW Inch	4	Variable	Carbide	Duarise	3/16 - 1"	A BRAND AE-VMS	720	976-977
8205		NEW Metric	4	Regular	Carbide	Duarise	3mm - 12mm	A BRAND AE-VMS	721	976-977
8210		NEW Inch	4	Variable	Carbide	Duarise	3/16" - 1"	A BRAND AE-VMS, Corner Radius	722	978-979
8215		NEW Metric	4	Regular	Carbide	Duarise	3mm - 12mm	A BRAND AE-VMS, Corner Radius	723	978-979
8220		NEW Inch	4	Variable	Carbide	Duarise	1/4" - 1"	A BRAND AE-VMS, Long Neck, Corner Radius	724	980

EXOPRO[®]

2055		Inch	5	Variable	Carbide	EXO [®]	1/4 - 1"	UVX-Ni, Corner Radius	725	981
9510		Metric	3	Stub	Carbide	EXO [®]	1mm - 20mm	Phoenix [®] Deep Feed, Ball End	726	982-983
9590		Metric	3	Stub	Carbide	WXS [®]	0.06mm - 6mm	Phoenix [®] Long Neck, Ball End	727	982-983
9581		Metric	3	Stub	Carbide	WXS [®]	1mm - 12mm	Phoenix [®] Pencil-Neck, Deep Feed, Ball End	728-729	982-983
9592		Metric	4	Stub	Carbide	WXS [®]	0.8mm - 3mm	Phoenix [®] Pencil Neck, Deep Feed, Corner Radius	730	986
9575		Metric	3	Stub	Carbide	WXS [®]	6mm - 20mm	Phoenix [®] Deep Feed, Corner Radius	731	984-985
9576		Metric	3	Stub	Carbide	WXS [®]	4mm - 16mm	Phoenix [®] Long Neck, Deep Feed, Corner Radius	732	984-985
9580		Metric	3	Stub	Carbide	WXS [®]	2mm - 12mm	Phoenix [®] Pencil Neck, Deep Feed, Corner Radius	733-735	984-985
9570		Metric	3	Stub	Carbide	EXO [®]	1mm - 20mm	Phoenix [®] High-Feed, Corner Radius	736	984-985

EXOCARB[®] WXL[®]

3610		Inch	2	Regular	Carbide	WXL [®]	1/32 - 1/2"	Ball End	737	990
3710		Metric	2	Regular	Carbide	WXL [®]	0.1mm - 20mm	Ball End	738	991
3670		Inch	4	Regular	Carbide	WXL [®]	1/16 - 1/2"	Corner Radius	739	992
3604		Inch	4	Regular	Carbide	WXL [®]	1/16 - 3/4"		740	993
3690		Inch	2	Regular	Carbide	WXL [®]	1/64 - 1/4"	Ball End, Long Neck, ±5µm Radius Tolerance	741	994-997
3790		Metric	2	Regular	Carbide	WXL [®]	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	742-744	994-997
3620		Inch	2	Stub	Carbide	WXL [®]	1/16 - 3/4"		745	998



List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

A Brand

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EXOPRO®

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EXOCARB® WXL®








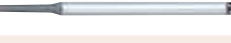


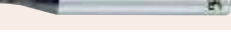



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good best



List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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EXOCARB® WXL®

3621		Inch	2	Regular	Carbide	WXL®	1/16 - 3/4"		745	998
3704		Metric	4	Regular	Carbide	WXL®	1mm - 12mm		746	999
3742		Metric	4	Long	Carbide	WXL®	3mm - 26mm		747	1000
3791		Metric	2	Stub	Carbide	WXL®	0.2mm - 5mm	Long Neck	748-749	1002-1005
3711		Metric	2	Regular	Carbide	WXL®	1mm - 18mm	Ball End, Long Shank	750	1001
3720		Metric	2	Stub	Carbide	WXL®	0.1mm - 6mm		751	1006-1007
3721		Metric	2	Stub	Carbide	WXL®	0.1mm - 20mm		752	1008-1009
3712		Metric	2	Stub	Carbide	WXL®	0.2mm - 6mm	Pencil Neck, Ball End	753-758	1010-1017
3722		Metric	2	Regular	Carbide	WXL®	0.1mm - 20mm		759	1018-1019
3723		Metric	2	Long	Carbide	WXL®	0.2mm - 12mm		760	1020-1021
3770		Metric	2	Regular	Carbide	WXL®	0.6mm - 12mm	Corner Radius	761	1022
3771		Metric	4	Regular	Carbide	WXL®	3mm - 12mm	Corner Radius	762	1023
3794		Metric	4	Stub	Carbide	WXL®	1mm - 3mm	Long Neck	763-764	1024-1025
4445		Inch	4	Regular	Carbide	WXL®	1/8 - 1/2"	High Helix, Corner Radius	765	1026

EXOCARB® WXS®

4410		Inch	2	Regular	Carbide	WXS®	1/32 - 1/2"	Ball End	766	1027
4510		Metric	2	Regular	Carbide	WXS®	1mm - 12mm	Ball End	767	1028
4440		Inch	4, 6	Regular	Carbide	WXS®	1/16 - 3/4"		768	1029
4540		Metric	4, 6	Regular	Carbide	WXS®	1mm - 12mm		769	1030
4471		Inch	4	Regular	Carbide	WXS®	1/16 - 1/2"	Corner Radius	770	1031
4571		Metric	4	Regular	Carbide	WXS®	3mm - 12mm	Corner Radius	771	1032
4470		Inch	3, 4	Regular	Carbide	WXS®	1/8 - 1/2"	Corner Radius, High Feed	772	1033
4570		Metric	3, 4	Regular	Carbide	WXS®	2mm - 13mm	Corner Radius, High Feed	772	1034



List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

EXOCARB® WXL®

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EXOCARB® WXS®










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good best













List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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EXOCARB® WXS®

4472	 NEW	Inch	5	Regular	Carbide	WXS®	1/8" - 1/2"	Corner Radius, High Feed	773	1035
4572	 NEW	Metric	4, 5	Regular	Carbide	WXS®	2mm - 12mm	Corner Radius, High Feed	774	1036
4592		Metric	2	Stub	Carbide	WXS®	0.4mm - 3mm	Corner Radius, Long Neck, ±5µm Radius Tolerance	775-777	1037
4590		Metric	2	Stub	Carbide	WXS®	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	778-779	1038-1040
4430		Inch	4	Regular	Carbide	WXS®	1/4" - 1/2"	Ball End, True 4 Flute	780	1041
4530		Metric	4	Regular	Carbide	WXS®	6mm - 12mm	Ball End, True 4 Flute	781	1042
4513		Metric	2	Regular	Carbide	WXS®	1mm - 12mm	Ball End, Sphere Type	782	1043
4581		Metric	4	Variable	Carbide	WXS®	1mm - 2.5mm	Ball End, Tapered	783	1044
4541		Metric	4, 6	Regular	Carbide	WXS®	3mm - 12mm	Corner Radius	784	1045

EXOCARB® MAX

9010		Inch	2	Stub	Carbide	WXS®	1/32" - 1/2"	Ball End	785	1046
9110		Metric	2	Stub	Carbide	WXS®	1mm - 10mm	Ball End	785	1046
9011		Inch	2	Stub	Carbide	WXS®	1/32" - 3/8"	Ball End, Long Shank	786	1046
9111		Metric	2	Stub	Carbide	WXS®	1mm - 10mm	Ball End, Long Shank	786	1046
9140		Metric	6	Regular	Carbide	WXS®	3mm - 12mm	Square End	787	1050-1051
9144		Metric	6	Regular	Carbide	WXS®	6mm - 12mm	Corner Radius	787	1050-1051
9191		Metric	2	Stub	CBN	Bright	0.4mm - 3mm	CBN, Ball End	788	1048
9192		Metric	2	Stub	CBN	Bright	0.4mm - 3mm	CBN, Super Long Neck, Ball Nose	788	1049
9181		Metric	2	Stub	CBN	Bright	0.5mm - 3mm	CBN, Corner Radius	789	1047
9182		Metric	2	Stub	CBN	Bright	0.5mm - 3mm	Long Neck, CBN, Corner Radius	789	1047



List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

EXOCARB® WXS®

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EXOCARB® MAX











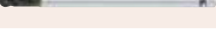
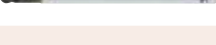

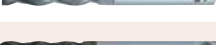

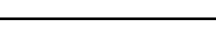
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good best



List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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EXOCARB® Diamond

7020		Inch	2	Stub	Carbide	Diamond	1/64 - 1/2"		790	1052-1053
7120		Metric	2	Regular	Carbide	Diamond	1mm - 12mm		791	1052-1053
7040		Inch	4	Stub	Carbide	Diamond	1/16 - 1/2"		791	1052-1053
7041		Inch	4	Long	Carbide	Diamond	1/8 - 1/2"		792	1052-1053
7042		Inch	4	Stub	Carbide	Diamond	1/16 - 1/2"	Long Shank	792	1052-1053
7072		Inch	4	Stub	Carbide	Diamond	1/8 - 1/2"	Long Shank, Corner Radius	793	1052-1053
7010		Inch	2	Regular	Carbide	Diamond	1/32 - 1/2"	Ball End	793	1052-1053
7110		Metric	2	Regular	Carbide	Diamond	1mm - 12mm	Ball End	794	1052-1053
7030		Inch	4	Regular	Carbide	Diamond	1/32 - 1/2"	Ball End	794	1052-1053
7031		Inch	4	Long	Carbide	Diamond	3/16 - 1/2"	Ball End	795	1052-1053
7032		Inch	4	Stub	Carbide	Diamond	1/16 - 1/2"	Ball End, Long Shank	795	1052-1053
7173		Metric	4	Stub	Carbide	Diamond	0.5mm - 12mm	Ball End, Long Shank	796	1052-1053
7132		Metric	4	Stub	Carbide	Diamond	3mm - 12mm	Long Shank, Corner Radius	797	1052-1053
7140		Metric	4	Regular	Carbide	Diamond	0.5mm - 12mm		797	1052-1053
7230		Inch	2, 4	Regular	Carbide	Diamond	1/64 - 1/4"	High Precision, Ball End	798	1054
7231		Inch	2, 4	Regular	Carbide	Diamond	1/64 - 1/4"	High Precision, Ball End, Long Reach	798	1054

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum Alloys	Copper Alloys	Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH				Inconel	6Al4V (30 HRC)				


EXOCARB® Diamond

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7120										<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	
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7230										<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>	
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good best

List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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EXOCARB® AERO

2050		Inch	4	Variable	Carbide	EXO®	1/8" - 1"	UVX, Square End, for Exotics	799	1055	
2052		Inch	4	Variable	Carbide	EXO®	1/8" - 1"	UVX, Corner Radius, for Exotics	800	1055	
3815		NEW	Inch	4	Regular	Carbide	WXL®	1/4" - 1"	UVX Silent Rougher, Low Helix, Corner Chamfer	801	1056
3820		NEW	Inch	4	Regular	Carbide	WXL®	1/4" - 1"	UVX Silent Rougher, High Helix, Corner Chamfer	801	1056
3915			Metric	4	Regular	Carbide	WXL®	6mm - 25mm	UVX Silent Rougher, Low Helix, Corner Chamfer	802	1056
3920			Metric	4	Regular	Carbide	WXL®	6mm - 25mm	UVX Silent Rougher, High Helix, Corner Chamfer	802	1056
3825		NEW	Inch	4	Regular	Carbide	WXL®	1/4" - 1"	UVX Silent Rougher, Low Helix, Long Neck, Corner Chamfer	803	1056
3830		NEW	Inch	4	Regular	Carbide	WXL®	1/4" - 1"	UVX Silent Rougher, High Helix, Long Neck, Corner Chamfer	803	1056
2015			Inch	4	Regular	Carbide	TiAlN	1/4" - 1"	Rougher, for Exotics	804	1057
2100		NEW	Inch	5	Multiple	Carbide	EXO®	1/2" - 1-1/4"	UVX-Ti	805	1058
2106		NEW	Inch	5	Multiple	Carbide	EXO®	1/2" - 1-1/4"	UVX-Ti, Corner Radius	806-807	1058
2104		NEW	Metric	5	Regular	Carbide	EXO®	12mm - 25mm	UVX-Ti, Reduced Neck	808	1059
2102		NEW	Inch	5	Regular	Carbide	EXO®	1/2" - 1-1/4"	UVX-Ti, Reduced Neck	808	1058
2108		NEW	Inch	5	Regular	Carbide	EXO®	1/2" - 1-1/4"	UVX-Ti, Reduced Neck, Corner Radius	809	1058
2110		NEW	Metric	5	Regular	Carbide	EXO®	12mm - 20mm	UVX-Ti, Reduced Neck, Corner Radius	810	1059
2080			Inch	6,8	Regular	Carbide	Bright	5/8" - 1"	HFC-Ti, High Feed Radius Cutter for Titanium	811	1060
2081			Metric	6,8	Regular	Carbide	Bright	16mm - 25mm	HFC-Ti, High Feed Radius Cutter for Titanium	811	1060
2863		NEW	Inch	2	Stub	Carbide	DLC	1/2" - 1"	AERO-DLC, Corner Radius	812	1061
2963		NEW	Metric	2	Stub	Carbide	DLC	12mm - 25mm	AERO-DLC, Corner Radius	813	1061
2873		NEW SIZES	Inch	3	Stub	Carbide	DLC	1/2" - 1"	AERO-DLC, Corner Radius/Square	814	1062
2973		NEW SIZES	Metric	3	Stub	Carbide	DLC	12mm - 25mm	AERO-DLC, Corner Radius/Square	815	1062
2874		NEW SIZES	Inch	3	Stub	Carbide	DLC	5/8" - 1"	AERO-DLC, Coolant-Through, Corner Radius/Square	816	1063
2974		NEW SIZES	Metric	3	Stub	Carbide	DLC	20mm - 25mm	AERO-DLC, Coolant-Through, Corner Radius/Square	817	1063

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC





EXOCARB® AERO

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2100						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>				
2106						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>				
2104						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>				
2102						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>				
2108						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>				
2110						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>				
2080													<input checked="" type="checkbox"/>				
2081													<input checked="" type="checkbox"/>				
2863											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2963											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2873											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2973											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2874											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					
2974											<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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EXOCARB® AERO

2843		NEW SIZES	Inch	3	Long	Carbide	DLC	1/2" - 1"	AERO-DLC, Long Length, Corner Radius/Square	818	1064
2943		NEW SIZES	Metric	3	Long	Carbide	DLC	12mm - 20mm	AERO-DLC, Long Length, Corner Radius/Square	819	1064
2853		NEW	Inch	3	Extra Long	Carbide	DLC	3/4"	AERO-DLC, Extra Long Length, Corner Radius/Square	820	1065
2953		NEW	Metric	3	Extra Long	Carbide	DLC	20mm	AERO-DLC, Extra Long Length, Corner Radius/Square	821	1065

List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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EXOCARB® AERO

2021		Inch	2	Stub	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	822	1066
2022		Inch	2	Regular	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	823	1066
2023		Inch	2	Regular	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck, Square & Corner Radius	824	1066
2024		Inch	2	Long	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck, Square & Corner Radius	825	1066
2041		Inch	3	Stub	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	826	1067
2042		Inch	3	Regular	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	827	1068
2043		Inch	3	Regular	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck, Square & Corner Radius	828	1068
2048		Inch	3	Long	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck, Square & Corner Radius	829	1068
2010		Inch	2	Regular	Carbide	Bright	1/8 - 1"	BLIZZARD®, Ball End	830	1069
8120		Metric	2	Regular	Carbide	Bright	1mm - 16mm		831	1070

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

EXOCARB® AERO

2843										<input type="checkbox"/>	<input type="checkbox"/>						
2943										<input type="checkbox"/>	<input type="checkbox"/>						
2853										<input type="checkbox"/>	<input type="checkbox"/>						
2953										<input type="checkbox"/>	<input type="checkbox"/>						

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List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum Alloys	Copper Alloys	Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH									









EXOCARB® AERO

2021										<input type="checkbox"/>	<input type="checkbox"/>						
2022										<input type="checkbox"/>	<input type="checkbox"/>						
2023										<input type="checkbox"/>	<input type="checkbox"/>						
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2043										<input type="checkbox"/>	<input type="checkbox"/>						
2048										<input type="checkbox"/>	<input type="checkbox"/>						
2010										<input type="checkbox"/>	<input type="checkbox"/>						
8120										<input type="checkbox"/>	<input type="checkbox"/>						

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List	Item	Brand/Series	Inch/Metric	Material	Coating	Size Range	Features	Page	Tech Page
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Composite Routers

2061		EXOPRO® AERO-BNC	Inch	Carbide	Diamond	1/8 - 1/2"	Nick Router	832	1071
2066		EXOPRO® AERO-HBC	Inch	Carbide	Diamond	1/8 - 1/2"	Compression Router, 30° Helix	833	1071
2064		EXOPRO® AERO-HBC 45	Inch	Carbide	Diamond	1/4 - 1/2"	Compression Router, 45° Helix	834	1071
2068		EXOPRO® AERO-HBC 60	Inch	Carbide	Diamond	1/4 - 1/2"	Compression Router, 60° Helix	835	1072
2680		EXOPRO® AERO-REC	Inch	Carbide	Diamond	15/64 - 1/2"	Rougher Router	836	1073
2650		EXOPRO® AERO-MFR	Inch	Carbide	Diamond	1/4 - 1/2"	Finishing Router	837	1074
668		AERO-HBC 60	Inch	Carbide	Bright	1/4 - 1/2"	Compression Router, 60° Helix	838	1072
641R		AERO-HFR	Inch	Carbide	Bright	3/16 - 1/2"	Hand Router	839	1075

List	Item	Inch/Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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HY-PRO® CARB V_G_K (Variable Geometry)

VG441		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1"	Square End	840	1076
VG434		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1"	Corner Radius	841	1076
VG436		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1"	Corner Chamfer	842	1076
VG446		Inch	4	Multiple	Carbide	TiAlN	1/4 - 1"	Red. Neck, Corner Radius/ Corner Chamfer	843	1077
VG464		Inch	4	Multiple	Carbide	TiAlN	1/4 - 1"	Extended Length, Square End/ Corner Chamfer	844	1077
VG441BN		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1 1/4"	Ball Nose	845	1078
VG541		Inch	5	Multiple	Carbide	TiAlN	1/8 - 1"	Square End	846	1079
VG534		Inch	5	Multiple	Carbide	TiAlN	3/16 - 1"	Corner Radius	847-848	1079

List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				

Composite Routers

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668			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
641R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

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List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC












HY-PRO® CARB V_G_x (Variable Geometry)

VG441	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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VG464	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
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VG534	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	








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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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HY-PRO® CARB Square End

HP421		Inch/ Metric	2		Carbide	TiAlN	3/64 - 1" 1mm-25mm		849- 850	1080- 1082
HP441		Inch/ Metric	4		Carbide	TiAlN	3/64 - 1" 1mm-25mm		849- 850	1080- 1082
HP460		Inch/ Metric	3		Carbide	TiAlN	1/8 - 1" 3mm-25mm	High Helix	851	1083- 1084
HP450		Inch/ Metric	4, 6, 8		Carbide	TiAlN	1/8 - 1" 3mm-25mm		852	1085
HP453		Metric	4		Carbide	TiAlN	4mm - 20mm	Super Tough Mills	853	1087
HP456		Metric	4		Carbide	TiAlN	6mm - 12mm	Super Tough Mills, Corner Radius	853	1087
HP451		Inch/ Metric	4		Carbide	TiAlN	1/8 - 1" 4mm-20mm	Super Tough Mills	854	1086- 1087
HP400		Inch/ Metric	4		Carbide	TiAlN	1/4 - 1" 3mm - 25mm	Rougher	855	1088- 1089
HP410		Inch/ Metric	2		Carbide	TiAlN	1/32 - 3/16" 0.5mm-2.5mm	Short Length, Long Neck	856- 857	1090
HP411		Inch/ Metric	4		Carbide	TiAlN	1/8 - 1/4" 3mm - 6mm	Short Length, Long Neck	858	1091
HP455		Inch/ Metric	5		Carbide	TiAlN	1/8 - 1" 3mm - 25mm	Corner Protection	859	1092

HY-PRO® CARB Ball End

HP421BN		Inch/ Metric	2		Carbide	TiAlN	3/64 - 1" 1mm-25mm	Ball End	860- 861	1093- 1094
HP441BN		Inch/ Metric	4		Carbide	TiAlN	3/64 - 1" 1mm-25mm	Ball End	860- 861	1093- 1094
HP416		Inch/ Metric	2		Carbide	TiAlN	1/32 - 1/2" 1mm-25mm	Ball End	862	1095- 1096
HP418		Inch/ Metric	2		Carbide	TiAlN	3/32 - 3/8 1mm-12mm	Ball End, Pencil Neck	863	1097- 1098
HP419		Inch/ Metric	2		Carbide	TiAlN	1/32 - 3/16 0.5mm-6mm	Ball End, Long Neck	864	1099- 1100
HP419L		Metric	2		Carbide	TiAlN	0.6mm - 3mm	Ball End, Long Neck	865	1099- 1100
HP413		Inch/ Metric	2		Carbide	TiAlN	1/32 - 3/16 1mm-6mm	Ball End	866	1099- 1100

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010 1018	1035 1045	1065	4140 4340													

HY-PRO® CARB Square End

HP421	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HP441	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HP460	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HP450	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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HP410	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HP411	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		
HP455	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	





HY-PRO® CARB Ball End

HP421BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HP441BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HP416	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
HP418	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
HP419	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		
HP419L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		
HP413	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>		






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List	Item	Inch/Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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HY-PRO® CARB Corner Radius

HP432		Inch/Metric	2		Carbide	TiAlN	1/8 - 1" 3mm-12mm	Corner Radius	867-868	1101-1104
HP434		Inch/Metric	4		Carbide	TiAlN	1/8 - 1" 3mm-12mm	Corner Radius	867-868	1102-1104
HP433		Metric	2		Carbide	TiAlN	3mm - 12mm	Corner Radius	869	1101-1104
HP435		Metric	4		Carbide	TiAlN	3mm - 12mm	Corner Radius	870	1102-1104

Square & Corner Radius

400		Inch/Metric	4		Carbide	Bright*	1/4 - 1" 6mm-25mm	Roughy Mills	871	1112-1113
415		Inch			Carbide	Bright*	1/8 - 1"	Toughy Mills, Standard Cut	872	-
415C		Inch			Carbide	Bright*	1/8 - 1"	Toughy Mills, Coarse Cut	872	-
402		Inch/Metric	2		Carbide	TiAlN, TiCN, Bright*	1/32 - 1" 0.5mm-25mm	General Purpose	873-875	1105-1106
403		Inch/Metric	3		Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	General Purpose	873-875	1105-1106
404		Inch/Metric	4		Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	General Purpose	873-875	1107-1108
408		Inch	Multiple		Carbide	Bright*	1/8 - 1"	Slow Spiral	876	1107-1108
409		Inch	4		Carbide	Bright*	1/16 - 1"	Slow Spiral	876	1107-1108
452		Inch	2		Carbide	TiAlN, Bright*	1/16 - 1"	Plus Tolerance	877	1105-1106
454		Inch	4		Carbide	Bright*	1/16 - 1"	Plus Tolerance	877	1107-1108
412		Inch/Metric	2		Carbide	Bright*	1/32 - 3/4" 1mm-12mm	Stub Length	878-879	1105-1106
414		Inch/Metric	4		Carbide	TiAlN, Bright*	1/32 - 3/4" 1mm-12mm	Stub Length	878-879	1107-1108
462		Inch/Metric	2		Carbide	TiCN, TiAlN, Bright*	1/8 - 1" 3mm-25mm	Long Length	880-881	1105-1106
464		Inch/Metric	4		Carbide	TiCN, TiAlN, Bright*	1/8 - 1" 3mm-25mm	Long Length	880-881	1107-1108
482		Inch/Metric	2		Carbide	TiCN, TiAlN, Bright*	1/8 - 1" 3mm-25mm	Extra-Long Length	882-883	1105-1106
484		Inch/Metric	4		Carbide	TiCN, TiAlN, Bright*	1/8 - 1" 3mm-25mm	Extra-Long Length	882-883	1107-1108

* Other coatings are available on request.

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

HY-PRO® CARB Corner Radius

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HP434	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
HP433	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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Square & Corner Radius

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List	Item	Inch/Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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Square & Corner Radius

495		Inch	2		Carbide	Bright*	1/8 - 1"	Corner Radius	884	1105-1106
496		Inch	4		Carbide	TiALN, Bright*	1/8 - 1"	Corner Radius	884	1107-1108

Square End

455C		Inch	5		Carbide	TiCN, TiALN, Bright*	1/8 - 1"	Corner Protection	885	1107-1108
460C		Inch/Metric	3		Carbide	Bright*	1/8 - 1" 6mm - 25mm	High Helix	886	1105-1106
445		Inch/Metric	3		Carbide	Bright*	1/16 - 1" 1mm-20mm		887	1105-1106
461		Inch/Metric	6		Carbide	TiALN, Bright*	1/8 - 1" 3mm-25mm		888	1107-1108
447		Inch	4		Carbide	TiALN, Bright*	1/16 - 1"	RHC/LHS	889	1107-1108
492		Inch	2		Carbide	Bright*	0.015 - 0.060	Miniature	890	1114
494		Inch	4		Carbide	Bright*	0.015 - 0.060	Miniature	890	1114

Ball End

402BN		Inch/Metric	2		Carbide	TiAIN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	891-893	1110
403BN		Inch/Metric	3		Carbide	TiAIN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	891-893	1110
404BN		Inch/Metric	4		Carbide	TiAIN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	891-893	1111
452BN		Inch	2		Carbide	Bright*	1/16 - 1"	Ball End, Plus Tolerance	894	1110
412BN		Inch/Metric	2		Carbide	TiALN, Bright*	1/32 - 3/4" 1mm - 12mm	Ball End, Stub Length	895-896	1110
414BN		Inch/Metric	4		Carbide	TiCN, TiALN, Bright*	1/32 - 3/4" 1mm - 12mm	Ball End, Stub Length	895-896	1111
462BN		Inch/Metric	2		Carbide	TiCN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Long Length	897	1110
464BN		Inch/Metric	4		Carbide	TiCN, TiALN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Long Length	897	1111
482BN		Inch/Metric	2		Carbide	TiALN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Extra Long Length	898-899	1110
484BN		Inch/Metric	4		Carbide	TiALN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Extra Long Length	898-899	1111
497		Inch/Metric	2		Carbide	Bright*	1/8 - 1" 3mm-20mm	Ball End, Long Shank	900	1109

* Other coatings are available on request.



List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Square & Corner Radius

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Square End

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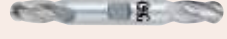


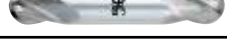
Ball End

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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Double End

442		Inch	2		Carbide	TiALN, Bright*	1/8 - 1/2"		901	1105- 1106
444		Inch	4		Carbide	TiALN, Bright*	1/8 - 1/2"		901	1107- 1108
422		Inch	2		Carbide	TiALN, Bright*	1/32 - 1/2"	Stub Length	902	1105- 1106
423		Inch	3		Carbide	TiALN, Bright*	1/32 - 1/2"	Stub Length	902	1105- 1106
424		Inch	4		Carbide	TiALN, Bright*	1/32 - 1/2"	Stub Length	902	1107- 1108
442BN		Inch	2		Carbide	Bright*	1/8 - 1/2"	Ball End	903	1110
444BN		Inch	4		Carbide	TiALN, Bright*	1/8 - 1/2"	Ball End	903	1111
422BN		Inch	2		Carbide	TiALN, Bright*	1/32 - 1/2"	Ball End, Stub Length	904	1110
423BN		Inch	3		Carbide	Bright*	1/32 - 1/2"	Ball End, Stub Length	904	1110
424BN		Inch	4		Carbide	TiALN, Bright*	1/32 - 1/2"	Ball End, Stub Length	904	1111

* Other coatings are available on request.

List	Item	Inch/ Metric	Length of Cut	Material	Coating	Size Range	Features	Product Page
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Carbide Routers

500		Inch		Carbide	Bright	3/32 - 1/2"	2 Flute, Straight	905
502		Inch		Carbide	Bright	3/32 - 1/2"	3 Flute, Straight	905
640		Inch		Carbide	Bright	1/16 - 1/2"	Fiberglass Routers, Diamond Cut	906

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC




Double End

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good best

List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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EXOMINI VC-10

673		Inch	2	Regular	VC-10	TiN	1/32 - 3/16"		907	1127-1128
676		Inch	4	Stub	VC-10	TiN	1/16 - 3/16"	Center Hole (smaller than 1/8)	908	1129-1130
677		Inch	4	Regular	VC-10	TiN	1/16 - 3/16"	Center Hole (smaller than 1/8)	908	1129-1130

EXOMILL VC-10

620		Inch	2	Regular	VC-10	Bright*	1/8 - 1 1/2"		909	1127-1128
621		Inch	2	Regular	VC-10	Bright*	1/8 - 1 1/2"	Ball End	909	1131
641		Inch	4,6	Regular	VC-10	Bright*	1/8 - 2"		910	1129-1130
644		Inch	4,6	Regular	VC-10	Bright*	3/8 - 1 1/2"	Ball End	911	1131
646		Inch	4,6	Long	VC-10	Bright*	1/4 - 2"		912	1129-1130
660		Inch	3,4	Regular	VC-10	Bright*	1/4 - 1"	High Helix	912	1124

HY-PRO® V

573		Inch	2	Regular	HSSE	TiCN, Bright*	1/8 - 1"		913	1125
574		Inch	4,6	Regular	HSSE	TiCN, Bright*	1/8 - 1"		914	1125-1126

* Other coatings are available on request.

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

EXOMINI VC-10

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EXOMILL VC-10

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HY-PRO® V

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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Roughing End Mills

690		Inch	Multiple	Regular	HSSE	TiN	1/4 - 2"	EXOTIN®, Center Hole	915	1123
450		Inch	Multiple	Stub, Reg., Long	HSS-Co	TiCN, Bright*	3/16 - 2"	Fine Pitch, Center Hole	916	1115
455		Inch	Multiple	Stub, Reg., Long	HSS-Co	TiCN, TiAlN	1/4 - 2"	Fine Pitch	917	1116
420		Inch	3, 4, 6	Stub	HSS-Co	Bright*	1/4 - 1 1/2"	Fine Pitch, Center Cutting	918	1115
460		Inch	4, 5, 6	Regular, Long	HSS-Co	Bright*	1/2 - 1 1/2"	Fine Pitch, Center Cutting	918	1121-1122
410		Inch	3	Stub	HSS-Co	Bright*	1/2 - 1"		919	1119
430E		Inch	3	Reg., Med., Long	HSS-Co	Bright*	3/8 - 1 1/2"		919	1118
490		Inch	Multiple	Stub, Reg., Med., Long	HSS-Co	Bright*	1/4 - 2"	General Purpose, Center Hole	920	1119
440		Inch	4, 6, 8	Reg., Long	HSS-Co	Bright*	1/2 - 2"	Ball End, General Purpose	921	1117
470		Inch	Multiple	Stub, Reg., Long	HSS-Co	Bright*	1/4 - 2"	Rough & Finish	922	1120

Single End Mills

520		Inch	2	Regular	HSS-Co	TiN, Bright*	1/8 - 2"		923	1127-1128
580		Metric	2	Regular	HSS-Co	Bright*	3mm - 50mm		924	1132
525		Inch	2	Long	HSS-Co	Bright*	3/8 - 2"		925	1127-1128
527		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1 1/4"	Reduced Neck	925	1127-1128
530		Inch	2	Regular	HSS-Co	Bright*	1/4 - 2"	High Helix	926	1127-1128
535		Inch	2	Long	HSS-Co	Bright*	1/4 - 2"	High Helix	926	1127-1128
521		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1 1/2"	Ball End	927	1131
526		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1"	Ball End, Reduced Neck	927	1131

* Other coatings are available on request.

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Roughing End Mills

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430E										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
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Single End Mills

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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Single End Multiple Flute

531		Inch	3	Regular	HSS-Co	Bright*	1/8 - 2"		928	1134
581		Metric	4, 6	Regular	HSS-Co	Bright*	3mm - 45mm	Center Hole	929	1133
536		Inch	3	Long	HSS-Co	Bright*	1/4 - 2"		930	1134
541		Inch	4, 6	Regular	HSS-Co	TiCN, TiN, TiAlN, Bright*	1/8 - 2"		931	1129- 1130
548		Inch	4	Medium	HSS-Co	TiCN, Bright*	5/8 - 1 1/2"		932	1129- 1130
546		Inch	4, 6	Long	HSS-Co	TiCN, Bright*	1/4 - 2"		932	1129- 1130
558		Inch	4, 6	Extra Long	HSS-Co	TiCN, Bright*	1/4 - 2"		933	1129- 1130
544		Inch	4	Regular	HSS-Co	Bright*	3/8 - 1 1/2"	Ball End	934	1131
540		Inch	4, 6, 8	Regular	HSS-Co	TiN, Bright*	1/8 - 2"	Center Hole	935	1129- 1130
547		Inch	4, 6, 8	Medium	HSS-Co	Bright*	1 - 2"	Center Hole	936	1129- 1130
545		Inch	4, 6, 8	Long	HSS-Co	Bright*	1/4 - 2"	Center Hole	936	1129- 1130
557		Inch	4, 6	Extra Long	HSS-Co	Bright*	1/4 - 2"	Center Hole	937	1129- 1130

Single End Tapered

591		Inch	3	Reg., Long, Extra Long	HSS-Co	Bright*	1/16 - 5/8"	1° Taper per Side	938	1135
593		Inch	3	Reg., Long, Extra Long	HSS-Co	Bright*	1/16 - 5/8"	2° Taper per Side	938	1136
594		Inch	3	Reg., Long, Extra Long	HSS-Co	Bright*	3/32 - 1/2"	3° Taper per Side	939	1136
595		Inch	3	Reg., Long, Extra Long	HSS-Co	Bright*	3/32 - 1/2"	3° Taper per Side	940	1137
596		Inch	3	Regular, Long	HSS-Co	Bright*	5/64 - 1/2"	7° Taper per Side	941	1137
597		Inch	3	Regular, Long	HSS-Co	Bright*	3/32 - 1/4"	10° Taper per Side	941	1138

* Other coatings are available on request.

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Single End Multiple Flute

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Single End Tapered

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
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Double End Mills

522		Inch	2	Regular	HSS-Co	TiN, Bright*	1/8 - 1"		942	1127- 1128
582		Metric	2	Regular	HSS-Co	Bright*	1mm - 25mm		943	1132
532		Inch	3	Regular	HSS-Co	Bright*	1/8 - 1"		944	1134
542		Inch	4	Regular	HSS-Co	TiN, Bright*	1/8 - 1"	Center Hole	945	1129- 1130
543		Inch	4	Regular	HSS-Co	Bright*	1/8 - 1"		946	1129- 1130
523		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1"	Ball End	946	1131
562		Inch	2	Stub	HSS-Co	Bright*	1/32 - 3/16"	Miniature	947	-
563		Inch	2	Regular	HSS-Co	Bright*	1/32 - 3/16"	Miniature	947	-
564		Inch	2	Long	HSS-Co	Bright*	1/16 - 3/16"	Miniature	948	-
566		Inch	4	Stub	HSS-Co	Bright*	1/16 - 3/16"	Miniature	948	-
567		Inch	4	Regular	HSS-Co	Bright*	1/16 - 3/16"	Miniature	949	-
568		Inch	4	Long	HSS-Co	Bright*	1/16 - 3/16"	Miniature	949	-
570		Inch	2	Stub	HSS-Co	Bright*	1/16 - 3/16"	Ball End, Miniature	950	-
571		Inch	2	Regular	HSS-Co	Bright*	1/16 - 3/16"	Ball End, Miniature	951	-

* Other coatings are available on request.

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC

Double End Mills
























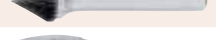
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List No.	Item	Inch/ Metric	Material	Coating	Feature	Product Page
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Carbide Burs 1/4" Shank

801		Inch, Metric	Carbide	Bright	Cylindrical, Medium Tough Cut	953
802		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Tough Cut	953
803		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Right Hand Spiral	953
901		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Tough Cut	954
902		Inch, Metric	Carbide	Bright	Cylindrical, Medium Right Hand Spiral	954
903		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Right Hand Spiral	954
804		Inch, Metric	Carbide	Bright	Pointed Tree, Medium Tough Cut	955
805		Inch, Metric	Carbide	Bright	Pointed Cone, Medium Right Hand Spiral	955
806		Inch, Metric	Carbide	Bright	Egg Shape, Medium Tough Cut	955
904		Inch, Metric	Carbide	Bright	Pointed Cone, Medium Tough Cut	956
905		Inch, Metric	Carbide	Bright	Pointed Tree, Medium Right Hand Spiral	956
906		Inch, Metric	Carbide	Bright	Egg Shape, Medium Right Hand Spiral	956
807		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Tough Cut	957
808		Inch, Metric	Carbide	Bright	90° Cone, Medium Tough Cut	957
849		Inch, Metric	Carbide	Bright	Ball Shape, Medium Right Hand Spiral	957
907		Inch, Metric	Carbide	Bright	Ball Shape, Medium Tough Cut	958
908		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Right Hand Spiral	958
949		Inch, Metric	Carbide	Bright	90° Cone, Medium Right Hand Spiral	958
850		Inch, Metric	Carbide	Bright	60° Cone, Medium Tough Cut	959
851		Inch, Metric	Carbide	Bright	Inverted Taper, Medium Tough Cut	959
852		Inch	Carbide	Bright	Flame Shape, Medium Right Hand Spiral	959
950		Inch, Metric	Carbide	Bright	Flame Shape, Medium Tough Cut	960
951		Inch, Metric	Carbide	Bright	60° Cone, Medium Right Hand Spiral	960
952		Inch	Carbide	Bright	Inverted Taper, Medium Right Hand Spiral	960





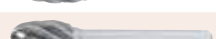




List No.	Item	Inch/ Metric	Material	Coating	Feature	Product Page
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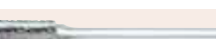



Carbide Burs 6" Long Shank

861		Inch, Metric	Carbide	Bright	Cylindrical, Medium Tough Cut	961
862		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Tough Cut	961
863		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Right Hand Spiral	961
961		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Tough Cut	962
962		Inch, Metric	Carbide	Bright	Cylindrical, Medium Right Hand Spiral	962
963		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Right Hand Spiral	962
867		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Tough Cut	963
868		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Right Hand Spiral	963
967		Inch, Metric	Carbide	Bright	Ball Shape, Medium Tough Cut	964
968		Inch, Metric	Carbide	Bright	Ball Shape, Medium Right Hand Spiral	964

Carbide Burs for Aluminum

881		Inch, Metric	Carbide	Bright	Cylindrical, Aluminum Cut	965
882		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Aluminum Cut	965
883		Inch, Metric	Carbide	Bright	Round Nose Tree, Aluminum Cut	965
885		Inch, Metric	Carbide	Bright	Flame Shape, Aluminum Cut	966
886		Inch, Metric	Carbide	Bright	Egg Shape, Aluminum Cut	966
887		Inch, Metric	Carbide	Bright	14° Included Angle, Aluminum Cut	966
888		Inch, Metric	Carbide	Bright	Ball Shape, Aluminum Cut	966

Carbide Burs 1-1/2" OAL

800		Inch, Metric	Carbide	Bright	Tough Cut	967-968
900		Inch, Metric	Carbide	Bright	Medium Right Hand Spiral	969-970
815		Inch, Metric	Carbide	Bright	Tough Cut	971
915		Inch, Metric	Carbide	Bright	Medium Right Hand Spiral	972
820		Inch, Metric	Carbide	Bright	Tough Cut	973
920		Inch, Metric	Carbide	Bright	Medium Right Hand Spiral	974



A Brand® AE-VMS

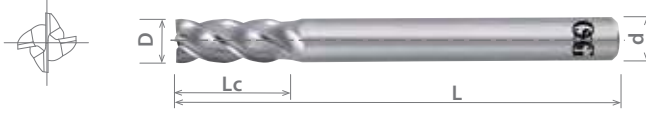
Advanced Performance Anti-Vibration Carbide End Mills

List 8200

AE-VMS, 4 Flute, Multiple Lengths

NEW	SPEED FEED P976-977	CARBIDE	DUR		Var.°	SHRINK FIT
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Milling Diameter Tolerance	
D ≤ 7/16	0/-0.008"
D > 7/16	0/-0.0012"



EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter
	D			
82000021	3/16	2	7/16	3/16
82000221	1/4	2-1/2	7/16	1/4
82000421	5/16	2-1/2	13/16	5/16
82000621	3/8	2-1/2	1/2	3/8
82000821	3/8	2-1/2	7/8	3/8
82001021	7/16	2-3/4	1	7/16
82001221	1/2	2-1/2	5/8	1/2
82001421	1/2	3	1	1/2
82001621	1/2	3-1/2	1-1/4	1/2

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter
	D			
82001821	5/8	3	3/4	5/8
82002021	5/8	3-1/2	1-1/4	5/8
82002221	5/8	5	1-5/8	5/8
82002421	3/4	3-1/2	7/8	3/4
82002621	3/4	4	1-1/2	3/4
82002821	3/4	4	1-5/8	3/4
82003021	1	4	1-1/2	1
82003221	1	5	2	1
82003421	1	5	2-1/2	1

Packed: 1 pc. Available Duarise coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels ≤200HB				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
8200	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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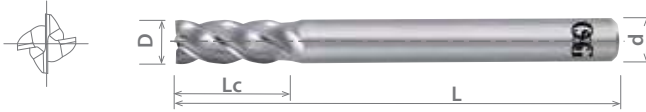


List 8205

AE-VMS, 4 Flute, Regular Length

NEW	SPEED FEED P976-977	CARBIDE	DUR		Var.°	SHRINK FIT
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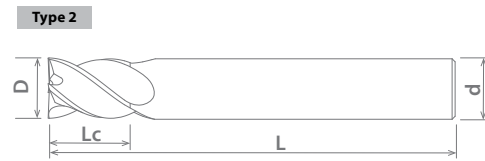
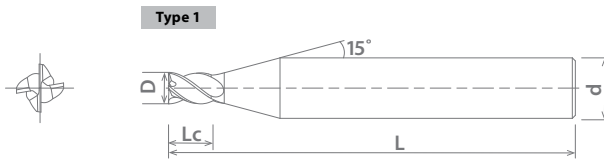
Milling Diameter Tolerance	
D ≤ 12mm	0/-0.020mm
D > 12mm	0/-0.030mm



EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	Type
	D	L	Lc	d	
8555830	3	60	8	6	1
8555840	4	60	11	6	1
8555850	5	60	13	6	1
8555860	6	60	13	6	2

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	Type
	D	L	Lc	d	
8555880	8	70	19	8	2
8555900	10	80	22	10	2
8555920	12	90	26	12	2

Packed: 1 pc. Available Duarise coating only.



List No.	Work Material																	
	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels ≤200HB			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
8205	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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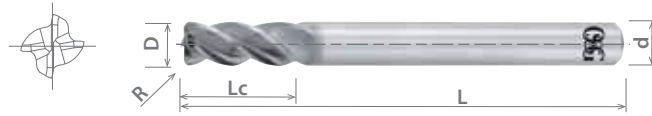


A Brand® AE-CR-VMS

Advanced Performance Anti-Vibration Carbide End Mills

List 8210

AE-CR-VMS, 4 Flute, Multiple Lengths, Corner Radius



NEW	SPEED FEED P978-979	CARBIDE	DUR	Var.°	SHRINK FIT
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Milling Diameter Tolerance	
D ≤ 7/16	0/-0.0008"
D > 7/16	0/-0.0012"

Radius Tolerance	
0.015 ≤ R ≤ 0.125	0/-0.0008"

EDP Number	Mill Diameter	Corner Radius	OAL	Length of Cut	Shank Diameter
	D	R	L	Lc	d
82100021	3/16	0.015	2	7/16	3/16
82100221	3/16	0.030	2	7/16	3/16
82100421	1/4	0.015	2-1/2	7/16	1/4
82100621	1/4	0.030	2-1/2	7/16	1/4
82100821	5/16	0.015	2-1/2	13/16	5/16
82101021	5/16	0.030	2-1/2	13/16	5/16
82101221	3/8	0.015	2-1/2	1/2	3/8
82101421	3/8	0.030	2-1/2	1/2	3/8
82101621	3/8	0.045	2-1/2	1/2	3/8
82101821	3/8	0.060	2-1/2	1/2	3/8
82102021	3/8	0.015	2-1/2	7/8	3/8
82102221	3/8	0.030	2-1/2	7/8	3/8
82102421	3/8	0.045	2-1/2	7/8	3/8
82102621	3/8	0.060	2-1/2	7/8	3/8
82102821	7/16	0.015	2-3/4	1	7/16
82103021	7/16	0.030	2-3/4	1	7/16
82103221	1/2	0.015	2-1/2	5/8	1/2
82103421	1/2	0.030	2-1/2	5/8	1/2
82103621	1/2	0.045	2-1/2	5/8	1/2
82103821	1/2	0.060	2-1/2	5/8	1/2
82104021	1/2	0.090	2-1/2	5/8	1/2
82104221	1/2	0.015	3	1	1/2
82104421	1/2	0.030	3	1	1/2
82104621	1/2	0.045	3	1	1/2
82104821	1/2	0.060	3	1	1/2
82105021	1/2	0.090	3	1	1/2

EDP Number	Mill Diameter	Corner Radius	OAL	Length of Cut	Shank Diameter
	D	R	L	Lc	d
82105221	1/2	0.015	3-1/2	1-1/4	1/2
82105421	1/2	0.030	3-1/2	1-1/4	1/2
82105621	1/2	0.045	3-1/2	1-1/4	1/2
82105821	1/2	0.060	3-1/2	1-1/4	1/2
82106021	1/2	0.090	3-1/2	1-1/4	1/2
82106221	5/8	0.030	3	3/4	5/8
82106421	5/8	0.060	3	3/4	5/8
82106621	5/8	0.090	3	3/4	5/8
82106821	5/8	0.125	3	3/4	5/8
82107021	5/8	0.030	3-1/2	1-1/4	5/8
82107221	5/8	0.060	3-1/2	1-1/4	5/8
82107421	5/8	0.090	3-1/2	1-1/4	5/8
82107621	5/8	0.125	3-1/2	1-1/4	5/8
82107821	3/4	0.030	3-1/2	7/8	3/4
82108021	3/4	0.060	3-1/2	7/8	3/4
82108221	3/4	0.090	3-1/2	7/8	3/4
82108421	3/4	0.125	3-1/2	7/8	3/4
82108621	3/4	0.030	4	1-1/2	3/4
82108821	3/4	0.060	4	1-1/2	3/4
82109021	3/4	0.090	4	1-1/2	3/4
82109221	3/4	0.125	4	1-1/2	3/4
82109421	1	0.030	4	1-1/2	1
82109621	1	0.060	4	1-1/2	1
82109821	1	0.090	4	1-1/2	1
82109921	1	0.125	4	1-1/2	1

Packed: 1 pc. Available Duarise coating only.



Work Material

List No.	P				Die Steels	M			K	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels ≤200HB				Aluminum	Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH					6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC
8210	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

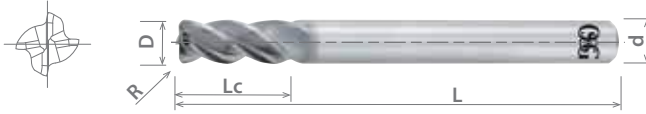




List 8215

AE-CR-VMS, 4 Flute, Regular Length, Corner Radius

NEW	SPEED FEED P978-979	CARBIDE	DUR	Var.°	SHRINK FIT
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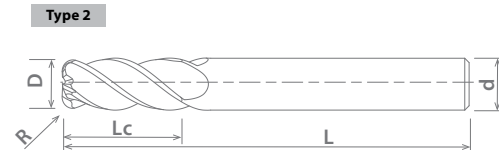
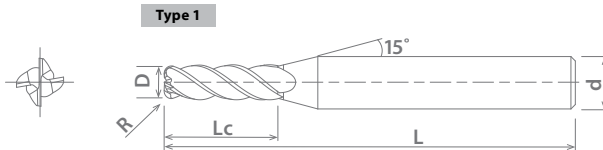
Milling Diameter Tolerance	
D ≤ 12mm	0/-0.020mm
D > 12mm	0/-0.030mm

Radius Tolerance	
0.2 ≤ R ≤ 3	0/-0.02mm

EDP Number	Mill Diameter D	Corner Radius R	OAL L	Length of Cut Lc	Shank Diameter d	Type
8556050	3	0.2	60	8	6	1
8556060	3	0.5	60	8	6	1
8556070	4	0.2	60	11	6	1
8556080	4	0.5	60	11	6	1
8556090	4	1.0	60	11	6	1
8556100	5	0.2	60	13	6	1
8556110	5	0.5	60	13	6	1
8556120	5	1.0	60	13	6	1
8556130	6	0.3	60	13	6	2
8556140	6	0.5	60	13	6	2
8556150	6	1.0	60	13	6	2
8556160	8	0.3	70	19	8	2
8556170	8	0.5	70	19	8	2
8556180	8	1.0	70	19	8	2

EDP Number	Mill Diameter D	Corner Radius R	OAL L	Length of Cut Lc	Shank Diameter d	Type
8556190	8	1.5	70	19	8	2
8556200	8	2.0	70	19	8	2
8556210	10	0.3	80	22	10	2
8556220	10	0.5	80	22	10	2
8556230	10	1.0	80	22	10	2
8556240	10	1.5	80	22	10	2
8556250	10	2.0	80	22	10	2
8556260	10	3.0	80	22	10	2
8556270	12	0.5	90	26	12	2
8556280	12	1.0	90	26	12	2
8556290	12	1.5	90	26	12	2
8556300	12	2.0	90	26	12	2
8556310	12	3.0	90	26	12	2

Packed: 1 pc. Available Duarise coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels ≤200HB			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
8215	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



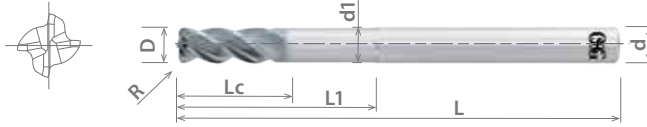


A Brand® AE-LN-CR-VMS

Advanced Performance Anti-Vibration Carbide End Mills

List 8220

AE-LN-CR-VMS, 4 Flute, Long Neck, Long Reach, Corner Radius



NEW	SPEED FEED P980	CARBIDE	DUR	Var.°	SHRINK FIT
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Milling Diameter Tolerance	
D ≤ 7/16	0/-0.0008"
D > 7/16	0/-0.0012"
Radius Tolerance	
0.015 ≤ R ≤ 0.125	0/-0.0008"

EDP Number	Mill Diameter	Corner Radius	OAL	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d1	d
82200021	1/4	0.015	4	0.375	1.250	0.235	1/4
82200221	1/4	0.030	4	0.375	1.250	0.235	1/4
82200421	1/4	0.060	4	0.375	1.250	0.235	1/4
82200621	5/16	0.015	4	0.438	1.562	0.295	5/16
82200821	5/16	0.030	4	0.438	1.562	0.295	5/16
82201021	3/8	0.015	4	0.500	1.875	0.353	3/8
82201221	3/8	0.030	4	0.500	1.875	0.353	3/8
82201421	3/8	0.045	4	0.500	1.875	0.353	3/8
82201621	3/8	0.060	4	0.500	1.875	0.353	3/8
82201821	7/16	0.015	4	0.547	1.968	0.400	7/16
82202021	7/16	0.030	4	0.547	1.968	0.400	7/16
82202221	1/2	0.015	4	0.625	2.250	0.470	1/2
82202421	1/2	0.030	4	0.625	2.250	0.470	1/2
82202621	1/2	0.045	4	0.625	2.250	0.470	1/2
82202821	1/2	0.060	4	0.625	2.250	0.470	1/2
82203021	1/2	0.090	4	0.625	2.250	0.470	1/2
82203221	5/8	0.030	4-1/8	0.780	2.250	0.588	5/8
82203421	5/8	0.060	4-1/8	0.780	2.250	0.588	5/8
82203621	5/8	0.090	4-1/8	0.780	2.250	0.588	5/8
82203821	5/8	0.125	4-1/8	0.780	2.250	0.588	5/8
82204021	3/4	0.030	5-1/4	1.000	3.250	0.705	3/4
82204221	3/4	0.060	5-1/4	1.000	3.250	0.705	3/4
82204421	3/4	0.090	5-1/4	1.000	3.250	0.705	3/4
82204621	3/4	0.125	5-1/4	1.000	3.250	0.705	3/4
82204821	1	0.030	5-1/2	1.125	3.250	0.940	1
82205021	1	0.060	5-1/2	1.125	3.250	0.940	1
82205221	1	0.090	5-1/2	1.125	3.250	0.940	1
82205421	1	0.125	5-1/2	1.125	3.250	0.940	1

Packed: 1 pc. Available Duarise coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels ≤200HB			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
8220	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 2055

5 Flute, Multiple Lengths, Corner Radius

SPEED FEED P981	CARBIDE	EXO®		Var.°
Milling Diameter Tolerance				
1/4 ≤ D ≤ 1		+0/-0.0015"		



EDP Number	EDP Number w/ Weldon Flat	Mill Diameter	Corner Radius	OAL	Length of Cut	Shank Diameter
		D	R	L	Lc	d
20552501	-	1/4	0.015	2-1/2	5/8	1/4
20552502	-	1/4	0.030	2-1/2	5/8	1/4
20552503	-	1/4	0.060	2-1/2	5/8	1/4
20553121	-	5/16	0.015	2-1/2	3/4	5/16
20553122	-	5/16	0.030	2-1/2	3/4	5/16
20553123	-	5/16	0.060	2-1/2	3/4	5/16
-	20553751	3/8	0.015	2-1/2	7/8	3/8
-	20553752	3/8	0.030	2-1/2	7/8	3/8
-	20553753	3/8	0.060	2-1/2	7/8	3/8
-	20555001	1/2	0.030	2-1/2	5/8	1/2
-	20555002	1/2	0.030	3	1	1/2
-	20555003	1/2	0.060	3	1	1/2
-	20555004	1/2	0.015	3-1/2	1-1/4	1/2
-	20555005	1/2	0.030	3-1/2	1-1/4	1/2
-	20555006	1/2	0.060	3-1/2	1-1/4	1/2
-	20555007	1/2	0.090	3-1/2	1-1/4	1/2
-	20555008	1/2	0.120	3-1/2	1-1/4	1/2
-	20556251	5/8	0.030	3-1/2	1-1/4	5/8
-	20556252	5/8	0.060	3-1/2	1-1/4	5/8
-	20556253	5/8	0.090	3-1/2	1-1/4	5/8
-	20556254	5/8	0.120	3-1/2	1-1/4	5/8
-	20557501	3/4	0.030	4	1-1/2	3/4
-	20557502	3/4	0.060	4	1-1/2	3/4
-	20557503	3/4	0.090	4	1-1/2	3/4
-	20557504	3/4	0.120	4	1-1/2	3/4
-	20551001	1	0.030	4	1-1/2	1
-	20551002	1	0.060	4	1-1/2	1
-	20551003	1	0.090	4	1-1/2	1
-	20551004	1	0.120	4	1-1/2	1

Packed: 1 pc. Available EXO® coating only.
Weldon Flat 3/8" and above.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB VGX - List VG534 (p. 847-848)

List No.	Work Material																
	P				Die Steels	M			K	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High		300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
2055	1010 1018	1035 1045	1065	4140 4340	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>				<input type="checkbox"/>		

good best





List 9510

PHX-DBT, 3 Flute, Deep Feed, Ball End



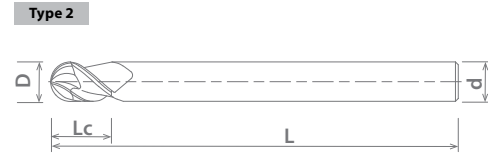
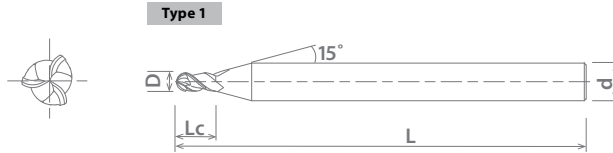
SPEED FEED P982-983	CARBIDE	EXO[®]		SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 5	+0 / -0.015mm
6 < D ≤ 20	+0.01mm / -0.005mm
Radius Tolerance	
0.5 ≤ R ≤ 10	+0.01 / -0.01mm

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	Type
	D	L	Lc	d	
3090202	1	60	1.5	6	1
3090204	2	60	3.0	6	1
3090206	3	70	4.5	6	1
3090208	4	70	6.0	6	1
3090210	5	70	7.5	6	1
3090212	6	80	9.0	6	2
3090312	6	110	9.0	6	2
3090216	8	90	12.0	8	2

EDP Number	Mill Diameter	OAL	Length of Cut	Shank Diameter	Type
	D	L	Lc	d	
3090316	8	120	12.0	8	2
3090220	10	100	15.0	10	2
3090320	10	130	15.0	10	2
3090222	12	100	18.0	12	2
3090322	12	140	18.0	12	2
3090226	16	150	24.0	16	2
3090230	20	150	30.0	20	2
3090330	20	200	30.0	20	2

Packed: 1 pc. Available EXO[®] coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB[®] WXL[®] - List 3710 (p. 738)

Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4510 (p. 767)

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9510	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best





List 9590

PHX-LN-DBT, 3 Flute, Long Neck, Ball End

SPEED FEED P982-983	CARBIDE	WXS	45°	SHANK h6
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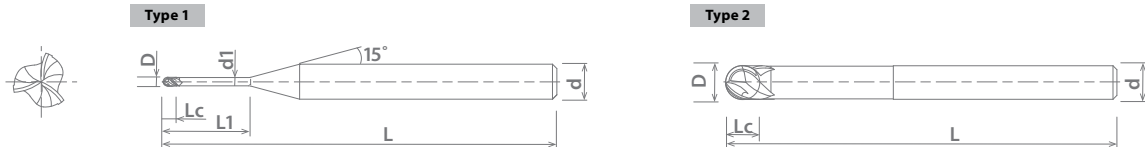
Milling Diameter Tolerance	
0.6 ≤ D ≤ 6	+0.007mm / -0.007mm

Radius Tolerance	
0.3 ≤ R ≤ 3	+0.007mm / -0.007mm



EDP Number	Mill Diameter	OAL	Length of Cut	Neck Length	Neck Diameter	Effective Neck Length (Based on Inclined Angle)						Shank Diameter	Type
						α							
						0.5°	1°	1.5°	2°	2.5°	3°		
3194901	0.6	50	0.45	1	0.55	1.02	1.05	1.08	1.11	1.14	1.17	4	1
3194902	0.6	50	0.45	2	0.55	2.06	2.12	2.18	2.26	2.33	2.42	4	1
3194903	0.6	50	0.45	3	0.55	3.09	3.19	3.29	3.41	3.53	3.66	4	1
3194904	0.6	50	0.45	4	0.55	4.12	4.26	4.4	4.56	4.72	4.9	4	1
3194906	0.6	50	0.45	6	0.55	6.19	6.4	6.62	6.86	7.11	7.39	4	1
3195004	1.0	50	0.75	4	0.95	4.26	4.50	4.74	4.96	5.18	5.39	4	1
3195006	1.0	50	0.75	6	0.95	6.39	6.72	7.03	7.32	7.95	7.88	4	1
3195008	1.0	50	0.75	8	0.95	8.50	8.92	9.28	9.62	9.98	10.36	4	1
3195010	1.0	50	0.75	10	0.95	10.61	11.09	11.51	11.92	12.37	12.85	4	1
3195012	1.0	50	0.75	12	0.95	12.71	13.25	13.71	14.12	14.49	14.83	4	1
3195014	1.0	50	0.75	14	0.95	14.81	15.40	15.90	16.34	16.73	17.82	4	1
3195016	1.0	50	0.75	16	0.95	16.90	17.54	18.07	18.54	19.53	20.31	4	1
3195106	1.5	50	1.12	6	1.45	6.37	6.70	7.00	7.28	7.54	7.82	4	1
3195108	1.5	50	1.12	8	1.45	8.49	8.89	9.25	9.58	9.93	10.30	4	1
3195110	1.5	50	1.12	10	1.45	10.60	11.07	11.48	11.88	12.32	12.79	4	1
3195112	1.5	50	1.12	12	1.45	12.70	13.23	13.69	14.09	14.46	14.80	4	1
3195116	1.5	50	1.12	16	1.45	16.89	17.52	18.05	18.51	18.93	19.31	4	1
3195206	2.0	50	1.50	6	1.95	6.35	6.65	6.94	7.21	7.46	7.73	4	1
3195208	2.0	50	1.50	8	1.95	8.46	8.85	9.20	9.52	9.85	10.21	4	1
3195210	2.0	50	1.50	10	1.95	10.57	11.03	11.43	11.82	12.24	12.70	4	1
3195212	2.0	50	1.50	12	1.95	12.67	13.19	13.64	14.12	14.63	15.19	4	1
3195214	2.0	50	1.50	14	1.95	14.77	15.34	15.86	16.42	17.02	17.67	4	1
3195216	2.0	50	1.50	16	1.95	16.86	17.48	18.08	18.72	19.41	-	4	1
3195218	2.0	60	1.50	18	1.95	18.94	19.62	20.29	21.02	21.80	-	4	1
3195220	2.0	60	1.50	20	1.95	21.03	21.76	22.51	23.18	-	-	4	1
3195222	2.0	60	1.50	22	1.95	23.13	23.89	24.50	25.03	-	-	4	1
3195312	3.0	60	2.25	12	2.85	12.61	13.10	13.57	14.08	-	-	4	1
3195316	3.0	60	2.25	16	2.85	16.77	17.38	17.01	-	-	-	4	1
3195320	3.0	60	2.25	20	2.85	20.92	21.65	-	-	-	-	4	1
3195325	3.0	60	2.25	25	2.85	26.10	-	-	-	-	-	4	1
3195416	4.0	60	3.00	16	3.85	-	-	-	-	-	-	4	2
3195420	4.0	60	3.00	20	3.85	-	-	-	-	-	-	4	2
3195425	4.0	60	3.00	25	3.85	-	-	-	-	-	-	4	2
3195520	6.0	70	4.50	20	5.85	-	-	-	-	-	-	6	2
3195530	6.0	70	4.50	30	5.85	-	-	-	-	-	-	6	2

Packed: 1 pc. Available WXS[®] coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9590	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 9581

PHX-PC-DBT, 3 Flute, Pencil-Neck, Deep Feed, Ball End



SPEED FEED P982-983	CARBIDE	WXS		SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 12	+ 0 / -0.015mm

Radius Tolerance	
0.5 ≤ R ≤ 6	+0.01mm / -0.01mm

EDP Number	Mill Diameter	Overall Length	Length of Cut	Min. Neck Diameter	Max. Neck Diameter	Neck Length	Effective Draft Angle	Neck Draft Angle	Shank Diameter	Type
	D	L	Lc	d1	d2	L1	α	β	d	
3095125	1.0	60	1.50	0.95	1.20	16.0	0.38°	0.5°	6	1
3095141	1.0	60	1.50	0.95	1.10	6.0	0.56°	1.0°	6	1
3095142	1.0	60	1.50	0.95	1.17	8.0	0.68°	1.0°	6	1
3095143	1.0	60	1.50	0.95	1.24	10.0	0.75°	1.0°	6	1
3095144	1.0	60	1.50	0.95	1.31	12.0	0.79°	1.0°	6	1
3095145	1.0	60	1.50	0.95	1.45	16.0	0.85°	1.0°	6	1
3095146	1.0	60	1.50	0.95	1.59	20.0	0.88°	1.0°	6	1
3095147	1.0	70	1.50	0.95	1.77	25.0	0.91°	1.0°	6	1
3095155	1.0	60	1.50	0.95	1.65	15.0	1.30°	1.5°	6	1
3095157	1.0	70	1.50	0.95	2.18	25.0	1.39°	1.5°	6	1
3095191	1.0	70	1.50	0.95	5.43	30.0	4.30°	4.5°	6	1
3095211	1.5	60	2.25	1.45	1.58	6.0	0.45°	1.0°	6	1
3095212	1.5	60	2.25	1.45	1.68	9.0	0.65°	1.0°	6	1
3095213	1.5	60	2.25	1.45	1.79	12.0	0.74°	1.0°	6	1
3095214	1.5	60	2.25	1.45	1.89	15.0	0.80°	1.0°	6	1
3095215	1.5	60	2.25	1.45	2.10	21.0	0.86°	1.0°	6	1
3095216	1.5	70	2.25	1.45	2.41	30.0	0.90°	1.0°	6	1
3095223	2.0	60	3.00	1.95	2.24	20.0	0.38°	0.5°	6	1
3095241	2.0	60	3.00	1.95	2.19	10.0	0.62°	1.0°	6	1
3095242	2.0	60	3.00	1.95	2.36	15.0	0.76°	1.0°	6	1
3095243	2.0	60	3.00	1.95	2.54	20.0	0.82°	1.0°	6	1
3095244	2.0	70	3.00	1.95	2.71	25.0	0.86°	1.0°	6	1
3095245	2.0	80	3.00	1.95	2.89	30.0	0.89°	1.0°	6	1
3095246	2.0	80	3.00	1.95	3.24	40.0	0.92°	1.0°	6	1
3095247	2.0	100	3.00	1.95	3.59	50.0	0.93°	1.0°	6	1
3095251	2.0	80	3.00	1.95	3.88	40.0	1.39°	1.5°	6	1
3095262	2.0	100	3.00	1.95	5.81	60.3	1.94°	2.0°	6	2
3095273	2.0	80	3.00	1.95	5.75	41.2	2.85°	3.0°	6	2
3095281	2.0	80	3.00	1.95	5.67	30.0	3.95°	3.8°	6	2
3095321	3.0	80	4.50	2.90	3.17	20.0	0.27°	0.5°	6	1
3095341	3.0	80	4.50	2.90	3.44	20.0	0.69°	1.0°	6	1
3095342	3.0	80	4.50	2.90	3.61	25.0	0.76°	1.0°	6	1
3095343	3.0	80	4.50	2.90	3.79	30.0	0.80°	1.0°	6	1
3095344	3.0	80	4.50	2.90	4.13	40.0	0.85°	1.0°	6	1
3095345	3.0	100	4.50	2.90	4.48	50.0	0.88°	1.0°	6	1
3095346	3.0	100	4.50	2.90	4.83	60.0	0.90°	1.0°	6	1
3095356	3.0	100	4.50	2.90	5.74	60.8	1.45°	1.5°	6	2
3095365	3.0	100	4.50	2.90	5.70	46.5	1.92°	2.0°	6	2
3095374	3.0	80	4.50	2.90	5.60	32.1	2.81°	3.0°	6	2
3095421	4.0	80	6.00	3.90	4.23	25.0	0.29°	0.5°	6	1
3095441	4.0	80	6.00	3.90	4.73	30.0	0.76°	1.0°	6	1
3095442	4.0	80	6.00	3.90	5.08	40.0	0.82°	1.0°	6	1
3095443	4.0	100	6.00	3.90	5.43	50.0	0.86°	1.0°	6	1
3095444	4.0	100	6.00	3.90	5.76	61.3	0.97°	1.0°	6	2
3095445	4.0	120	6.00	3.90	6.48	80.0	0.92°	1.0°	8	1
3095453	4.0	80	6.00	3.90	5.70	42.2	1.43°	1.5°	6	2
3095454	4.0	120	6.00	3.90	7.69	80.4	1.47°	1.5°	8	2
3095462	4.0	120	6.00	3.90	7.63	61.3	1.94°	2.0°	8	2
3095472	4.0	100	6.00	3.90	7.50	42.2	2.85°	3.0°	8	2
3095541	5.0	100	7.50	4.90	5.86	35.0	0.76°	1.0°	8	1
3095542	5.0	100	7.50	4.90	6.38	50.0	0.84°	1.0°	8	1
3095543	5.0	130	7.50	4.90	7.08	70.0	0.89°	1.0°	8	1

Packed: 1 pc. Available WXS[®] coating only.





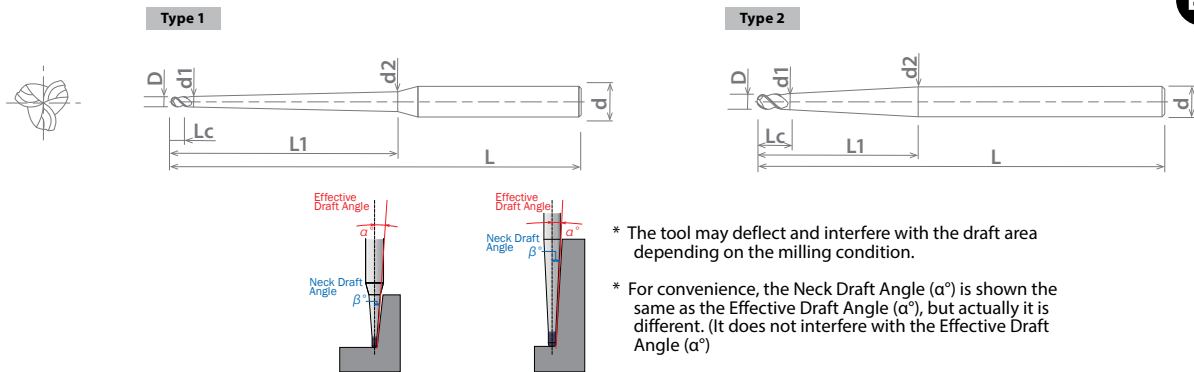
List 9581 (Continued)

SPEED FEED P982-983 CARBIDE WXS 45° SHANK h6

PHX-PC-DBT, 3 Flute, Pencil-Neck, Deep Feed, Ball End

EDP Number	Mill Diameter	Overall Length	Length of Cut	Min. Neck Diameter	Max. Neck Diameter	Neck Length	Effective Draft Angle	Neck Draft Angle	Shank Diameter	Type
	D	L	Lc	d1	d2	L1	α	β	d	
3095544	5.0	130	7.50	4.90	7.72	90.4	0.98°	1.0°	8	2
3095553	5.0	130	7.50	4.90	7.64	61.8	1.45°	1.5°	8	2
3095562	5.0	130	7.50	4.90	7.56	47.5	1.91°	2.0°	8	2
3095641	6.0	100	9.00	5.90	6.98	40.0	0.77°	1.0°	8	1
3095642	6.0	100	9.00	5.90	7.33	50.0	0.82°	1.0°	8	1
3095643	6.0	130	9.00	5.90	7.69	62.3	0.97°	1.0°	8	2
3095644	6.0	130	9.00	5.90	8.72	90.0	0.90°	1.0°	10	1
3095651	6.0	100	9.00	5.90	7.60	43.2	1.43°	1.5°	8	2
3095653	6.0	130	9.00	5.90	9.59	81.4	1.47°	1.5°	10	2
3095661	6.0	100	9.00	5.90	7.50	33.6	1.87°	2.0°	8	2
3095662	6.0	130	9.00	5.90	9.49	62.3	1.94°	2.0°	10	2
3095841	8.0	120	12.00	7.90	9.22	50.0	0.77°	1.0°	10	1
3095842	8.0	120	12.00	7.90	9.62	63.3	0.97°	1.0°	10	2
3095843	8.0	150	12.00	7.90	10.62	90.0	0.88°	1.0°	12	1
3095844	8.0	180	12.00	7.90	11.62	120.6	0.99°	1.0°	12	2
3095851	8.0	120	12.00	7.90	9.50	44.2	1.43°	1.5°	10	2
3095853	8.0	150	12.00	7.90	11.49	82.4	1.47°	1.5°	12	2
3095862	8.0	120	12.00	7.90	11.35	63.3	1.94°	2.0°	12	2
3096041	10.0	120	15.00	9.90	11.56	64.3	0.97°	1.0°	12	2
3096042	10.0	160	15.00	9.90	12.16	80.0	0.83°	1.0°	16	1
3096043	10.0	160	15.00	9.90	12.86	100.0	0.87°	1.0°	16	1
3096044	10.0	180	15.00	9.90	13.56	120.0	0.89°	1.0°	16	1
3096045	10.0	200	15.00	9.90	14.26	140.0	0.91°	1.0°	16	1
3096046	10.0	220	15.00	9.90	14.96	160.0	0.92°	1.0°	16	1
3096051	10.0	120	15.00	9.90	11.40	45.2	1.43°	1.5°	12	2
3096053	10.0	180	15.00	9.90	15.38	121.6	1.48°	1.5°	16	2
3096061	10.0	120	15.00	9.90	11.24	35.6	1.87°	2.0°	12	2
3096064	10.0	160	15.00	9.90	15.21	92.9	1.96°	2.0°	16	2
3096241	12.0	120	18.00	11.90	13.36	60.0	0.73°	1.0°	16	1
3096242	12.0	180	18.00	11.90	14.76	100.0	0.85°	1.0°	16	1
3096243	12.0	180	18.00	11.90	15.48	122.6	0.99°	1.0°	16	2
3096244	12.0	220	18.00	11.90	16.85	160.0	0.91°	1.0°	20	1
3096254	12.0	220	18.00	11.90	19.27	160.8	1.48°	1.5°	20	2

Packed: 1 pc. Available WXS[®] coating only.



List No.	Work Material															
	P					M			K	N		S	H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels		
	Low	Med.	High			300	400	17-4 PH			6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
9581	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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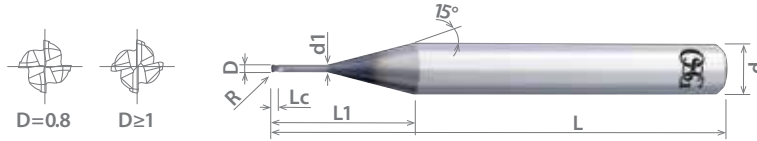




List 9592

PHX-LN-CRE, 4 Flute, Pencil-Neck, Deep Feed, Corner Radius, Rib Processor

SPEED FEED P986	CARBIDE	WXS			SHANK h6
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Milling Diameter Tolerance	
0.8 ≤ D ≤ 3	+0 / -0.01mm
Radius Tolerance	
0.4 ≤ R ≤ 1.5	+0.007mm / -0.007mm
Neck Length Tolerance	
0.8 ≤ D ≤ 3	+0 / -0.1mm

EDP Number	Mill Diameter D	Corner Radius R	Overall Length L	Length of Cut Lc	Neck Length L1	Neck Dia. d1	Effective Neck Length (le)			Shank Diameter d
							α			
							0°	0.5°	1°	
3190800	0.8	0.1	50	0.32	2	0.75	2.00	2.16	2.32	4
3190801	0.8	0.1	50	0.32	4	0.75	4.00	4.29	4.57	4
3190802	0.8	0.1	50	0.32	6	0.75	6.00	6.42	6.78	4
3190803	0.8	0.1	50	0.32	8	0.75	8.00	8.54	8.97	4
3191006	1.0	0.1	50	0.40	4	0.95	4.00	4.29	4.56	4
3191007	1.0	0.1	50	0.40	6	0.95	6.00	6.41	6.77	4
3191008	1.0	0.1	50	0.40	8	0.95	8.00	8.53	8.96	4
3191009	1.0	0.1	50	0.40	10	0.95	10.00	10.63	11.13	4
3191010	1.0	0.1	50	0.40	12	0.95	12.00	12.73	13.29	4
3191011	1.0	0.2	50	0.40	4	0.95	4.00	4.29	4.56	4
3191012	1.0	0.2	50	0.40	6	0.95	6.00	6.41	6.77	4
3191013	1.0	0.2	50	0.40	8	0.95	8.00	8.53	8.96	4
3191014	1.0	0.2	50	0.40	10	0.95	10.00	10.63	11.13	4
3191015	1.0	0.2	50	0.40	12	0.95	12.00	12.73	13.29	4
3191018	1.0	0.3	50	0.40	4	0.95	4.00	4.29	4.56	4
3191019	1.0	0.3	50	0.40	6	0.95	6.00	6.41	6.77	4
3191501	1.5	0.1	50	0.60	4	1.45	4.00	4.29	4.56	4
3191503	1.5	0.1	50	0.60	8	1.45	8.00	8.53	8.96	4
3191505	1.5	0.1	50	0.60	12	1.45	12.00	12.73	13.29	4
3191506	1.5	0.2	50	0.60	4	1.45	4.00	4.29	4.56	4
3191507	1.5	0.2	50	0.60	6	1.45	6.00	6.41	6.77	4
3191508	1.5	0.2	50	0.60	8	1.45	8.00	8.53	8.96	4
3192001	2.0	0.1	50	0.80	8	1.95	8.00	8.53	8.96	4
3192002	2.0	0.1	50	0.80	10	1.95	10.00	10.63	11.13	4
3192003	2.0	0.1	50	0.80	12	1.95	12.00	12.73	13.29	4
3192004	2.0	0.1	50	0.80	16	1.95	16.00	16.92	17.57	4
3192013	2.0	0.3	50	0.80	8	1.95	8.00	8.53	8.96	4
3192015	2.0	0.3	50	0.80	12	1.95	12.00	12.73	13.29	4
3192019	2.0	0.5	50	0.80	6	1.95	6.00	6.41	6.77	4
3192020	2.0	0.5	50	0.80	8	1.95	8.00	8.53	8.96	4
3192021	2.0	0.5	50	0.80	10	1.95	10.00	10.63	11.13	4
3192022	2.0	0.5	50	0.80	12	1.95	12.00	12.73	13.29	4
3193008	3.0	0.3	50	1.20	12	2.85	12.00	12.73	13.29	4

Packed: 1 pc. Available WXS[®] coating only.
Center Cutting applies only to diameter sizes over 0.8mm.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4592 (p. 775-777)

Work Material

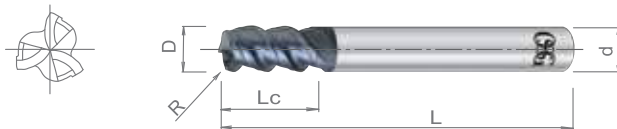
List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
9592	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

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List 9575

PHX-DFR, 3 Flute, Deep Feed, Corner Radius



SPEED FEED P984-985	CARBIDE	WXS	55°	SHANK h6
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Milling Diameter Tolerance	
6 ≤ D ≤ 20	+0.01mm / -0.01mm
Radius Tolerance	
3 ≤ R ≤ 10	+0.03mm / -0.03mm

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
3090512	6	1.5	80	12	6
3090516	8	2.0	90	16	8
3090520	10	2.0	100	20	10
3090522	12	2.0	120	24	12
3090526	16	3.0	130	32	16
3090530	20	3.0	150	40	20

Packed: 1 pc. Available WXS[®] coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB[®] WXL[®] - List 3771 (p. 762)

Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4571 (p. 771)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9575	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

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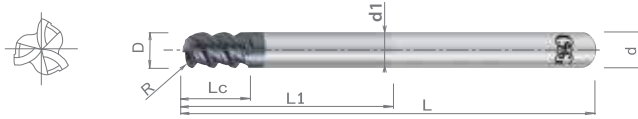




List 9576

PHX-LN-DFR, 3 Flute, Long Neck, Deep Feed, Corner Radius

SPEED FEED P984-985	CARBIDE	WXS		SHANK h6
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Milling Diameter Tolerance	
4 ≤ D ≤ 16	+0.01mm / -0.01mm
Radius Tolerance	
2 ≤ R ≤ 8	+0.03mm / -0.03mm

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	D1	d
3092041	4	1.0	70	6	20	3.8	4
3092042	4	1.0	70	6	28	3.8	4
3092061	6	1.5	80	9	30	5.8	6
3092062	6	1.5	90	9	42	5.8	6
3092063	6	1.5	100	9	54	5.8	6
3092081	8	2.0	85	12	40	7.7	8
3092082	8	2.0	100	12	56	7.7	8
3092083	8	2.0	120	12	72	7.7	8
3092101	10	2.0	100	15	50	9.7	10
3092102	10	2.0	120	15	70	9.7	10
3092103	10	2.0	140	15	90	9.7	10
3092121	12	2.0	110	18	60	11.7	12
3092122	12	2.0	135	18	84	11.7	12
3092123	12	2.0	160	18	108	11.7	12
3092161	16	3.0	140	24	80	15.5	16
3092162	16	3.0	175	24	120	15.5	16

Packed: 1 pc. Available WXS[®] coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9576	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

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List 9580

PHX-PC-DFR, 3 Flute, Pencil Neck, Deep Feed, Corner Radius

SPEED FEED P984-985	CARBIDE	WXS	55°	SHANK h6
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Milling Diameter Tolerance	
2 ≤ D ≤ 12	+0 / -0.015mm

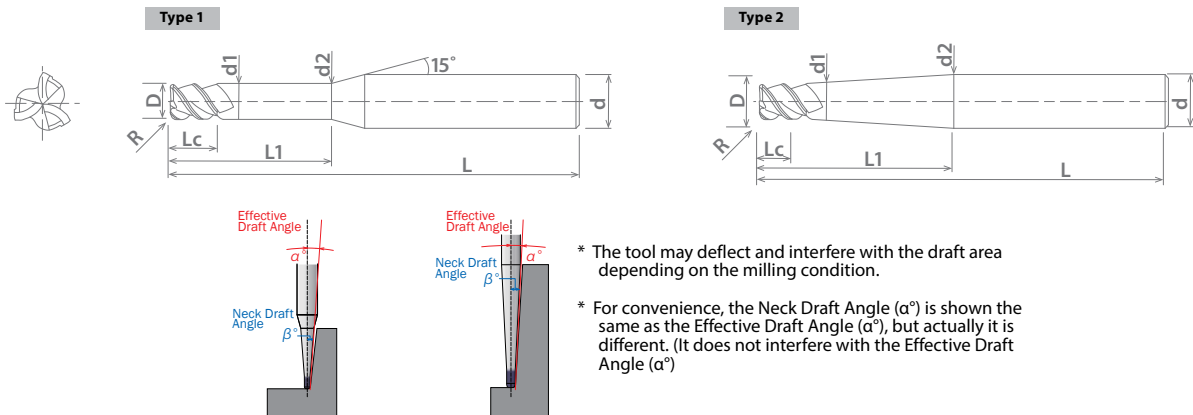
Radius Tolerance	
0.5 ≤ R ≤ 2	+0.03mm / -0.03mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Min. Neck Diameter	Maximum Neck Diameter	Neck Length	Effective Draft Angle	Neck Draft Angle	Shank Diameter	Type
	D	R	L	Lc	d1	d2	L1	α	β	d	
3097223	2	0.5	60	3.0	1.95	2.25	20.0	0.36°	0.5°	6	1
3097224	2	0.5	70	3.0	1.95	2.33	25.0	0.39°	0.5°	6	1
3097225	2	0.5	80	3.0	1.95	2.42	30.0	0.41°	0.5°	6	1
3097226	2	0.5	80	3.0	1.95	2.51	35.0	0.42°	0.5°	6	1
3097227	2	0.5	80	3.0	1.95	2.60	40.0	0.43°	0.5°	6	1
3097241	2	0.5	60	3.0	1.95	2.19	10.0	0.59°	1°	6	1
3097242	2	0.5	60	3.0	1.95	2.37	15.0	0.73°	1°	6	1
3097243	2	0.5	60	3.0	1.95	2.54	20.0	0.80°	1°	6	1
3097244	2	0.5	70	3.0	1.95	2.72	25.0	0.84°	1°	6	1
3097245	2	0.5	80	3.0	1.95	2.89	30.0	0.87°	1°	6	1
3097246	2	0.5	80	3.0	1.95	3.07	35.0	0.89°	1°	6	1
3097247	2	0.5	80	3.0	1.95	3.24	40.0	0.90°	1°	6	1
3097248	2	0.5	100	3.0	1.95	3.42	45.0	0.91°	1°	6	1
3097249	2	0.5	100	3.0	1.95	3.59	50.0	0.92°	1°	6	1
3097251	2	0.5	80	3.0	1.95	3.89	40.0	1.37°	1.5°	6	1
3097262	2	0.5	100	3.0	1.95	6.00	60.3	2.00°	2°	6	2
3097273	2	0.5	100	3.0	1.95	6.00	41.2	3.00°	3°	6	2
3097321	3	0.8	80	4.5	2.90	3.17	20.0	0.25°	0.5°	6	1
3097341	3	0.8	80	4.5	2.90	3.44	20.0	0.66°	1°	6	1
3097342	3	0.8	80	4.5	2.90	3.62	25.0	0.73°	1°	6	1
3097343	3	0.8	80	4.5	2.90	3.79	30.0	0.78°	1°	6	1

Packed: 1 pc. Available WXS[®] coating only.

continued on next page **EP**



List No.	Work Material															
	P					M			K	N		S	H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels		
	Low	Med.	High	4140 4340		300	400	17-4 PH			6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
9580	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 9580 (Continued)

PHX-PC-DFR, 3 Flute, Pencil Neck, Deep Feed, Corner Radius



SPEED FEED P984-985	CARBIDE	WXS		55°	SHANK h6
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Milling Diameter Tolerance	
2 ≤ D ≤ 12	+0 / -0.015mm

Radius Tolerance	
0.5 ≤ R ≤ 2	+0.03mm / -0.03mm

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Min. Neck Diameter	Maximum Neck Diameter	Neck Length	Effective Draft Angle	Neck Draft Angle	Shank Diameter	Type
	D	R	L	Lc	d1	d2	L1	α	β	d	
3097344	3	0.8	80	4.5	2.90	4.14	40.0	0.83°	1°	6	1
3097345	3	0.8	100	4.5	2.90	4.49	50.0	0.87°	1°	6	1
3097346	3	0.8	100	4.5	2.90	4.84	60.0	0.89°	1°	6	1
3097356	3	0.8	100	4.5	2.90	6.00	60.8	1.50°	1.5°	6	2
3097365	3	0.8	100	4.5	2.90	6.00	46.5	2.00°	2°	6	2
3097374	3	0.8	100	4.5	2.90	6.00	32.1	3.00°	3°	6	2
3097421	4	1.0	80	6.0	3.90	4.23	25.0	0.28°	0.5°	6	1
3097422	4	1.0	80	6.0	3.90	4.32	30.0	0.31°	0.5°	6	1
3097423	4	1.0	80	6.0	3.90	4.41	35.0	0.34°	0.5°	6	1
3097424	4	1.0	80	6.0	3.90	4.49	40.0	0.36°	0.5°	6	1
3097425	4	1.0	80	6.0	3.90	4.58	45.0	0.38°	0.5°	6	1
3097426	4	1.0	100	6.0	3.90	4.67	50.0	0.39°	0.5°	6	1
3097441	4	1.0	80	6.0	3.90	4.74	30.0	0.73°	1°	6	1
3097442	4	1.0	80	6.0	3.90	5.09	40.0	0.80°	1°	6	1
3097443	4	1.0	100	6.0	3.90	5.44	50.0	0.84°	1°	6	1
3097444	4	1.0	100	6.0	3.90	6.00	61.3	1.00°	1°	6	2
3097453	4	1.0	80	6.0	3.90	6.00	42.2	1.50°	1.5°	6	2
3097454	4	1.0	120	6.0	3.90	8.00	80.4	1.50°	1.5°	8	2
3097461	4	1.0	80	6.0	3.90	6.00	32.6	2.00°	2°	6	2
3097462	4	1.0	120	6.0	3.90	8.00	61.3	2.00°	2°	8	2
3097472	4	1.0	100	6.0	3.90	8.00	42.2	3.00°	3°	8	2
3097627	6	1.5	130	9.0	5.90	6.79	60.0	0.39°	0.5°	8	1
3097641	6	1.5	100	9.0	5.90	6.98	40.0	0.73°	1°	8	1
3097642	6	1.5	100	9.0	5.90	7.33	50.0	0.79°	1°	8	1
3097643	6	1.5	130	9.0	5.90	8.00	62.3	1.00°	1°	8	2
3097651	6	1.5	100	9.0	5.90	8.00	43.2	1.50°	1.5°	8	2
3097653	6	1.5	130	9.0	5.90	10.00	81.4	1.50°	1.5°	10	2
3097661	6	1.5	100	9.0	5.90	8.00	33.6	2.00°	2°	8	2
3097662	6	1.5	130	9.0	5.90	10.00	62.3	2.00°	2°	10	2
3097826	8	2.0	150	12.0	7.90	9.09	80.0	0.40°	0.5°	10	1
3097841	8	2.0	120	12.0	7.90	9.23	50.0	0.73°	1°	10	1
3097842	8	2.0	150	12.0	7.90	10.00	63.3	1.00°	1°	10	2
3097844	8	2.0	180	12.0	7.90	12.00	120.6	1.00°	1°	12	2
3097851	8	2.0	120	12.0	7.90	10.00	44.2	1.50°	1.5°	10	2
3097853	8	2.0	150	12.0	7.90	12.00	82.4	1.50°	1.5°	12	2
3097861	8	2.0	120	12.0	7.90	10.00	34.6	2.00°	2°	10	2
3097862	8	2.0	120	12.0	7.90	12.00	63.3	2.00°	2°	12	2
3098026	10	2.0	150	15.0	9.90	11.38	100.0	0.40°	0.5°	12	1
3098041	10	2.0	120	15.0	9.90	12.00	64.3	1.00°	1°	12	2
3098042	10	2.0	160	15.0	9.90	12.17	80.0	0.80°	1°	16	1
3098043	10	2.0	160	15.0	9.90	12.87	100.0	0.84°	1°	16	1
3098044	10	2.0	180	15.0	9.90	13.57	120.0	0.87°	1°	16	1
3098045	10	2.0	200	15.0	9.90	14.26	140.0	0.88°	1°	16	1
3098046	10	2.0	220	15.0	9.90	14.96	160.0	0.90°	1°	16	1
3098051	10	2.0	120	15.0	9.90	12.00	45.2	1.50°	1.5°	12	2
3098053	10	2.0	180	15.0	9.90	16.00	121.6	1.50°	1.5°	16	2
3098061	10	2.0	120	15.0	9.90	12.00	35.6	2.00°	2°	12	2

Packed: 1 pc. Available WXS[®] coating only.





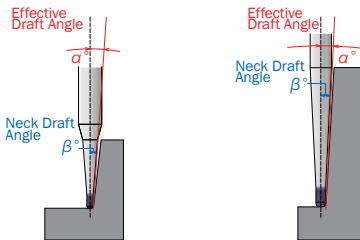
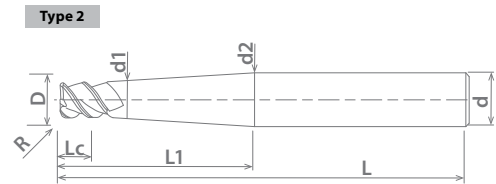
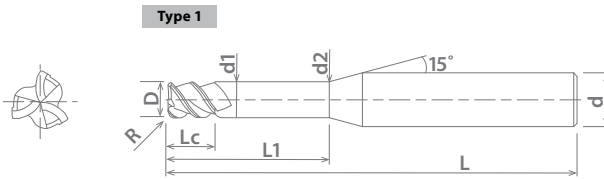
List 9580 (Continued)

SPEED FEED P984-985	CARBIDE	WXS		55°	SHANK h6
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PHX-PC-DFR, 3 Flute, Pencil Neck, Deep Feed, Corner Radius

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Min. Neck Diameter	Maximum Neck Diameter	Neck Length	Effective Draft Angle	Neck Draft Angle	Shank Diameter	Type
	D	R	L	Lc	d1	d2	L1	α	β	d	
3098064	10	2.0	220	15.0	9.90	16.00	92.9	2.00°	2°	16	2
3098224	12	2.0	180	18.0	11.90	13.68	120.0	0.41°	0.5°	16	1
3098241	12	2.0	120	18.0	11.90	13.37	60.0	0.67°	1°	16	1
3098242	12	2.0	180	18.0	11.90	14.76	100.0	0.81°	1°	16	1
3098243	12	2.0	180	18.0	11.90	16.00	122.6	1.00°	1°	16	2
3098244	12	2.0	220	18.0	11.90	16.86	160.0	0.88°	1°	20	1
3098254	12	2.0	220	18.0	11.90	20.00	160.8	1.50°	1.5°	20	2

Packed: 1 pc. Available WXS[®] coating only.



- * The tool may deflect and interfere with the draft area depending on the milling condition.
- * For convenience, the Neck Draft Angle (α°) is shown the same as the Effective Draft Angle (α°), but actually it is different. (It does not interfere with the Effective Draft Angle (α°))

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9580	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best





List 9570

PHX-CRT, 3 Flute, High Feed, Corner Radius



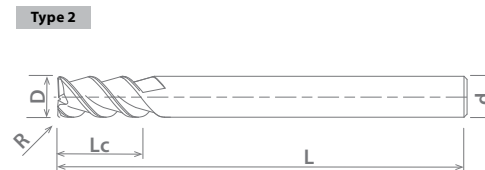
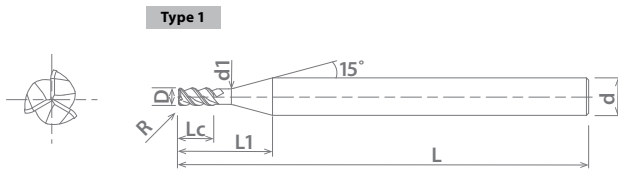
SPEED FEED P984-985	CARBIDE	EXO[®]		55°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 5	+0 / -0.015mm
6 ≤ D ≤ 20	+0.01mm / -0.005mm

Radius Tolerance	
0.3 ≤ R ≤ 3	+0.01mm / -0.01mm

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Effective Neck Length (Le) (Based on Inclined Angle)				Shank Diameter	Type
	D	R	L	Lc	L1	d1	α				d	
					0.5°	1°	2°	3°				
3090002	1	0.3	60	2	4.0	0.95	4.29	4.56	5.05	5.50	6	1
3090003	1.5	0.3	60	3	4.5	1.45	4.82	5.11	5.64	6.12	6	1
3090004	2	0.5	60	4	6.0	1.95	6.41	6.77	7.39	7.89	6	1
3090006	3	0.8	70	6	9.0	2.85	9.46	9.87	10.62	11.48	6	1
3090008	4	1.0	70	8	12.0	3.85	12.60	13.09	14.07	15.21	6	1
3090010	5	1.0	70	10	15.0	4.85	15.72	16.30	-	-	6	1
3090012	6	1.5	80	12	-	-	-	-	-	-	6	2
3090016	8	2.0	90	16	-	-	-	-	-	-	8	2
3090020	10	2.0	100	20	-	-	-	-	-	-	10	2
3090022	12	2.0	120	24	-	-	-	-	-	-	12	2
3090026	16	3.0	130	32	-	-	-	-	-	-	16	2
3090030	20	3.0	150	40	-	-	-	-	-	-	20	2

Packed: 1 pc. Available EXO[®] coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB[®] WXS[®] - List 4570 (p. 772)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9570	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best





List 3610

WXL-EBD, 2 Flute, Regular Length, Ball End

SPEED FEED P990	CARBIDE	WXL	REG	30°	SHANK h6
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Radius Tolerance	
1/32 ≤ D ≤ 3/16	+0.0002" / -0.0002"
1/4 ≤ D ≤ 1/2	+0.0001" / -0.0003"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36100111	1/32	2-1/2	1/32	1/4
36100211	1/16	2-1/2	1/16	1/4
36100311	3/32	2-1/2	3/32	1/4
36100411	1/8	3	1/8	1/4
36100511	3/16	3	3/16	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36100611	1/4	3	1/4	1/4
36100711	5/16	4	5/16	5/16
36100811	3/8	4	3/8	3/8
36100911	1/2	4	1/2	1/2

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 860-861, 862 or 866)

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4410 (p. 766)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
3610	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best





List 3710

WXL-EBD, 2 Flute, Regular Length, Ball End

SPEED FEED P991	CARBIDE	WXL	REG	30°	SHANK h6
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Radius Tolerance	
0.1 ≤ D < 6	+0.005mm / -0.005mm
6 ≤ D ≤ 12	+0.003mm / -0.007mm
12 < D ≤ 20	+0.01mm / -0.01mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3105010	0.1	40	0.2	4
3105020	0.2	40	0.4	4
3105030	0.3	40	0.6	4
3105040	0.4	40	0.8	4
3105050	0.5	40	1.1	4
3105060	0.6	40	1.1	4
3105080	0.8	40	2.0	4
3105100	1.0	50	1.5	4
3106100	1.0	60	2.5	6
3105120	1.2	50	3.0	4
3105140	1.4	50	3.5	4
3105150	1.5	50	2.0	4
3106150	1.5	50	4.0	6
3105160	1.6	50	4.0	4
3105200	2.0	50	3.0	4
3106200	2.0	50	5.0	6
3105250	2.5	50	3.0	4
3106250	2.5	60	6.0	6
3105300	3.0	60	4.5	4
3106301	3.0	60	8.0	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3106350	3.5	70	8.0	6
3105400	4.0	60	8.0	4
3106400	4.0	70	6.0	6
3106500	5.0	80	8.0	6
3106502	5.0	80	12.0	6
3106600	6.0	90	10.0	6
3106601	6.0	90	12.0	6
3106610	7.0	90	14.0	6
3106620	8.0	100	12.0	8
3106621	8.0	100	14.0	8
3106630	9.0	100	18.0	8
3106640	10.0	100	15.0	10
3106641	10.0	100	18.0	10
3106650	11.0	100	22.0	10
3106660	12.0	110	18.0	12
3106661	12.0	110	22.0	12
3106670	14.0	110	26.0	12
3106680	16.0	140	30.0	16
3106690	18.0	140	34.0	16
3106700	20.0	160	38.0	20

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 860-861, 862 or 866)

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4510 (p. 767)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
3710	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best



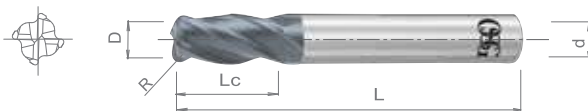


List 3670

WXL-CR-EMS, 4 Flute, Regular Length, Corner Radius

SPEED FEED P992	CARBIDE	WXL	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1/2	+0 / -0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
36700111	1/16	0.010	1-1/2	3/16	1/8
36700211	5/64	0.010	1-1/2	1/4	1/8
36700311	3/32	0.010	1-1/2	3/8	1/8
36700411	7/64	0.010	1-1/2	3/8	1/8
36700511	1/8	0.010	1-1/2	1/2	1/8
36700611	1/8	0.020	1-1/2	1/2	1/8
36700711	1/8	0.030	1-1/2	1/2	1/8
36700811	5/32	0.020	2	9/16	3/16
36700911	5/32	0.030	2	9/16	3/16
36701011	3/16	0.020	2	5/8	3/16
36701111	3/16	0.030	2	5/8	3/16
36701211	7/32	0.020	2-1/2	5/8	1/4
36701311	7/32	0.030	2-1/2	5/8	1/4
36701411	1/4	0.020	2-1/2	3/4	1/4
36701511	1/4	0.030	2-1/2	3/4	1/4

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
36701611	1/4	0.045	2-1/2	3/4	1/4
36701711	1/4	0.060	2-1/2	3/4	1/4
36701811	5/16	0.020	2-1/2	13/16	5/16
36701911	5/16	0.030	2-1/2	13/16	5/16
36702011	3/8	0.020	2-1/2	1	3/8
36702111	3/8	0.030	2-1/2	1	3/8
36702211	3/8	0.045	2-1/2	1	3/8
36702311	3/8	0.060	2-1/2	1	3/8
36702411	7/16	0.020	2-3/4	1	7/16
36702511	7/16	0.030	2-3/4	1	7/16
36702611	1/2	0.020	3	1	1/2
36702711	1/2	0.030	3	1	1/2
36702811	1/2	0.045	3	1	1/2
36702911	1/2	0.060	3	1	1/2

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 (p. 867-868)
 Want to turbo-charge performance? Try EXOCARB® WXS® - List 4471 (p. 770)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3670	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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EXOCARB® WXL®

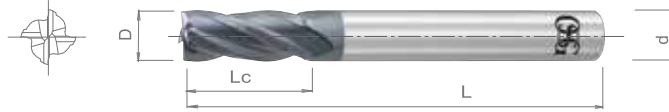
Premium Performance Carbide End Mills with OSG's Proprietary WXL® Coating

List 3604

WXL-EMS, 4 Flute, Regular Length

SPEED FEED P993	CARBIDE	WXL	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 3/4	+0 / -0.0008"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36040111	1/16	1-1/2	3/16	1/8
36040211	5/64	1-1/2	1/4	1/8
36040311	3/32	1-1/2	3/8	1/8
36040411	7/64	1-1/2	3/8	1/8
36040511	1/8	1-1/2	1/2	1/8
36040611	5/32	2	9/16	3/16
36040711	3/16	2	5/8	3/16
36040811	7/32	2-1/2	5/8	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36040911	1/4	2-1/2	3/4	1/4
36041011	9/32	2-1/2	3/4	5/16
36041111	5/16	2-1/2	13/16	5/16
36041211	3/8	2-1/2	1	3/8
36041311	7/16	2-3/4	1	7/16
36041411	1/2	3	1	1/2
36041511	5/8	3-1/2	1-1/4	5/8
36041611	3/4	4	1-1/2	3/4

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 849-850)

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4440 (p. 768)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
3604	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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List 3690

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

SPEED FEED P994-997	CARBIDE	WXL	REG	30°	SHANK h6
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±5µm (±0.0002") Radius Tolerance



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
36900111	1/64	2-1/2	1/64	3/64	0.013	1/8
36900211	1/64	2-1/2	1/64	3/32	0.013	1/8
36900311	1/32	2-1/2	1/32	5/32	0.029	1/4
36900411	1/32	2-1/2	1/32	5/16	0.029	1/4
36900511	1/32	2-1/2	1/32	13/32	0.029	1/4
36900611	1/16	2-1/2	1/16	5/16	0.061	1/4
36900711	1/16	2-1/2	1/16	5/8	0.061	1/4
36900811	1/16	3	1/16	13/16	0.061	1/4
36900911	3/32	2-1/2	3/32	15/32	0.092	1/4
36901011	3/32	2-7/8	3/32	15/16	0.092	1/4
36901111	3/32	3-1/8	3/32	1-13/32	0.092	1/4
36901211	1/8	3	1/8	5/8	0.123	1/4
36901311	1/8	3	1/8	1-1/4	0.123	1/4
36901411	1/8	3-3/4	1/8	1-7/8	0.123	1/4
36901511	3/16	3-1/2	3/16	15/16	0.185	1/4
36901611	3/16	4	3/16	1-7/8	0.185	1/4
36901711	1/4	4	1/4	1-1/4	0.248	1/4
36901811	1/4	4-1/2	1/4	2	0.248	1/4

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP419 (p. 864)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3690	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3790

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

SPEED FEED P994-997	CARBIDE	WXL	REG	30°	SHANK h6
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±5µm Radius Tolerance



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Diameter
	D	L	Lc	L1	d2	d
3110103	0.1	45	0.1	0.3	0.085	4
3110105	0.1	45	0.1	0.5	0.085	4
3110203	0.2	45	0.2	0.3	0.18	4
3110205	0.2	45	0.2	0.5	0.18	4
3110207	0.2	45	0.16	0.75	0.18	4
3110210	0.2	45	0.2	1.0	0.18	4
3110212	0.2	45	0.16	1.25	0.18	4
3110215	0.2	45	0.2	1.5	0.18	4
3110217	0.2	45	0.16	1.75	0.18	4
3110220	0.2	45	0.16	2.0	0.18	4
3110225	0.2	45	0.16	2.5	0.18	4
3110230	0.2	45	0.16	3.0	0.18	4
3110305	0.3	45	0.24	0.5	0.28	4
3110306	0.3	45	0.24	0.6	0.28	4
3110307	0.3	45	0.24	0.75	0.28	4
3110310	0.3	45	0.2	1.0	0.28	4
3110312	0.3	45	0.24	1.25	0.28	4
3110315	0.3	45	0.2	1.5	0.28	4
3110317	0.3	45	0.24	1.75	0.28	4
3110320	0.3	45	0.2	2.0	0.28	4
3110322	0.3	45	0.24	2.25	0.28	4
3110325	0.3	45	0.24	2.5	0.28	4
3110327	0.3	45	0.24	2.75	0.28	4
3110330	0.3	45	0.24	3.0	0.28	4
3110335	0.3	45	0.24	3.5	0.28	4
3110340	0.3	45	0.24	4.0	0.28	4
3110345	0.3	45	0.24	4.5	0.28	4
3110350	0.3	45	0.24	5.0	0.28	4
3110405	0.4	45	0.3	0.5	0.37	4
3110407	0.4	45	0.3	0.75	0.37	4
3110410	0.4	45	0.3	1.0	0.37	4
3110415	0.4	45	0.3	1.5	0.37	4
3110420	0.4	45	0.3	2.0	0.37	4
3110425	0.4	45	0.3	2.5	0.37	4
3110430	0.4	45	0.3	3.0	0.37	4
3110435	0.4	45	0.3	3.5	0.37	4
3110440	0.4	45	0.3	4.0	0.37	4
3110445	0.4	45	0.3	4.5	0.37	4
3110450	0.4	45	0.3	5.0	0.37	4
3110455	0.4	45	0.3	5.5	0.37	4
3110460	0.4	45	0.3	6.0	0.37	4
3110510	0.5	45	0.4	1.0	0.45	4
3110515	0.5	45	0.4	1.5	0.45	4
3110520	0.5	45	0.4	2.0	0.45	4
3110525	0.5	45	0.4	2.5	0.45	4
3110530	0.5	45	0.4	3.0	0.45	4
3110535	0.5	45	0.4	3.5	0.45	4
3110540	0.5	45	0.4	4.0	0.45	4
3110545	0.5	45	0.4	4.5	0.45	4
3110550	0.5	45	0.4	5.0	0.45	4
3110555	0.5	45	0.4	5.5	0.45	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Diameter
	D	L	Lc	L1	d2	d
3110560	0.5	45	0.4	6.0	0.45	4
3110570	0.5	45	0.4	7.0	0.45	4
3110580	0.5	45	0.4	8.0	0.45	4
3110590	0.5	45	0.4	9.0	0.45	4
3110600	0.5	45	0.4	10	0.45	4
3110610	0.6	45	0.5	1.0	0.55	4
3110615	0.6	45	0.5	1.5	0.55	4
3110620	0.6	45	0.5	2.0	0.55	4
3110625	0.6	45	0.5	2.5	0.55	4
3110630	0.6	45	0.5	3.0	0.55	4
3110635	0.6	45	0.5	3.5	0.55	4
3110640	0.6	45	0.5	4.0	0.55	4
3110645	0.6	45	0.5	4.5	0.55	4
3110650	0.6	45	0.5	5.0	0.55	4
3110655	0.6	45	0.5	5.5	0.55	4
3110660	0.6	45	0.5	6.0	0.55	4
3110665	0.6	45	0.5	6.5	0.55	4
3110670	0.6	45	0.5	7.0	0.55	4
3110675	0.6	45	0.5	7.5	0.55	4
3110680	0.6	45	0.5	8.0	0.55	4
3110685	0.6	45	0.5	8.5	0.55	4
3110690	0.6	45	0.5	9.0	0.55	4
3110695	0.6	45	0.5	9.5	0.55	4
3110700	0.6	45	0.5	10	0.55	4
3110711	0.6	45	0.5	11	0.55	4
3110712	0.6	45	0.5	12	0.55	4
3110820	0.8	45	0.6	2.0	0.75	4
3110830	0.8	45	0.5	3.0	0.75	4
3110840	0.8	45	0.6	4.0	0.75	4
3110850	0.8	45	0.6	5.0	0.75	4
3110860	0.8	45	0.6	6.0	0.75	4
3110870	0.8	45	0.6	7.0	0.75	4
3110880	0.8	45	0.6	8.0	0.75	4
3110890	0.8	45	0.6	9.0	0.75	4
3110900	0.8	45	0.6	10	0.75	4
3110912	0.8	45	0.5	12	0.75	4
3111025	1.0	45	0.8	2.5	0.95	4
3111030	1.0	45	0.8	3.0	0.95	4
3111040	1.0	45	0.8	4.0	0.95	4
3111050	1.0	45	0.8	5.0	0.95	4
3111060	1.0	45	0.8	6.0	0.95	4
3111070	1.0	45	0.8	7.0	0.95	4
3111080	1.0	45	0.8	8.0	0.95	4
3111090	1.0	45	0.8	9.0	0.95	4
3111100	1.0	45	0.8	10	0.95	4
3111112	1.0	45	0.8	12	0.95	4
3111114	1.0	50	0.8	14	0.95	4
3111116	1.0	50	0.8	16	0.95	4
3111118	1.0	55	0.8	18	0.95	4
3111120	1.0	55	0.8	20	0.95	4
3111240	1.2	45	1.0	4.0	1.15	4

Packed: 1 pc. Available WXL® coating only.





List 3790 (Continued)

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

SPEED FEED P994-997	CARBIDE	WXL	REG	30°	SHANK h6
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±5µm Radius Tolerance

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Diameter
	D	L	Lc	L1	d2	d
3111260	1.2	45	1.0	6.0	1.15	4
3111280	1.2	45	1.0	8.0	1.15	4
3111300	1.2	45	1.0	10	1.15	4
3111312	1.2	45	1.0	12	1.15	4
3111314	1.2	50	1.0	14	1.15	4
3111316	1.2	50	1.0	16	1.15	4
3111318	1.2	55	1.0	18	1.15	4
3111320	1.2	60	1.0	20	1.15	4
3111324	1.2	60	1.0	24	1.15	4
3111480	1.4	45	1.1	8.0	1.35	4
3111512	1.4	45	1.1	12	1.35	4
3111516	1.4	50	1.1	16	1.35	4
3111530	1.5	45	1.2	3.0	1.45	4
3111540	1.5	45	1.2	4.0	1.45	4
3111560	1.5	45	1.2	6.0	1.45	4
3111580	1.5	45	1.2	8.0	1.45	4
3111600	1.5	45	1.2	10	1.45	4
3111612	1.5	45	1.2	12	1.45	4
3111614	1.5	50	1.2	14	1.45	4
3111616	1.5	55	1.2	16	1.45	4
3111618	1.5	55	1.2	18	1.45	4
3111620	1.5	55	1.2	20	1.45	4
3111622	1.5	55	1.2	22	1.45	4
3111630	1.5	65	1.2	30	1.45	4
3111640	1.6	45	1.3	4.0	1.55	4
3111680	1.6	45	1.3	8.0	1.55	4
3111712	1.6	45	1.3	12	1.55	4
3111716	1.6	50	1.3	16	1.55	4
3111720	1.6	55	1.3	20	1.55	4
3111880	1.8	45	1.4	8.0	1.75	4
3111912	1.8	45	1.4	12	1.75	4
3111916	1.8	50	1.4	16	1.75	4
3111920	1.8	55	1.4	20	1.75	4
3112030	2.0	45	1.6	3.0	1.95	4
3112040	2.0	45	1.6	4.0	1.95	4
3112060	2.0	45	1.6	6.0	1.95	4
3112080	2.0	45	1.6	8.0	1.95	4
3112100	2.0	45	1.6	10	1.95	4
3112112	2.0	45	1.6	12	1.95	4
3112114	2.0	50	1.6	14	1.95	4
3112116	2.0	50	1.6	16	1.95	4
3112118	2.0	55	1.6	18	1.95	4
3112120	2.0	55	1.6	20	1.95	4
3112122	2.0	60	1.6	22	1.95	4
3112125	2.0	65	1.6	25	1.95	4
3112130	2.0	70	1.6	30	1.95	4
3112135	2.0	75	1.6	35	1.95	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Diameter
	D	L	Lc	L1	d2	d
3112140	2.0	80	1.6	40	1.95	4
3112560	2.5	45	2.0	6.0	2.45	4
3112600	2.5	50	2.0	10	2.45	4
3112615	2.5	55	2.0	15	2.45	4
3112620	2.5	60	2.0	20	2.45	4
3112625	2.5	65	2.0	25	2.45	4
3112630	2.5	70	2.0	30	2.45	4
3112635	2.5	70	2.0	35	2.45	4
3123060	3.0	50	2.4	6.0	2.85	6
3123080	3.0	50	2.4	8.0	2.85	6
3123100	3.0	50	2.4	10	2.85	6
3123112	3.0	55	2.4	12	2.85	6
3123114	3.0	55	2.4	14	2.85	6
3123115	3.0	55	2.4	15	2.85	6
3123116	3.0	55	2.4	16	2.85	6
3123120	3.0	60	2.4	20	2.85	6
3123125	3.0	65	2.4	25	2.85	6
3123130	3.0	70	2.4	30	2.85	6
3123135	3.0	80	2.4	35	2.85	6
3123140	3.0	85	2.4	40	2.85	6
3123600	3.5	60	2.8	10	3.35	6
3123615	3.5	60	2.8	15	3.35	6
3123620	3.5	65	2.8	20	3.35	6
3123625	3.5	65	2.8	25	3.35	6
3123630	3.5	70	2.8	30	3.35	6
3123635	3.5	80	2.8	35	3.35	6
3123640	3.5	90	2.8	40	3.35	6
3123645	3.5	90	2.8	45	3.35	6
3124080	4.0	60	3.2	8.0	3.85	6
3124100	4.0	60	3.2	10	3.85	6
3124112	4.0	60	3.2	12	3.85	6
3124114	4.0	60	3.2	14	3.85	6
3124115	4.0	60	3.2	15	3.85	6
3124116	4.0	60	3.2	16	3.85	6
3124120	4.0	65	3.2	20	3.85	6
3124125	4.0	70	3.2	25	3.85	6
3124130	4.0	80	3.2	30	3.85	6
3124135	4.0	80	3.2	35	3.85	6
3124140	4.0	90	3.2	40	3.85	6
3124145	4.0	90	3.2	45	3.85	6
3124150	4.0	100	3.2	50	3.85	6
3125100	5.0	65	5.0	10	4.85	6
3125115	5.0	70	5.0	15	4.85	6
3125120	5.0	70	4.0	20	4.85	6
3125125	5.0	70	4.0	25	4.85	6
3125130	5.0	80	4.0	30	4.85	6
3125135	5.0	80	4.0	35	4.85	6

Packed: 1 pc. Available WXL® coating only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
3790	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3790 (Continued)

WXL-LN-EBD, 2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

SPEED FEED P994-997	CARBIDE	WXL	REG	30°	SHANK h6
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±5µm Radius Tolerance



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Diameter
	D	L	Lc	L1	d2	d
3125140	5.0	90	5.0	40	4.85	6
3125145	5.0	100	5.0	45	4.85	6
3125150	5.0	100	5.0	50	4.85	6
3126100	6.0	60	6.0	10	5.85	6
3126120	6.0	70	6.0	20	5.85	6
3126125	6.0	70	6.0	25	5.85	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Diameter
	D	L	Lc	L1	d2	d
3126130	6.0	80	4.8	30	5.85	6
3126135	6.0	80	6.0	35	5.85	6
3126140	6.0	90	4.8	40	5.85	6
3126145	6.0	100	6.0	45	5.85	6
3126150	6.0	120	4.8	50	5.85	6

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP419 or HP419L (p. 864 or 865)

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4590 (p. 778-779)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010 1018	1035 1045	1065	4140 4340													
3790	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best



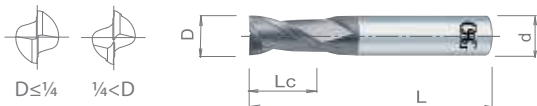


List 3620

WXL-2D-DE, 2 Flute, Stub Length

SPEED FEED P998	CARBIDE	WXL		STUB	30°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 7/16	+0 / -0.0008"
1/2 ≤ D ≤ 3/4	+0 / -0.0012"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36200001	1/16	2	1/8	1/8
36200002	5/64	2	5/32	1/8
36200003	3/32	2	3/16	1/8
36200004	7/64	2	7/32	1/8
36200005	1/8	2	1/4	1/8
36200006	5/32	2	5/16	3/16
36200007	3/16	2	3/8	3/16
36200008	7/32	2	7/16	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36200009	1/4	2-1/2	1/2	1/4
36200010	9/32	2-1/2	9/16	5/16
36200011	5/16	2-1/2	5/8	5/16
36200012	3/8	2-3/4	3/4	3/8
36200013	7/16	3	7/8	7/16
36200014	1/2	3	1	1/2
36200015	5/8	3-1/2	1-1/4	5/8
36200016	3/4	4	1-1/2	3/4

Packed: 1 pc. Available WXL® coating only.



List 3621

WXL-3D-DE, 2 Flute, Regular Length

SPEED FEED P998	CARBIDE	WXL		REG	35°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 7/16	+0 / -0.0008"
1/2 ≤ D ≤ 3/4	+0 / -0.0012"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36210001	1/16	2	3/16	1/8
36210002	5/64	2	15/64	1/8
36210003	3/32	2	9/32	1/8
36210004	7/64	2	21/64	1/8
36210005	1/8	2	3/8	1/8
36210006	5/32	2	15/32	3/16
36210007	3/16	2-1/4	9/16	3/16
36210008	7/32	2-1/2	21/32	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36210009	1/4	2-1/2	3/4	1/4
36210010	9/32	2-3/4	27/32	5/16
36210011	5/16	2-3/4	15/16	5/16
36210012	3/8	3	1-1/8	3/8
36210013	7/16	3-1/4	1-5/16	7/16
36210014	1/2	3-1/2	1-1/2	1/2
36210015	5/8	4-1/4	1-7/8	5/8
36210016	3/4	5	2-1/4	3/4

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 849-850)

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3620	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
3621	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





EXOCARB® WXL®

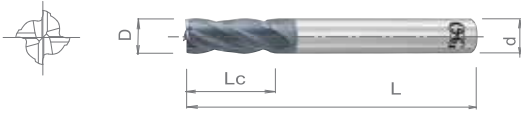
Premium Performance Carbide End Mills with OSG's Proprietary WXL® Coating

List 3704

WXL-EMS, 4 Flute, Regular Length

SPEED FEED P999	CARBIDE	WXL	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3130510	1.0	40	2.5	4
3130515	1.5	40	4	4
3130520	2.0	40	6	4
3130525	2.5	40	8	4
3130530	3.0	45	8	6
3130535	3.5	45	10	6
3130540	4.0	45	11	6
3130545	4.5	45	11	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3130550	5.0	50	13	6
3130560	6.0	50	13	6
3130570	7.0	60	16	8
3130580	8.0	60	19	8
3130590	9.0	70	19	10
3130600	10.0	70	22	10
3130620	12.0	75	26	12

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 849-850)

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4540 (p. 769)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
3704	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3742

WXL-EML, 4 Flute, Long Length

SPEED FEED P1000	CARBIDE	WXL	LONG	30°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 26	+0 / -0.03mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
37420000	3.0	50	12	6
37420001	3.5	50	14	6
37420002	4.0	50	17	6
37420003	4.5	50	17	6
37420004	5.0	60	20	6
37420005	5.5	60	20	6
37420006	6.0	60	20	6
37420007	6.5	70	24	8
37420008	7.0	70	24	8
37420009	7.5	70	24	8
37420010	8.0	70	28	8
37420011	8.5	80	28	10
37420012	9.0	80	28	10
37420013	9.5	80	28	10
37420014	10.0	80	34	10

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
37420015	10.5	90	34	12
37420016	11.0	90	34	12
37420017	11.5	90	34	12
37420018	12.0	90	40	12
37420019	13.0	100	40	12
37420020	14.0	100	40	12
37420021	15.0	105	40	16
37420022	16.0	115	48	16
37420023	18.0	115	48	16
37420024	20.0	125	56	20
37420025	23.0	140	67	25
37420026	24.0	140	67	25
37420027	25.0	140	67	25
37420028	26.0	140	67	25

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 849-850)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
3742	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best





List 3791

WXL-LN-EDS, 2 Flute, Stub Length, Long Neck, Rib Processing

SPEED FEED P1002-1005	CARBIDE	WXL		STUB	30°	SHANK h6
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Milling Diameter Tolerance	
0.2≤D≤5	+0 / -0.015mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
3131201	0.2	45	0.30	0.5	4
3131202	0.2	45	0.30	1.0	4
3131203	0.2	45	0.30	1.5	4
3131204	0.2	45	0.30	2.0	4
3131205	0.2	45	0.30	2.5	4
3131206	0.2	45	0.30	3.0	4
3131207	0.2	45	0.30	3.5	4
3131208	0.2	45	0.30	4.0	4
3131302	0.3	45	0.45	1.0	4
3131303	0.3	45	0.45	1.5	4
3131304	0.3	45	0.45	2.0	4
3131305	0.3	45	0.45	2.5	4
3131306	0.3	45	0.45	3.0	4
3131308	0.3	45	0.45	4.0	4
3131310	0.3	45	0.45	5.0	4
3131312	0.3	45	0.45	6.0	4
3131318	0.3	45	0.45	9.0	4
3131403	0.4	45	0.60	1.5	4
3131404	0.4	45	0.60	2.0	4
3131406	0.4	45	0.60	3.0	4
3131408	0.4	45	0.60	4.0	4
3131410	0.4	45	0.60	5.0	4
3131412	0.4	45	0.60	6.0	4
3131414	0.4	45	0.60	7.0	4
3131416	0.4	45	0.60	8.0	4
3131418	0.4	45	0.60	9.0	4
3131420	0.4	45	0.60	10.0	4
3131424	0.4	45	0.60	12.0	4
3131501	0.5	45	0.70	1.5	4
3131502	0.5	45	0.70	2.0	4
3131503	0.5	45	0.70	3.0	4
3131504	0.5	45	0.70	4.0	4
3131505	0.5	45	0.70	5.0	4
3131506	0.5	45	0.70	6.0	4
3131507	0.5	45	0.70	7.0	4
3131508	0.5	45	0.70	8.0	4
3131509	0.5	45	0.70	9.0	4
3131510	0.5	45	0.70	10.0	4
3131512	0.5	45	0.70	12.0	4
3131515	0.5	50	0.70	15.0	4
3131602	0.6	45	0.90	2.0	4
3131603	0.6	45	0.90	3.0	4
3131604	0.6	45	0.90	4.0	4
3131605	0.6	45	0.90	5.0	4
3131606	0.6	45	0.90	6.0	4
3131607	0.6	45	0.90	7.0	4
3131608	0.6	45	0.90	8.0	4
3131610	0.6	45	0.90	10.0	4
3131612	0.6	45	0.90	12.0	4
3131615	0.6	50	0.90	15.0	4
3131618	0.6	50	0.90	18.0	4
3131702	0.7	45	1.00	2.0	4
3131704	0.7	45	1.00	4.0	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
3131706	0.7	45	1.00	6.0	4
3131708	0.7	45	1.00	8.0	4
3131710	0.7	45	1.00	10.0	4
3131804	0.8	45	1.20	4.0	4
3131806	0.8	45	1.20	6.0	4
3131808	0.8	45	1.20	8.0	4
3131810	0.8	45	1.20	10.0	4
3131812	0.8	45	1.20	12.0	4
3131814	0.8	50	1.20	14.0	4
3131816	0.8	50	1.20	16.0	4
3131820	0.8	55	1.20	20.0	4
3131824	0.8	60	1.20	24.0	4
3131904	0.9	45	1.35	4.0	4
3131906	0.9	45	1.35	6.0	4
3131908	0.9	45	1.35	8.0	4
3131910	0.9	45	1.35	10.0	4
3131915	0.9	50	1.35	15.0	4
3132003	1.0	45	1.50	3.0	4
3132004	1.0	45	1.50	4.0	4
3132005	1.0	45	1.50	5.0	4
3132006	1.0	45	1.50	6.0	4
3132007	1.0	45	1.50	7.0	4
3132008	1.0	45	1.50	8.0	4
3132009	1.0	45	1.50	9.0	4
3132010	1.0	45	1.50	10.0	4
3132012	1.0	45	1.50	12.0	4
3132014	1.0	50	1.50	14.0	4
3132016	1.0	50	1.50	16.0	4
3132018	1.0	55	1.50	18.0	4
3132020	1.0	55	1.50	20.0	4
3132022	1.0	60	1.50	22.0	4
3132025	1.0	60	1.50	25.0	4
3132030	1.0	70	1.50	30.0	4
3132204	1.2	45	1.80	4.0	4
3132206	1.2	45	1.80	6.0	4
3132208	1.2	45	1.80	8.0	4
3132210	1.2	45	1.80	10.0	4
3132212	1.2	45	1.80	12.0	4
3132214	1.2	50	1.80	14.0	4
3132216	1.2	50	1.80	16.0	4
3132220	1.2	55	1.80	20.0	4
3132406	1.4	45	2.10	6.0	4
3132408	1.4	45	2.10	8.0	4
3132410	1.4	45	2.10	10.0	4
3132412	1.4	45	2.10	12.0	4
3132414	1.4	50	2.10	14.0	4
3132416	1.4	50	2.10	16.0	4
3132422	1.4	60	2.10	22.0	4
3132504	1.5	45	2.30	4.0	4
3132506	1.5	45	2.30	6.0	4
3132508	1.5	45	2.30	8.0	4
3132510	1.5	45	2.30	10.0	4
3132512	1.5	45	2.30	12.0	4

Packed: 1 pc. Available WXL® coating only.





List 3791 (Continued)

WXL-LN-EDS, 2 Flute, Stub Length, Long Neck, Rib Processing

SPEED FEED P1002-1005	CARBIDE	WXL	STUB	30°	SHANK h6
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
3132514	1.5	50	2.30	14.0	4
3132516	1.5	50	2.30	16.0	4
3132518	1.5	55	2.30	18.0	4
3132520	1.5	55	2.30	20.0	4
3132525	1.5	60	2.30	25.0	4
3132530	1.5	70	2.30	30.0	4
3132538	1.5	80	2.30	38.0	4
3132540	1.5	80	2.30	40.0	4
3132545	1.5	80	2.30	45.0	4
3132606	1.6	45	2.40	6.0	4
3132608	1.6	45	2.40	8.0	4
3132610	1.6	45	2.40	10.0	4
3132612	1.6	45	2.40	12.0	4
3132614	1.6	50	2.40	14.0	4
3132616	1.6	50	2.40	16.0	4
3132618	1.6	55	2.40	18.0	4
3132620	1.6	55	2.40	20.0	4
3132806	1.8	45	2.70	6.0	4
3132808	1.8	45	2.70	8.0	4
3132810	1.8	45	2.70	10.0	4
3132812	1.8	45	2.70	12.0	4
3132814	1.8	50	2.70	14.0	4
3132816	1.8	50	2.70	16.0	4
3132818	1.8	55	2.70	18.0	4
3132820	1.8	55	2.70	20.0	4
3132825	1.8	60	2.70	25.0	4
3133006	2.0	45	3.00	6.0	4
3133008	2.0	45	3.00	8.0	4
3133010	2.0	45	3.00	10.0	4
3133012	2.0	45	3.00	12.0	4
3133014	2.0	50	3.00	14.0	4
3133016	2.0	50	3.00	16.0	4
3133018	2.0	55	3.00	18.0	4
3133020	2.0	55	3.00	20.0	4
3133025	2.0	60	3.00	25.0	4
3133030	2.0	70	3.00	30.0	4
3133035	2.0	80	3.00	35.0	4
3133040	2.0	90	3.00	40.0	4
3133050	2.0	100	3.00	50.0	4
3133060	2.0	110	3.00	60.0	4
3133508	2.5	45	3.70	8.0	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
3133510	2.5	45	3.70	10.0	4
3133512	2.5	45	3.70	12.0	4
3133514	2.5	50	3.70	14.0	4
3133516	2.5	55	3.70	16.0	4
3133518	2.5	55	3.70	18.0	4
3133520	2.5	60	3.70	20.0	4
3133525	2.5	70	3.70	25.0	4
3133530	2.5	80	3.70	30.0	4
3133540	2.5	90	3.70	40.0	4
3133550	2.5	100	3.70	50.0	4
3134008	3.0	45	4.50	8.0	6
3134010	3.0	45	4.50	10.0	6
3134012	3.0	45	4.50	12.0	6
3134014	3.0	50	4.50	14.0	6
3134016	3.0	55	4.50	16.0	6
3134018	3.0	55	4.50	18.0	6
3134020	3.0	60	4.50	20.0	6
3134025	3.0	65	4.50	25.0	6
3134030	3.0	80	4.50	30.0	6
3134035	3.0	90	4.50	35.0	6
3134040	3.0	90	4.50	40.0	6
3134050	3.0	100	4.50	50.0	6
3135012	4.0	50	6.00	12.0	6
3135016	4.0	60	6.00	16.0	6
3135020	4.0	60	6.00	20.0	6
3135025	4.0	70	6.00	25.0	6
3135030	4.0	80	6.00	30.0	6
3135035	4.0	90	6.00	35.0	6
3135040	4.0	90	6.00	40.0	6
3135045	4.0	100	6.00	45.0	6
3135050	4.0	100	6.00	50.0	6
3135060	4.0	110	6.00	60.0	6
3136016	5.0	60	7.50	16.0	6
3136020	5.0	70	7.50	20.0	6
3136025	5.0	70	7.50	25.0	6
3136030	5.0	90	7.50	30.0	6
3136035	5.0	90	7.50	35.0	6
3136040	5.0	100	7.50	40.0	6
3136050	5.0	110	7.50	50.0	6
3136060	5.0	120	7.50	60.0	6

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP10 (p. 856-857)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3791	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3711

WXL-LS-EBD, 2 Flute, Regular Length, Long Shank, Ball End



SPEED FEED P1001	CARBIDE	WXL	REG	30°	SHANK h6
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Radius Tolerance	
1 ≤ D < 4	+0.005mm / -0.005mm
5 ≤ D ≤ 18	+0.01mm / -0.01mm

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
37110000	1	70	2.5	3
37110001	2	70	5.0	3
37110002	3	80	8.0	3
37110003	4	100	8.0	4
37110004	5	100	10.0	4
37110005	6	140	12.0	6
37110006	7	140	14.0	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
37110007	8	160	14.0	8
37110008	10	180	18.0	10
37110009	12	200	22.0	12
37110010	14	200	26.0	12
37110011	16	220	30.0	16
37110012	18	220	34.0	16

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® Max - List 9111 (p. 786)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
3711	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3720

WXL-1.5D-DE, 2 Flute, Stub Length

SPEED FEED P1006-1007	CARBIDE	WXL	STUB	30°	SHANK h6
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Milling Diameter Tolerance	
0.2 ≤ D ≤ 6	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3181801	0.1	45	0.15	4
3181802	0.2	45	0.30	4
3181803	0.3	45	0.45	4
3181804	0.4	45	0.60	4
3181805	0.5	45	0.75	4
3181806	0.6	45	0.90	4
3181807	0.7	45	1.10	4
3181808	0.8	45	1.20	4
3181809	0.9	45	1.40	4
3181810	1.0	45	1.50	4
3181811	1.1	45	1.70	4
3181812	1.2	45	1.80	4
3181813	1.3	45	2.00	4
3181814	1.4	45	2.10	4
3181815	1.5	45	2.30	4
3181816	1.6	45	2.40	4
3181817	1.7	45	2.60	4
3181818	1.8	45	2.70	4
3181819	1.9	45	2.90	4
3181820	2.0	45	3.00	4
3181821	2.1	45	3.20	4
3181822	2.2	45	3.30	4
3181823	2.3	45	3.50	4
3181824	2.4	45	3.60	4
3181825	2.5	45	3.80	4
3181826	2.6	45	3.90	4
3181827	2.7	45	4.10	4
3181828	2.8	45	4.20	4
3181829	2.9	45	4.40	4
3181830	3.0	45	4.50	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3181831	3.1	45	4.70	6
3181832	3.2	45	4.80	6
3181833	3.3	45	5.00	6
3181834	3.4	45	5.10	6
3181835	3.5	45	5.30	6
3181836	3.6	45	5.40	6
3181837	3.7	45	5.60	6
3181838	3.8	45	5.70	6
3181839	3.9	45	5.90	6
3181840	4.0	45	6.00	6
3181841	4.1	50	6.20	6
3181842	4.2	50	6.30	6
3181843	4.3	50	6.50	6
3181844	4.4	50	6.60	6
3181845	4.5	50	6.80	6
3181846	4.6	50	6.90	6
3181847	4.7	50	7.10	6
3181848	4.8	50	7.20	6
3181849	4.9	50	7.40	6
3181850	5.0	50	7.50	6
3181851	5.1	50	7.70	6
3181852	5.2	50	7.80	6
3181853	5.3	50	8.00	6
3181854	5.4	50	8.10	6
3181855	5.5	50	8.30	6
3181856	5.6	50	8.40	6
3181857	5.7	50	8.60	6
3181858	5.8	50	8.70	6
3181859	5.9	50	8.90	6
3181860	6.0	50	9.00	6

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 849-850)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3720	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best



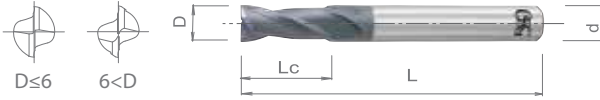


List 3721

WXL-2D-DE, 2 Flute, Stub Length

SPEED FEED P1008-1009	CARBIDE	WXL	STUB	30°	SHANK h6
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Milling Diameter Tolerance	
0.1 ≤ D ≤ 12	+0 / -0.02mm
12 ≤ D ≤ 20	+0 / -0.03mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3182001	0.1	45	0.2	4
3182002	0.2	45	0.4	4
3182003	0.3	45	0.6	4
3182004	0.4	45	0.8	4
3182005	0.5	45	1.0	4
3182006	0.6	45	1.2	4
3182007	0.7	45	1.4	4
3182008	0.8	45	1.6	4
3182009	0.9	45	1.8	4
3182010	1.0	45	2.0	4
3182011	1.1	45	2.2	4
3182012	1.2	45	2.4	4
3182013	1.3	45	2.6	4
3182014	1.4	45	2.8	4
3182015	1.5	45	3.0	4
3182016	1.6	45	3.2	4
3182017	1.7	45	3.4	4
3182018	1.8	45	3.6	4
3182019	1.9	45	3.8	4
3182020	2.0	45	4.0	4
3182021	2.1	45	4.2	4
3182022	2.2	45	4.4	4
3182023	2.3	45	4.6	4
3182024	2.4	45	4.8	4
3182025	2.5	45	5.0	4
3182026	2.6	45	5.2	4
3182027	2.7	45	5.4	4
3182028	2.8	45	5.6	4
3182029	2.9	45	5.8	4
3182030	3.0	45	6.0	6
3182031	3.1	45	6.2	6
3182032	3.2	45	6.4	6
3182033	3.3	45	6.6	6
3182034	3.4	45	6.8	6
3182035	3.5	45	7.0	6
3182036	3.6	45	7.2	6
3182037	3.7	45	7.4	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3182038	3.8	45	7.6	6
3182039	3.9	45	7.8	6
3182040	4.0	45	8.0	6
3182041	4.1	50	8.2	6
3182042	4.2	50	8.4	6
3182043	4.3	50	8.6	6
3182044	4.4	50	8.8	6
3182045	4.5	50	9.0	6
3182046	4.6	50	9.2	6
3182047	4.7	50	9.4	6
3182048	4.8	50	9.6	6
3182049	4.9	50	9.8	6
3182050	5.0	50	10.0	6
3182051	5.1	50	10.2	6
3182052	5.2	50	10.4	6
3182053	5.3	50	10.6	6
3182054	5.4	50	10.8	6
3182055	5.5	50	11.0	6
3182056	5.6	50	11.2	6
3182057	5.7	50	11.4	6
3182058	5.8	50	11.6	6
3182059	5.9	50	11.8	6
3182060	6.0	50	12.0	6
3182065	6.5	60	13.0	8
3182070	7.0	60	14.0	8
3182075	7.5	60	15.0	8
3182080	8.0	60	16.0	8
3182085	8.5	70	17.0	10
3182090	9.0	70	18.0	10
3182095	9.5	70	19.0	10
3182100	10.0	70	20.0	10
3182110	11.0	75	22.0	12
3182120	12.0	75	24.0	12
3182160	16.0	90	32.0	16
3182180	18.0	90	36.0	16
3182200	20.0	100	40.0	20

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 849-850)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3721	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3712

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P1010-1017	CARBIDE	WXL	STUB	30°	SHANK h6
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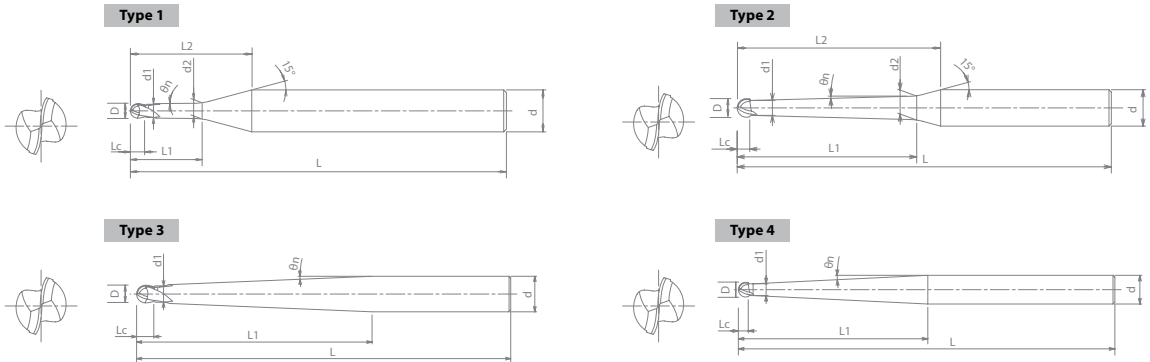
Radius Tolerance	
0.2 ≤ D ≤ 6	+/-0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	L1	θn	d	
3170011	0.20	45	0.16	0.19	1.0	0.5°	4	1
3170012	0.20	45	0.16	0.19	1.5	0.5°	4	1
3170013	0.20	45	0.16	0.19	2.0	0.5°	4	1
3170014	0.20	45	0.16	0.19	2.5	0.5°	4	1
3170015	0.20	45	0.16	0.19	3.0	0.5°	4	1
3170021	0.20	45	0.16	0.19	2.0	1.0°	4	1
3170022	0.20	45	0.16	0.19	2.5	1.0°	4	1
3170023	0.20	45	0.16	0.19	3.0	1.0°	4	1
3170031	0.30	45	0.24	0.29	2.0	0.5°	4	1
3170032	0.30	45	0.24	0.29	3.0	0.5°	4	1
3170041	0.30	45	0.24	0.29	3.0	1.0°	4	1
3170042	0.30	45	0.24	0.29	4.0	1.0°	4	1
3170051	0.40	45	0.30	0.38	2.0	0.5°	4	1
3170052	0.40	45	0.30	0.38	3.0	0.5°	4	1
3170053	0.40	45	0.30	0.38	4.0	0.5°	4	1
3170054	0.40	45	0.30	0.38	5.0	0.5°	4	1
3170055	0.40	45	0.30	0.38	6.0	0.5°	4	1
3170061	0.40	45	0.30	0.38	4.0	1.0°	4	1
3170062	0.40	45	0.30	0.38	5.0	1.0°	4	1
3170063	0.40	45	0.30	0.38	6.0	1.0°	4	1
3170071	0.50	45	0.40	0.48	4.0	0.5°	4	1
3170072	0.50	45	0.40	0.48	6.0	0.5°	4	1

Packed: 1 pc. Available WXL® coating only.

continued on next page



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3712	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P1010-1017	CARBIDE	WXL		STUB	30°	SHANK h6
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Radius Tolerance	
0.2≤D≤6	+/-0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	L1	θn	d	
3170073	0.50	45	0.40	0.48	8.0	0.5°	4	1
3170074	0.50	45	0.40	0.48	10.0	0.5°	4	1
3170081	0.50	45	0.40	0.48	4.0	1.0°	4	1
3170082	0.50	45	0.40	0.48	6.0	1.0°	4	1
3170083	0.50	45	0.40	0.48	8.0	1.0°	4	1
3170084	0.50	45	0.40	0.48	10.0	1.0°	4	1
3170085	0.50	50	0.40	0.48	12.0	1.0°	4	1
3170091	0.60	45	0.50	0.58	2.0	0.5°	4	1
3170092	0.60	45	0.50	0.58	4.0	0.5°	4	1
3170093	0.60	45	0.50	0.58	6.0	0.5°	4	1
3170094	0.60	45	0.50	0.58	8.0	0.5°	4	1
3170095	0.60	45	0.50	0.58	10.0	0.5°	4	1
3170096	0.60	45	0.50	0.58	12.0	0.5°	4	1
3170097	0.60	50	0.50	0.58	16.0	0.5°	4	1
3170101	0.60	45	0.50	0.58	4.0	1.0°	4	1
3170102	0.60	45	0.50	0.58	6.0	1.0°	4	1
3170103	0.60	45	0.50	0.58	8.0	1.0°	4	1
3170104	0.60	45	0.50	0.58	10.0	1.0°	4	1
3170105	0.60	45	0.50	0.58	12.0	1.0°	4	1
3170106	0.60	50	0.50	0.58	16.0	1.0°	4	1
3170111	0.80	45	0.60	0.78	4.0	0.5°	4	1
3170112	0.80	45	0.60	0.78	6.0	0.5°	4	1
3170113	0.80	45	0.60	0.78	8.0	0.5°	4	1
3170114	0.80	45	0.60	0.78	12.0	0.5°	4	1
3170121	0.80	45	0.60	0.78	8.0	1.0°	4	1
3170122	0.80	45	0.60	0.78	12.0	1.0°	4	1
3170123	0.80	50	0.60	0.78	16.0	1.0°	4	1
3170131	1.00	45	0.63	0.95	6.0	0.5°	4	3
3170132	1.00	45	0.63	0.95	8.0	0.5°	4	3
3170133	1.00	45	0.63	0.95	10.0	0.5°	4	3
3170134	1.00	45	0.63	0.95	12.0	0.5°	4	3
3170135	1.00	50	0.63	0.95	16.0	0.5°	4	3
3170136	1.00	55	0.63	0.95	18.0	0.5°	4	3
3170137	1.00	55	0.63	0.95	20.0	0.5°	4	3
3170138	1.00	60	0.63	0.95	25.0	0.5°	4	3
3170139	1.00	65	0.63	0.95	30.0	0.5°	4	3
3170140	1.00	70	0.63	0.95	35.0	0.5°	4	3
3170141	1.00	45	0.63	0.95	10.0	1.0°	4	3
3170142	1.00	50	0.63	0.95	16.0	1.0°	4	3
3170143	1.00	55	0.63	0.95	20.0	1.0°	4	3
3170144	1.00	60	0.63	0.95	25.0	1.0°	4	3
3170145	1.00	65	0.63	0.95	30.0	1.0°	4	3
3170146	1.00	70	0.63	0.95	35.0	1.0°	4	3
3170147	1.00	80	0.63	0.95	40.0	1.0°	4	3
3170148	1.00	90	0.63	0.95	50.0	1.0°	4	3
3170149	1.00	100	0.63	0.95	60.0	1.0°	4	3
3170150	1.00	110	0.63	0.95	70.0	1.0°	4	3
3170151	1.00	45	0.63	0.95	8.0	1.5°	4	3
3170152	1.00	45	0.63	0.95	10.0	1.5°	4	3
3170153	1.00	45	0.63	0.95	12.0	1.5°	4	3

Packed: 1 pc. Available WXL® coating only.





List 3712 (Continued)

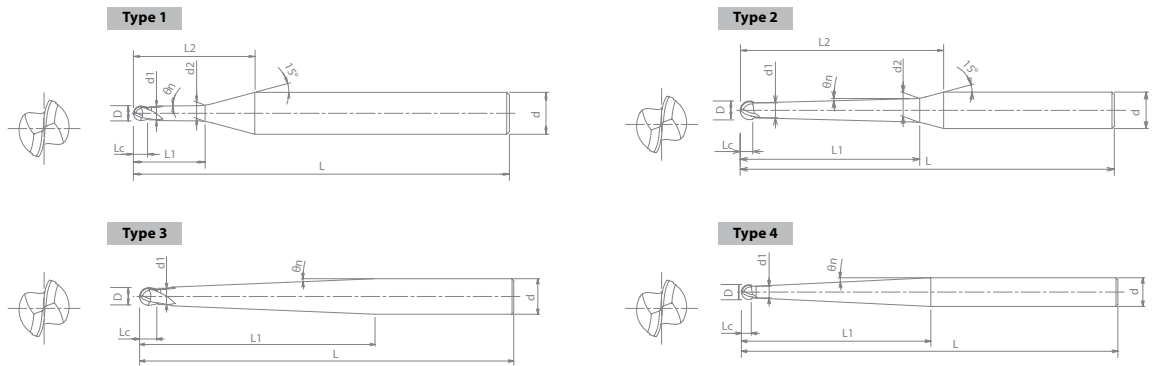
SPEED FEED P1010-1017	CARBIDE	WXL	STUB	30°	SHANK h6
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WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	L1	θn	d	
3170154	1.00	50	0.63	0.95	16.0	1.5°	4	3
3170155	1.00	55	0.63	0.95	20.0	1.5°	4	3
3170156	1.00	60	0.63	0.95	25.0	1.5°	4	3
3170157	1.00	65	0.63	0.95	30.0	1.5°	4	3
3170158	1.00	70	0.63	0.95	35.0	1.5°	4	3
3170161	1.00	80	0.63	0.95	45.0	2.0°	4	4
3170171	1.20	45	0.76	1.15	12.0	0.5°	4	3
3170172	1.20	60	0.76	1.15	25.0	0.5°	4	3
3170181	1.20	45	0.76	1.15	12.0	1.0°	4	3
3170182	1.20	60	0.76	1.15	25.0	1.0°	4	3
3170191	1.20	45	0.76	1.15	12.0	1.5°	4	3
3170192	1.20	60	0.76	1.15	25.0	1.5°	4	3
3170211	1.50	45	0.95	1.42	8.0	0.5°	4	3
3170212	1.50	45	0.95	1.42	10.0	0.5°	4	3
3170213	1.50	45	0.95	1.42	12.0	0.5°	4	3
3170214	1.50	55	0.95	1.42	16.0	0.5°	4	3
3170215	1.50	55	0.95	1.42	20.0	0.5°	4	3
3170216	1.50	60	0.95	1.42	25.0	0.5°	4	3
3170217	1.50	65	0.95	1.42	30.0	0.5°	4	3
3170218	1.50	70	0.95	1.42	35.0	0.5°	4	3
3170221	1.50	45	0.95	1.42	10.0	1.0°	4	3
3170222	1.50	45	0.95	1.42	12.0	1.0°	4	3
3170223	1.50	55	0.95	1.42	16.0	1.0°	4	3
3170224	1.50	55	0.95	1.42	20.0	1.0°	4	3
3170225	1.50	60	0.95	1.42	25.0	1.0°	4	3

Packed: 1 pc. Available WXL® coating only.

continued on next page



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
3712	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P1010-1017	CARBIDE	WXL		STUB	30°	SHANK h6
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Radius Tolerance	
0.2≤D≤6	+/-0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	L1	θn	d	
3170226	1.50	65	0.95	1.42	30.0	1.0°	4	3
3170227	1.50	70	0.95	1.42	35.0	1.0°	4	3
3170230	1.50	45	0.95	1.42	10.0	1.5°	4	3
3170231	1.50	45	0.95	1.42	12.0	1.5°	4	3
3170232	1.50	55	0.95	1.42	16.0	1.5°	4	3
3170233	1.50	55	0.95	1.42	20.0	1.5°	4	3
3170234	1.50	60	0.95	1.42	25.0	1.5°	4	3
3170235	1.50	65	0.95	1.42	30.0	1.5°	4	3
3170236	1.50	70	0.95	1.42	35.0	1.5°	4	3
3170241	1.50	70	0.95	1.42	38.6	2.0°	4	4
3170271	2.00	45	1.26	1.93	8.0	0.5°	4	3
3170272	2.00	45	1.26	1.93	10.0	0.5°	4	3
3170273	2.00	45	1.26	1.93	12.0	0.5°	4	3
3170274	2.00	50	1.26	1.93	16.0	0.5°	4	3
3170275	2.00	55	1.26	1.93	20.0	0.5°	4	3
3170276	2.00	65	1.26	1.93	26.0	0.5°	4	3
3170277	2.00	70	1.26	1.93	30.0	0.5°	4	3
3170278	2.00	75	1.26	1.93	35.0	0.5°	4	3
3170279	2.00	80	1.26	1.93	40.0	0.5°	4	3
3170281	2.00	50	1.26	1.93	16.0	1.0°	4	3
3170282	2.00	55	1.26	1.93	20.0	1.0°	4	3
3170283	2.00	65	1.26	1.93	25.0	1.0°	4	3
3170284	2.00	70	1.26	1.93	30.0	1.0°	4	3
3170285	2.00	75	1.26	1.93	35.0	1.0°	4	3
3170286	2.00	80	1.26	1.93	40.0	1.0°	4	3
3170287	2.00	90	1.26	1.93	50.0	1.0°	6	3
3170288	2.00	100	1.26	1.93	60.0	1.0°	6	3
3170289	2.00	110	1.26	1.93	70.0	1.0°	6	3
3170291	2.00	50	1.26	1.93	16.0	1.5°	4	3
3170292	2.00	55	1.26	1.93	20.0	1.5°	4	3
3170293	2.00	65	1.26	1.93	25.0	1.5°	4	3
3170294	2.00	70	1.26	1.93	30.0	1.5°	4	3
3170295	2.00	75	1.26	1.93	35.0	1.5°	4	3
3170296	2.00	80	1.26	1.93	41.4	1.5°	4	4
3170301	2.00	70	1.26	1.93	31.5	2.0°	4	4
3170321	3.00	50	2.40	2.95	8.0	0.5°	6	1
3170322	3.00	50	2.40	2.95	10.0	0.5°	6	1
3170323	3.00	55	2.40	2.95	12.0	0.5°	6	1
3170324	3.00	55	2.40	2.95	16.0	0.5°	6	1
3170325	3.00	60	2.40	2.95	20.0	0.5°	6	1
3170326	3.00	65	2.40	2.95	25.0	0.5°	6	1
3170327	3.00	70	2.40	2.95	30.0	0.5°	6	1
3170328	3.00	80	2.40	2.95	35.0	0.5°	6	1
3170329	3.00	85	2.40	2.95	40.0	0.5°	6	1
3170330	3.00	90	2.40	2.95	50.0	0.5°	6	1
3170331	3.00	60	2.40	2.95	20.0	1.0°	6	1
3170332	3.00	65	2.40	2.95	25.0	1.0°	6	1
3170333	3.00	70	2.40	2.95	30.0	1.0°	6	1

Packed: 1 pc. Available WXL® coating only.





List 3712 (Continued)

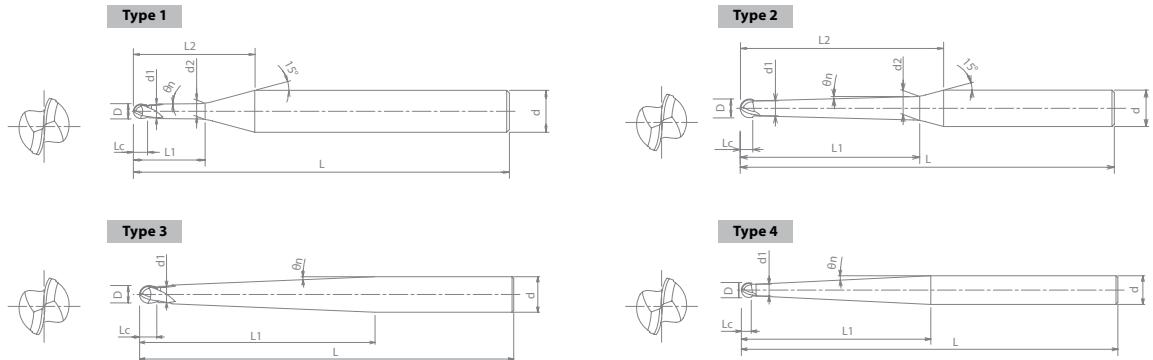
WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P1010-1017	CARBIDE	WXL		STUB	30°	SHANK h6
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	L1	θn	d	
3170334	3.00	80	2.40	2.95	35.0	1.0°	6	1
3170335	3.00	85	2.40	2.95	40.0	1.0°	6	1
3170336	3.00	90	2.40	2.95	50.0	1.0°	6	1
3170337	3.00	100	2.40	2.95	60.0	1.0°	6	1
3170338	3.00	110	2.40	2.95	70.0	1.0°	6	1
3170341	3.00	60	2.40	2.95	20.0	1.5°	6	1
3170342	3.00	65	2.40	2.95	25.0	1.5°	6	1
3170343	3.00	70	2.40	2.95	30.0	1.5°	6	1
3170344	3.00	80	2.40	2.95	35.0	1.5°	6	1
3170345	3.00	85	2.40	2.95	40.0	1.5°	6	1
3170346	3.00	90	2.40	2.95	50.0	1.5°	6	1
3170347	3.00	100	2.40	2.95	62.5	1.5°	6	2
3170351	3.00	100	2.40	2.95	47.5	2.0°	6	2
3170371	4.00	65	3.20	3.93	20.0	1.0°	6	1
3170372	4.00	80	3.20	3.93	30.0	1.0°	6	1
3170373	4.00	90	3.20	3.93	40.0	1.0°	6	1
3170374	4.00	100	3.20	3.93	50.0	1.0°	8	1
3170375	4.00	110	3.20	3.93	60.0	1.0°	8	1
3170381	4.00	80	3.20	3.93	44.2	1.5°	6	2
3170391	4.00	80	3.20	3.93	34.0	2.0°	6	2
3170401	5.00	100	5.00	4.95	30.0	1.0°	8	1
3170402	5.00	100	5.00	4.95	40.0	1.0°	8	1
3170403	5.00	130	5.00	4.95	60.0	1.0°	8	1
3170411	5.00	100	5.00	4.95	26.9	1.5°	6	2
3170412	5.00	130	5.00	4.95	65.1	1.5°	8	2

Packed: 1 pc. Available WXL® coating only.

continued on next page



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH			6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
3712	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3712 (Continued)

WXL-PC-EBD, 2 Flute, Stub Length, Pencil Neck, Ball End

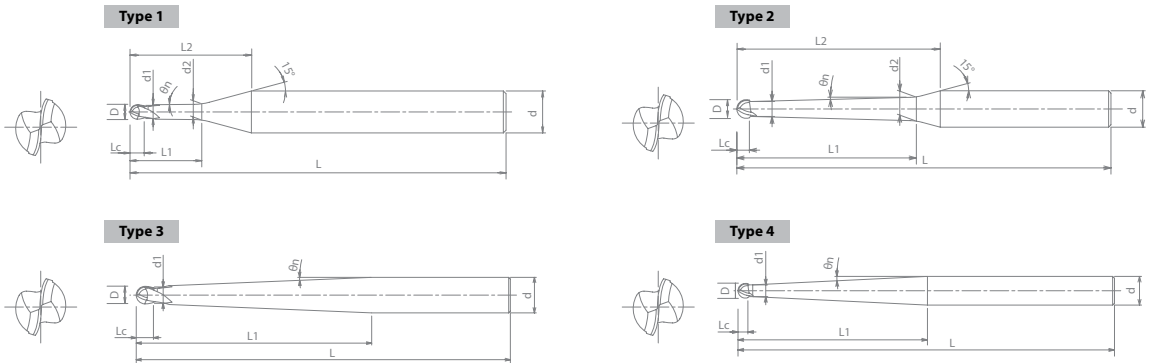
SPEED FEED P1010-1017	CARBIDE	WXL		STUB	30°	SHANK h6
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Radius Tolerance	
0.2 ≤ D ≤ 6	+/-0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	L1	θn	d	
3170421	5.00	130	5.00	4.95	50.1	2.0°	8	2
3170431	6.00	100	6.00	5.95	30.0	1.0°	8	1
3170432	6.00	100	6.00	5.95	40.0	1.0°	8	1
3170433	6.00	100	6.00	5.95	50.0	1.0°	8	1
3170434	6.00	110	6.00	5.95	60.0	1.0°	10	1
3170435	6.00	120	6.00	5.95	70.0	1.0°	10	1
3170436	6.00	130	6.00	5.95	80.0	1.0°	12	1
3170441	6.00	100	6.00	5.95	49.0	1.5°	8	2
3170451	6.00	100	6.00	5.95	36.0	2.0°	8	2

Packed: 1 pc. Available WXL® coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3712	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3722

WXL-3D-DE, 2 Flute, Regular Length

SPEED FEED P1018-1019	CARBIDE	WXL	REG	35°	SHANK h6
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Milling Diameter Tolerance	
0.1 ≤ D ≤ 12	+0 / -0.02mm
12 ≤ D ≤ 20	+0 / -0.03mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3182401	0.1	45	0.3	4
3182402	0.2	45	0.6	4
3182403	0.3	45	0.9	4
3182404	0.4	45	1.2	4
3182405	0.5	45	1.5	4
3182406	0.6	45	1.8	4
3182407	0.7	45	2.1	4
3182408	0.8	45	2.4	4
3182409	0.9	45	2.7	4
3182410	1.0	45	3.0	4
3182411	1.1	45	3.3	4
3182412	1.2	45	3.6	4
3182413	1.3	45	3.9	4
3182414	1.4	45	4.2	4
3182415	1.5	45	4.5	4
3182416	1.6	45	4.8	4
3182417	1.7	45	5.1	4
3182418	1.8	45	5.4	4
3182419	1.9	45	5.7	4
3182420	2.0	45	6.0	4
3182421	2.1	45	6.3	4
3182422	2.2	45	6.6	4
3182423	2.3	45	6.9	4
3182424	2.4	45	7.2	4
3182425	2.5	45	7.5	4
3182426	2.6	45	7.8	4
3182427	2.7	45	8.1	4
3182428	2.8	45	8.4	4
3182429	2.9	45	8.7	4
3182430	3.0	45	9.0	6
3182431	3.1	45	9.3	6
3182432	3.2	45	9.6	6
3182433	3.3	45	9.9	6
3182434	3.4	45	10.2	6
3182435	3.5	45	10.5	6
3182436	3.6	45	10.8	6
3182437	3.7	45	11.1	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3182438	3.8	45	11.4	6
3182439	3.9	45	11.7	6
3182440	4.0	50	12.0	6
3182441	4.1	50	12.3	6
3182442	4.2	50	12.6	6
3182443	4.3	50	12.9	6
3182444	4.4	50	13.2	6
3182445	4.5	50	13.5	6
3182446	4.6	55	13.8	6
3182447	4.7	55	14.1	6
3182448	4.8	55	14.4	6
3182449	4.9	55	14.7	6
3182450	5.0	55	15.0	6
3182451	5.1	55	15.3	6
3182452	5.2	55	15.6	6
3182453	5.3	55	15.9	6
3182454	5.4	55	16.2	6
3182455	5.5	60	16.5	6
3182456	5.6	60	16.8	6
3182457	5.7	60	17.1	6
3182458	5.8	60	17.4	6
3182459	5.9	60	17.7	6
3182460	6.0	60	18.0	6
3182465	6.5	65	19.5	8
3182470	7.0	65	21.0	8
3182475	7.5	70	22.5	8
3182480	8.0	70	24.0	8
3182485	8.5	70	22.5	10
3182490	9.0	75	27.0	10
3182495	9.5	75	28.5	10
3182500	10.0	80	30.0	10
3182510	11.0	80	33.0	12
3182520	12.0	90	36.0	12
3182560	16.0	110	48.0	16
3182580	18.0	130	54.0	16
3182600	20.0	130	60.0	20

Packed: 1 pc. Available WXL® coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
3722	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3723

WXL-4D-DE, 2 Flute, Long Length

SPEED FEED P1020-1021	CARBIDE	WXL	LONG	40°	SHANK h6
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Milling Diameter Tolerance	
0.2 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3182602	0.2	45	0.8	4
3182603	0.3	45	1.2	4
3182604	0.4	45	1.6	4
3182605	0.5	45	2.0	4
3182606	0.6	45	2.4	4
3182607	0.7	45	2.8	4
3182608	0.8	45	3.2	4
3182609	0.9	45	3.6	4
3182610	1.0	45	4.0	4
3182611	1.1	45	4.4	4
3182612	1.2	45	4.8	4
3182613	1.3	45	5.2	4
3182614	1.4	45	5.6	4
3182615	1.5	45	6.0	4
3182616	1.6	45	6.4	4
3182617	1.7	45	6.8	4
3182618	1.8	45	7.2	4
3182619	1.9	45	7.6	4
3182620	2.0	45	8.0	4
3182621	2.1	45	8.4	4
3182622	2.2	45	8.8	4
3182623	2.3	45	9.2	4
3182624	2.4	45	9.6	4
3182625	2.5	45	10.0	4
3182626	2.6	50	10.4	4
3182627	2.7	50	10.8	4
3182628	2.8	50	11.2	4
3182629	2.9	50	11.6	4
3182630	3.0	50	12.0	6
3182631	3.1	50	12.4	6
3182632	3.2	50	12.8	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
3182633	3.3	50	13.2	6
3182634	3.4	50	13.6	6
3182635	3.5	50	14.0	6
3182636	3.6	50	14.4	6
3182637	3.7	50	14.8	6
3182638	3.8	50	15.2	6
3182639	3.9	50	15.6	6
3182640	4.0	55	16.0	6
3182641	4.1	55	16.4	6
3182642	4.2	55	16.8	6
3182643	4.3	55	17.2	6
3182644	4.4	55	17.6	6
3182645	4.5	55	18.0	6
3182646	4.6	55	18.4	6
3182647	4.7	55	18.8	6
3182648	4.8	55	19.2	6
3182649	4.9	55	19.6	6
3182650	5.0	60	20.0	6
3182651	5.1	60	20.4	6
3182652	5.2	60	20.8	6
3182653	5.3	60	21.2	6
3182654	5.4	60	21.6	6
3182655	5.5	65	22.0	6
3182656	5.6	65	22.4	6
3182657	5.7	65	22.8	6
3182658	5.8	65	23.2	6
3182659	5.9	65	23.6	6
3182660	6.0	65	24.0	6
3182680	8.0	80	32.0	8
3182700	10.0	90	40.0	10
3182720	12.0	100	48.0	12

Packed: 1 pc. Available WXL® coating only.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3723	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





List 3770

WXL-CR-EDS, 2 Flute, Regular Length, Corner Radius

SPEED FEED P1022	CARBIDE	WXL	REG	30°	SHANK h6
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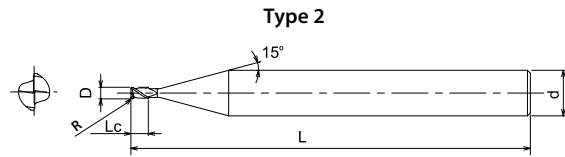
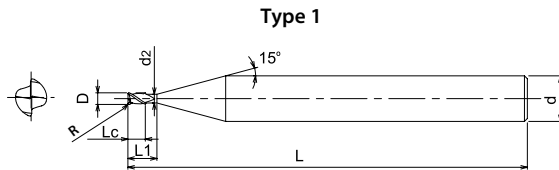
Milling Diameter Tolerance	
0.6 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Dia.	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.	Type
	D	R	L	Lc	L1	d2	d	
37700000	0.6	0.1	50	0.9	2.0	0.55	6	1
37700001	0.8	0.1	50	1.2	2.6	0.75	6	1
37700002	1.0	0.1	50	1.5	2.7	0.95	6	1
37700003	1.2	0.1	50	1.8	3.2	1.15	6	1
37700004	1.4	0.1	50	2.1	3.7	1.35	6	1
37700005	1.5	0.1	50	2.3	4.0	1.45	6	1
37700006	1.6	0.1	50	2.4	4.2	1.55	6	1
37700007	1.8	0.1	50	2.7	4.7	1.75	6	1
37700008	2.0	0.1	50	3.0	5.2	1.95	6	1
37700009	2.5	0.1	50	3.7	5.2	2.40	6	1
37700010	3.0	0.2	60	8.0	-	-	6	2
37700011	3.0	0.5	60	8.0	-	-	6	2
37700012	4.0	0.2	70	11.0	-	-	6	2
37700013	4.0	0.5	70	11.0	-	-	6	2
37700014	4.0	1.0	70	11.0	-	-	6	2
37700015	5.0	0.2	80	13.0	-	-	6	2
37700016	5.0	0.5	80	13.0	-	-	6	2
37700017	5.0	1.0	80	13.0	-	-	6	2
37700018	6.0	0.2	90	13.0	-	-	6	2

EDP Number	Mill Dia.	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.	Type
	D	R	L	Lc	L1	d2	d	
37700019	6.0	0.5	90	13.0	-	-	6	2
37700020	6.0	1.0	90	13.0	-	-	6	2
37700021	6.0	1.5	90	13.0	-	-	6	2
37700022	6.0	2.0	90	13.0	-	-	6	2
37700023	8.0	0.5	100	19.0	-	-	8	2
37700024	8.0	1.0	100	19.0	-	-	8	2
37700025	8.0	1.5	100	19.0	-	-	8	2
37700026	8.0	2.0	100	19.0	-	-	8	2
37700027	10.0	0.5	100	22.0	-	-	10	2
37700028	10.0	1.0	100	22.0	-	-	10	2
37700029	10.0	1.5	100	22.0	-	-	10	2
37700030	10.0	2.0	100	22.0	-	-	10	2
37700031	10.0	3.0	100	22.0	-	-	10	2
37700032	12.0	0.5	110	26.0	-	-	12	2
37700033	12.0	1.0	110	26.0	-	-	12	2
37700034	12.0	1.5	110	26.0	-	-	12	2
37700035	12.0	2.0	110	26.0	-	-	12	2
37700036	12.0	3.0	110	26.0	-	-	12	2

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP432 or HP433 (p. 867-868 or 869)

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3770	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

☐ good ☐ best





EXOCARB® WXL®

Premium Performance Carbide End Mills with OSG's Proprietary WXL® Coating

List 3771

WXL-CR-PHS, 4 Flute, Regular Length, Corner Radius

SPEED FEED P1023	CARBIDE	WXL	REG	30°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
37710000	3	0.2	60	8	6
37710001	3	0.5	60	8	6
37710002	4	0.2	70	11	6
37710003	4	0.5	70	11	6
37710004	4	1.0	70	11	6
37710005	5	0.2	80	13	6
37710006	5	0.5	80	13	6
37710007	5	1.0	80	13	6
37710008	6	0.2	90	13	6
37710009	6	0.5	90	13	6
37710010	6	1.0	90	13	6
37710011	6	1.5	90	13	6
37710012	6	2.0	90	13	6
37710013	8	0.5	100	19	8

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
37710014	8	1.0	100	19	8
37710015	8	1.5	100	19	8
37710016	8	2.0	100	19	8
37710017	10	0.5	100	22	10
37710018	10	1.0	100	22	10
37710019	10	1.5	100	22	10
37710020	10	2.0	100	22	10
37710021	10	3.0	100	22	10
37710022	12	0.5	110	26	12
37710023	12	1.0	110	26	12
37710024	12	1.5	110	26	12
37710025	12	2.0	110	26	12
37710026	12	3.0	110	26	12

Packed: 1 pc. Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 or HP435 (p. 8670868 or 869)

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4571 (p. 771)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum	Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH					6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC
3771	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best





List 3794

WXL-LN-EMS, 4 Flute, Stub Length, Long Neck, Rib Processing

SPEED FEED P1024-1025	CARBIDE	WXL	STUB	35°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 3	+0 / -0.015mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
3172004	1.0	45	1.5	4	0.95	4
3172006	1.0	45	1.5	6	0.95	4
3172008	1.0	45	1.5	8	0.95	4
3172010	1.0	45	1.5	10	0.95	4
3172012	1.0	45	1.5	12	0.95	4
3172016	1.0	50	1.5	16	0.95	4
3172206	1.2	45	1.8	6	1.15	4
3172208	1.2	45	1.8	8	1.15	4
3172210	1.2	45	1.8	10	1.15	4
3172212	1.2	45	1.8	12	1.15	4
3172216	1.2	50	1.8	16	1.15	4
3172406	1.4	45	2.1	6	1.35	4
3172408	1.4	45	2.1	8	1.35	4
3172410	1.4	45	2.1	10	1.35	4
3172412	1.4	45	2.1	12	1.35	4
3172414	1.4	50	2.1	14	1.35	4
3172416	1.4	50	2.1	16	1.35	4
3172422	1.4	60	2.1	22	1.35	4
3172506	1.5	45	2.3	6	1.45	4
3172508	1.5	45	2.3	8	1.45	4
3172510	1.5	45	2.3	10	1.45	4
3172512	1.5	45	2.3	12	1.45	4
3172514	1.5	50	2.3	14	1.45	4
3172516	1.5	50	2.3	16	1.45	4
3172518	1.5	55	2.3	18	1.45	4
3172520	1.5	55	2.3	20	1.45	4
3172606	1.6	45	2.4	6	1.55	4
3172608	1.6	45	2.4	8	1.55	4
3172610	1.6	45	2.4	10	1.55	4
3172612	1.6	45	2.4	12	1.55	4
3172614	1.6	50	2.4	14	1.55	4
3172616	1.6	50	2.4	16	1.55	4
3172618	1.6	55	2.4	18	1.55	4
3172620	1.6	55	2.4	20	1.55	4
3172625	1.6	60	2.4	25	1.55	4
3172806	1.8	45	2.7	6	1.75	4
3172808	1.8	45	2.7	8	1.75	4
3172810	1.8	45	2.7	10	1.75	4
3172812	1.8	45	2.7	12	1.75	4
3172814	1.8	50	2.7	14	1.75	4
3172816	1.8	50	2.7	16	1.75	4

Packed: 1 pc.
Available WXL® coating only.

continued on next page

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3794	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 3794 (Continued)

WXL-LN-EMS, 4 Flute, Stub Length, Long Neck, Rib Processing

SPEED FEED P1024-1025	CARBIDE	WXL	STUB	35°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 3	+0 / -0.015mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
3172818	1.8	55	2.7	18	1.75	4
3172820	1.8	55	2.7	20	1.75	4
3172825	1.8	60	2.7	25	1.75	4
3173006	2.0	45	3.0	6	1.95	4
3173008	2.0	45	3.0	8	1.95	4
3173010	2.0	45	3.0	10	1.95	4
3173012	2.0	45	3.0	12	1.95	4
3173014	2.0	50	3.0	14	1.95	4
3173016	2.0	50	3.0	16	1.95	4
3173018	2.0	55	3.0	18	1.95	4
3173020	2.0	55	3.0	20	1.95	4
3173025	2.0	60	3.0	25	1.95	4
3173030	2.0	70	3.0	30	1.95	4
3173508	2.5	45	3.7	8	2.40	4
3173512	2.5	45	3.7	12	2.40	4
3173516	2.5	55	3.7	16	2.40	4
3173520	2.5	60	3.7	20	2.40	4
3173525	2.5	70	3.7	25	2.40	4
3174008	3.0	45	4.5	8	2.85	6
3174012	3.0	45	4.5	12	2.85	6
3174016	3.0	55	4.5	16	2.85	6
3174020	3.0	60	4.5	20	2.85	6
3174025	3.0	65	4.5	25	2.85	6
3174030	3.0	80	4.5	30	2.85	6

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP411 (p. 858)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3794	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





List 4445

WXL-CR-EHS, 4 Flute, Regular Length, High Helix, Corner Radius

SPEED FEED P1026	CARBIDE	WXL	REG	50°	SHANK h6
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Radius Tolerance	
1/8 ≤ D ≤ 1/2	± 0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
44450001	1/8	0.01	2-1/2	3/8	1/4
44450002	3/16	0.01	2-1/2	1/2	1/4
44450003	1/4	0.01	2-1/2	5/8	1/4

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
44450004	5/16	0.02	2-3/4	3/4	5/16
44450005	3/8	0.02	3	1	3/8
44450006	1/2	0.02	4	1-1/8	1/2

Packed: 1 pc.
Available WXL® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP460 (p. 851)

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4445	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

good best





EXOCARB® WXS®

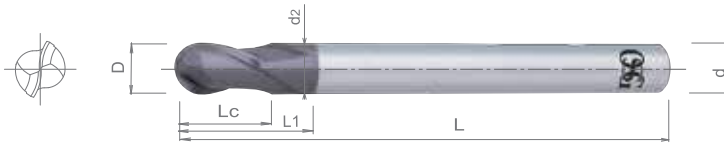
Ultra Premium Performance Carbide End Mills with OSG's Proprietary WXS® Coating

List 4410

WXS-EBD, 2 Flute, Regular Length, Ball End

SPEED FEED P1027	CARBIDE	WXS	REG	30°	SHANK h6
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Radius Tolerance	
1/32 ≤ D ≤ 3/16	± 0.0002"
1/4 ≤ D ≤ 1/2	± 0.0003"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
44100111	1/32	1-1/2	1/32	0.094	0.029	1/4
44100211	1/16	1-1/2	1/16	0.157	0.060	1/4
44100511	3/32	1-1/2	3/32	0.189	0.092	1/4
44100711	1/8	2	1/8	0.252	0.123	1/4
44100911	3/16	2-1/2	3/16	0.283	0.185	1/4
44101111	1/4	3	1/4	0.504	0.246	1/4
44101311	5/16	3-1/2	5/16	0.630	0.308	5/16
44101411	3/8	3-1/2	3/8	0.756	0.371	3/8
44101611	1/2	4	1/2	1.000	0.496	1/2

Packed: 1 pc.
Available WXS® coating only.



Seamless ball-side tangency*

*Seamless ball-side tangency : R≤6

The newly developed WXS® Coating achieves high-speed, high-precision milling of hard materials.

A short flute length has been adopted to enhance tool rigidity (sizes below R3 are shaped with a neck recess).

OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3610 (p. 737)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 860-861, 862 or 866)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4410	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best





List 4510

WXS-EBD, 2 Flute, Regular Length, Ball End

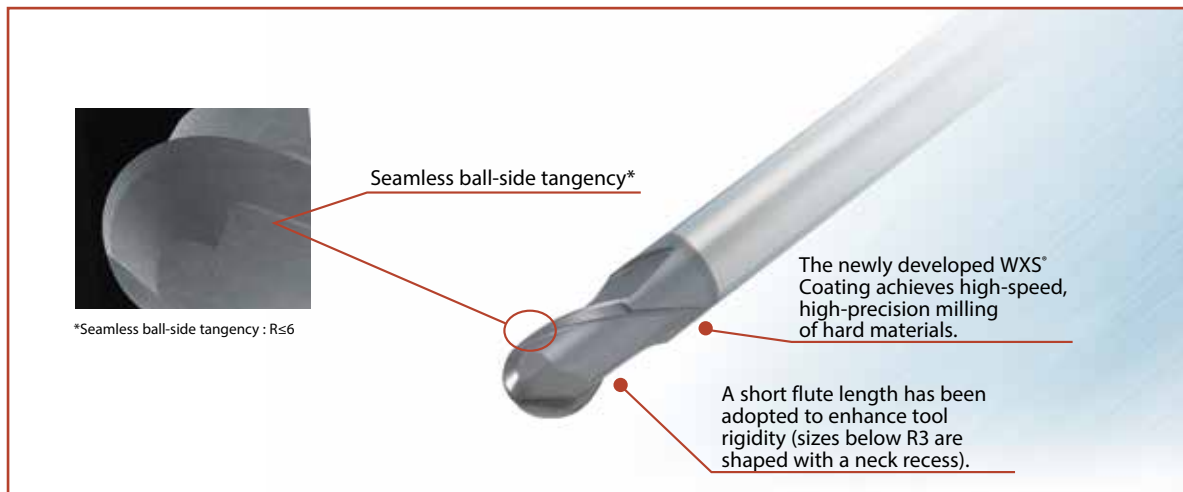
SPEED FEED P1028	CARBIDE	WXS	REG	30°	SHANK h6
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Radius Tolerance	
1 ≤ D ≤ 2	± 0.005mm
2 < D ≤ 12	+/- 0.007mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
3041410	1.0	50	1	2	0.95	4
3041415	1.5	50	2	3	1.45	4
3041420	2.0	50	2	4	1.95	6
3041430	3.0	60	3	6	2.85	6
3041440	4.0	70	4	8	3.85	6
3041441	4.0	60	4	8	3.85	4
3041450	5.0	80	5	10	4.85	6
3041460	6.0	90	9	-	-	6
3041480	8.0	100	12	-	-	8
3041500	10.0	100	15	-	-	10
3041520	12.0	110	18	-	-	12

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3710 (p. 738)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421BN, HP416 or HP413 (p. 860-861, 862 or 866)

Want to turbo-charge performance? Try EXOPRO® PHX - List 9510 (p. 726)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4510	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best



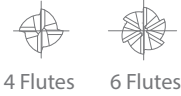


List 4440

WXS-EMS, Multiple Flute, Regular Length

SPEED FEED P1029	CARBIDE	WXS	REG	45°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1/2	+0 / -0.0008"
5/8 ≤ D ≤ 3/4	+0 / -0.0012"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
44400311	1/16	2-1/2	3/16	1/4	4
44400511	3/32	2-1/2	5/16	1/4	4
44400711	1/8	2-1/2	3/8	1/4	4
44400911	3/16	2-1/2	1/2	1/4	4
44401111	1/4	2-1/2	5/8	1/4	6
44401311	5/16	2-3/4	3/4	5/16	6
44401411	3/8	3	1	3/8	6
44401611	1/2	3-1/2	1-1/8	1/2	6
44401811	5/8	4	1-1/2	5/8	6
44402011	3/4	4-1/4	1-3/4	3/4	6

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54HRC? Try EXOCARB® WXL® - List 3604 (p. 740)
 Don't require ultra-high performance? Try HY-PRO® CARB - List HP450 (p. 852)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4440	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best



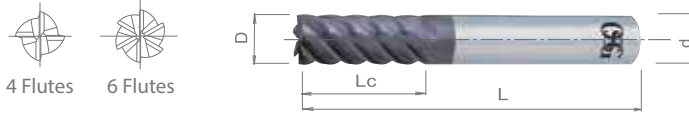


List 4540

WXS-EMS, Multiple Flute, Regular Length

SPEED FEED P1030	CARBIDE	WXS	REG	45°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Dia.	Number of Flutes
	D	L	Lc	d	
3041010	1.0	60	2.5	6	4
3041015	1.5	60	4.0	6	4
3041020	2.0	60	6.0	6	4
3041025	2.5	60	8.0	6	4
3041030	3.0	60	8.0	6	4
3041035	3.5	60	10.0	6	4
3041040	4.0	60	11.0	6	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Dia.	Number of Flutes
	D	L	Lc	d	
3041045	4.5	60	11.0	6	4
3041050	5.0	60	13.0	6	4
3041055	5.5	60	13.0	6	4
3041060	6.0	60	13.0	6	6
3041080	8.0	70	19.0	8	6
3041100	10.0	80	22.0	10	6
3041120	12.0	90	26.0	12	6

Packed: 1 pc. Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54HRC? Try EXOCARB® WXL® - List 3704 (p. 746)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP450 (p. 852)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4540	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best



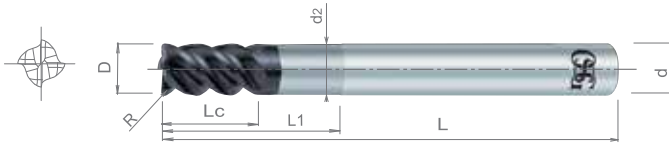


List 4471

WXS-PKE, 4 Flute, Regular Length, Reduced Neck, Corner Radius

SPEED FEED P1031	CARBIDE WXS	REG	45°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1/2	+0 / -0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
447100111	1/16	0.010	2.25	1/16	0.25	0.058	1/8
447100311	3/32	0.010	2.25	3/32	0.38	0.089	1/8
447100511	1/8	0.010	2.25	1/8	0.50	0.120	1/8
447100611	1/8	0.015	2.25	1/8	0.50	0.120	1/8
447100711	1/8	0.020	2.25	1/8	0.50	0.120	1/8
447101011	3/16	0.020	2.25	3/16	0.50	0.181	3/16
447101111	3/16	0.030	2.25	3/16	0.50	0.181	3/16
447101411	1/4	0.010	2.50	1/4	0.75	0.242	1/4
447101511	1/4	0.020	2.50	1/4	0.75	0.242	1/4
447101611	1/4	0.030	2.50	1/4	0.75	0.242	1/4
447102011	3/8	0.020	3.00	3/8	1.00	0.367	3/8
447102111	3/8	0.030	3.00	3/8	1.00	0.367	3/8
447102211	3/8	0.060	3.00	3/8	1.00	0.367	3/8
447102611	1/2	0.030	3.25	1/2	1.50	0.488	1/2
447102711	1/2	0.060	3.25	1/2	1.50	0.488	1/2

Packed: 1 pc. Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54HRC? Try EXOCARB® WXL® - List 3670 (p. 739)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 (p. 867-868)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
4471	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best



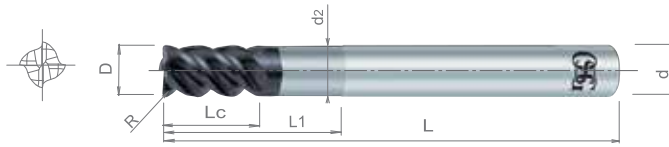


List 4571

WXS-PKE, 4 Flute, Regular Length, Reduced Neck, Corner Radius

SPEED FEED P1032	CARBIDE WXS	REG	45°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
457103011	3	0.2	60	5	9	2.85	6
457103111	3	0.2	70	5	15	2.85	6
457103211	3	0.5	60	5	9	2.85	6
457103311	3	0.5	70	5	15	2.85	6
457104011	4	0.2	70	6	12	3.80	6
457104111	4	0.2	80	6	20	3.80	6
457104211	4	0.5	70	6	12	3.80	6
457104311	4	0.5	80	6	20	3.80	6
457105011	5	0.2	80	8	15	4.80	6
457105111	5	0.2	90	8	25	4.80	6
457105211	5	0.5	80	8	15	4.80	6
457105311	5	0.5	90	8	25	4.80	6
457106011	6	0.5	90	9	18	5.80	6
457106111	6	1.0	90	9	18	5.80	6
457106211	6	1.0	100	9	30	5.80	6
457106311	6	0.5	100	9	30	5.80	6
457108011	8	0.5	100	12	24	7.70	8
457108111	8	0.5	110	12	40	7.70	8
457108211	8	1.0	100	12	24	7.70	8
457108311	8	1.0	110	12	40	7.70	8
457110011	10	0.5	100	15	30	9.70	10
457110111	10	0.5	120	15	50	9.70	10
457110211	10	1.0	100	15	30	9.70	10
457110311	10	1.0	120	15	50	9.70	10
457110411	10	2.0	100	15	30	9.70	10
457110511	10	2.0	120	15	50	9.70	10
457112011	12	1.0	110	18	36	11.70	12
457112111	12	1.0	130	18	60	11.70	12
457112211	12	2.0	110	18	36	11.70	12
457112311	12	2.0	130	18	60	11.70	12

Packed: 1 pc. Available WXS® coating only.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3771 (p. 762)

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 or HP435 (p. 867-868 or 870)

Want to turbo-charge performance? Try EXOPRO® PHX - List 9575 (p. 731)

Work Material

List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
4571	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best





EXOCARB® WXS®

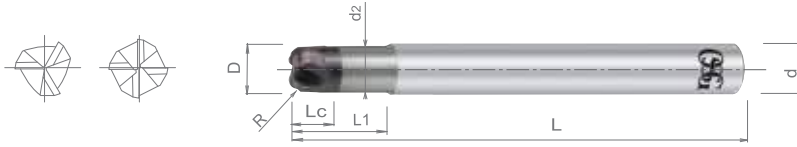
Ultra Premium Performance Carbide End Mills with OSG's Proprietary WXS® Coating

List 4470

WXS-CRE, Regular Length, High Feed, Corner Radius

SPEED FEED P1033	CARBIDE	WXS	REG	0°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 3/16	+0 / -0.0008"
1/4 ≤ D ≤ 1/2	+0 / -0.0012"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	No. of Flutes
	D	R	L	Lc	L1	d2	d	
44700111	1/8	1/32	2-1/4	0.06	3/8	0.12	1/4	3
44700211	3/16	1/16	2-1/4	0.09	9/16	0.18	1/4	3
44700311	1/4	1/16	3	0.10	1	0.23	1/4	4
44700411	5/16	3/32	3	0.13	1-1/4	0.29	5/16	4
44700511	3/8	3/32	4	0.15	1-1/2	0.34	3/8	4
44700611	1/2	1/8	5	0.20	2	0.46	1/2	4

Packed: 1 pc. Available WXS® coating only.

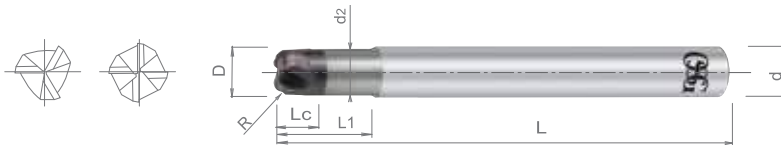


List 4570

WXS-CRE, Regular Length, High Feed, Corner Radius

SPEED FEED P1034	CARBIDE	WXS	REG	0°	SHANK h6
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Milling Diameter Tolerance	
2 ≤ D ≤ 5	+0 / -0.02mm
6 ≤ D ≤ 13	+0 / -0.03mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	No. of Flutes
	D	R	L	Lc	L1	d2	d	
457002011	2	0.50	60	0.8	5.0	1.8	6	3
457003011	3	0.75	60	1.3	9.0	2.7	6	4
457004011	4	1.00	70	1.6	10.0	3.6	6	4
457005011	5	1.20	80	2.0	12.5	4.5	6	4
457006011	6	1.50	90	2.5	12.0	5.4	6	4
457007011	7	1.50	90	3.0	-	-	6	4
457008011	8	2.00	100	3.5	16.0	7.2	8	4
457009011	9	2.00	100	4.0	-	-	8	4
457010011	10	2.00	100	4.5	20.0	9.0	10	4
457011011	11	2.00	100	5.0	-	-	10	4
457012011	12	3.00	110	5.0	24.0	11.0	12	4
457013011	13	3.00	110	6.0	-	-	12	4

Packed: 1 pc. Available WXS® coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075		Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010 1018	1035 1045	1065	4140 4340	6061 7075				Casting								
4470	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
4570	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best





List 4472

WXS-CRE, 5 Flute, Regular Length, High Feed, Corner Radius

NEW	SPEED FEED P1035	CARBIDE	WXS		REG	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 3/16	+0 / -0.0008"
1/4 ≤ D ≤ 1/2	+0 / -0.0012"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
447200013	1/8	1/32	2-1/4	0.062	0.375	0.113	1/4
447200113	3/16	1/16	2-1/4	0.094	0.562	0.168	1/4
447200213	1/4	1/16	3	0.098	1.000	0.226	1/4
447200313	5/16	3/32	3	0.129	1.250	0.280	5/16
447200413	3/8	3/32	4	0.149	1.500	0.336	3/8
447200513	1/2	1/8	5	0.200	2.000	0.460	1/2

Packed: 1 pc. Available WXS® coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4472	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best





List 4572

WXS-CRE, Multiple Flute, Regular Length, High Feed, Corner Radius

NEW	SPEED FEED P1036	CARBIDE	WXS		REG	SHANK h6
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Milling Diameter Tolerance	
2 ≤ D ≤ 12	+0 / -0.03mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	Number of Flutes
	D	R	L	Lc	L1	d2	d	
48106421	2	0.50	50	0.8	8.0	2.0	6	4
48106433	3	0.75	55	1.2	12.0	2.7	6	5
48106445	4	1.00	55	1.6	12.0	3.6	6	5
48106467	6	1.50	90	2.5	12.0	5.4	6	5
48106489	8	2.00	100	3.5	16.0	7.2	8	5
48106509	10	2.00	100	4.0	20.0	9.0	10	5
48106533	12	3.00	110	5.0	24.0	11.0	12	5

Packed: 1 pc. Available WXS® coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4572	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

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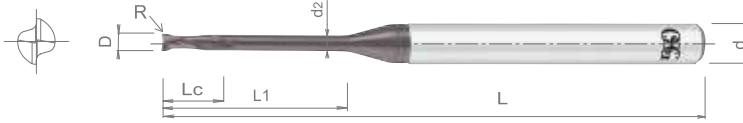




List 4592

WXS,CPR, 2 Flute, Stub Length, Long Neck, Corner Radius, Rib Processing

SPEED FEED P1037	CARBIDE	WXS		STUB	30°	SHANK h6
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±5µm Corner Radius Tolerance

Milling Diameter Tolerance	
0.4 ≤ D ≤ 0.5	+0 / -0.01mm
0.5 ≤ D ≤ 3	+0 / -0.015mm

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
3100403	0.4	0.05	50	0.30	2	0.37	4
3100404	0.4	0.05	50	0.30	3	0.37	4
3100405	0.4	0.05	50	0.30	4	0.37	4
3100406	0.4	0.10	50	0.30	2	0.37	4
3100407	0.4	0.10	50	0.30	3	0.37	4
3100408	0.4	0.10	50	0.30	4	0.37	4
3100501	0.5	0.05	50	0.40	1	0.46	4
3100502	0.5	0.05	50	0.40	2	0.46	4
3100503	0.5	0.05	50	0.40	3	0.46	4
3100504	0.5	0.05	50	0.40	4	0.46	4
3100505	0.5	0.05	50	0.40	5	0.46	4
3100506	0.5	0.05	50	0.40	6	0.46	4
3100508	0.5	0.10	50	0.40	2	0.46	4
3100509	0.5	0.10	50	0.40	3	0.46	4
3100510	0.5	0.10	50	0.40	4	0.46	4
3100511	0.5	0.10	50	0.40	5	0.46	4
3100512	0.5	0.10	50	0.40	6	0.46	4
3100601	0.6	0.10	50	0.48	2	0.56	4
3100602	0.6	0.10	50	0.48	4	0.56	4
3100603	0.6	0.10	50	0.48	6	0.56	4
3100803	0.8	0.20	50	0.65	4	0.76	4
3100804	0.8	0.20	50	0.65	6	0.76	4
3100805	0.8	0.20	50	0.65	8	0.76	4
3101001	1.0	0.05	50	0.80	4	0.95	4
3101002	1.0	0.05	50	0.80	6	0.95	4
3101003	1.0	0.05	50	0.80	8	0.95	4
3101004	1.0	0.05	50	0.80	10	0.95	4
3101005	1.0	0.05	50	0.80	12	0.95	4
3101006	1.0	0.10	50	0.80	4	0.95	4
3101007	1.0	0.10	50	0.80	6	0.95	4
3101008	1.0	0.10	50	0.80	8	0.95	4
3101009	1.0	0.10	50	0.80	10	0.95	4
3101010	1.0	0.10	50	0.80	12	0.95	4
3101011	1.0	0.20	50	0.80	4	0.95	4
3101012	1.0	0.20	50	0.80	6	0.95	4
3101013	1.0	0.20	50	0.80	8	0.95	4
3101014	1.0	0.20	50	0.80	10	0.95	4
3101015	1.0	0.20	50	0.80	12	0.95	4
3101016	1.0	0.20	50	0.80	16	0.95	4
3101017	1.0	0.20	50	0.80	20	0.95	4
3101018	1.0	0.30	50	0.80	4	0.95	4

Packed: 1 pc.
Available WXS® coating only.

continued on next page

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4592	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

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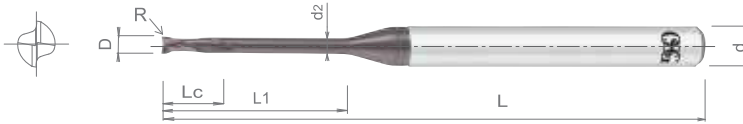
List 4592 (Continued)

WXS-CPR, 2 Flute, Stub Length, Long Neck, Corner Radius, Rib Processing

SPEED FEED P1037	CARBIDE	WXS	STUB	30°	SHANK h6
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±5µm Corner Radius Tolerance

Milling Diameter Tolerance	
0.4 ≤ D ≤ 0.5	+0 / -0.01mm
0.5 ≤ D ≤ 3	+0 / -0.015mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
3101019	1.0	0.30	50	0.80	6	0.95	4
3101020	1.0	0.30	50	0.80	8	0.95	4
3101021	1.0	0.30	50	0.80	10	0.95	4
3101022	1.0	0.30	50	0.80	12	0.95	4
3101201	1.2	0.20	50	1.00	6	1.15	4
3101202	1.2	0.20	50	1.00	8	1.15	4
3101203	1.2	0.20	50	1.00	10	1.15	4
3101501	1.5	0.20	50	1.20	6	1.45	4
3101502	1.5	0.20	50	1.20	8	1.45	4
3101503	1.5	0.20	50	1.20	10	1.45	4
3101504	1.5	0.20	50	1.20	12	1.45	4
3101505	1.5	0.20	50	1.20	16	1.45	4
3101506	1.5	0.30	50	1.20	6	1.45	4
3101507	1.5	0.30	50	1.20	8	1.45	4
3101508	1.5	0.30	50	1.20	10	1.45	4
3101509	1.5	0.30	50	1.20	12	1.45	4
3101510	1.5	0.30	50	1.20	16	1.45	4
3102001	2.0	0.10	50	1.60	8	1.95	4
3102002	2.0	0.10	50	1.60	10	1.95	4
3102003	2.0	0.10	50	1.60	12	1.95	4
3102004	2.0	0.10	60	1.60	16	1.95	4
3102005	2.0	0.10	60	1.60	20	1.95	4
3102006	2.0	0.10	70	1.60	25	1.95	4
3102007	2.0	0.20	50	1.60	8	1.95	4
3102008	2.0	0.20	50	1.60	10	1.95	4
3102009	2.0	0.20	50	1.60	12	1.95	4
3102010	2.0	0.20	60	1.60	16	1.95	4
3102011	2.0	0.20	60	1.60	20	1.95	4
3102012	2.0	0.20	70	1.60	25	1.95	4
3102013	2.0	0.30	50	1.60	8	1.95	4
3102014	2.0	0.30	50	1.60	10	1.95	4
3102015	2.0	0.30	50	1.60	12	1.95	4
3102016	2.0	0.30	60	1.60	16	1.95	4
3102017	2.0	0.30	60	1.60	20	1.95	4
3102018	2.0	0.30	70	1.60	25	1.95	4
3102019	2.0	0.50	50	1.60	8	1.95	4
3102020	2.0	0.50	50	1.60	10	1.95	4
3102021	2.0	0.50	50	1.60	12	1.95	4
3102022	2.0	0.50	60	1.60	16	1.95	4
3102023	2.0	0.50	60	1.60	20	1.95	4
3102024	2.0	0.50	70	1.60	25	1.95	4
3102501	2.5	0.20	50	2.20	10	2.40	4
3102502	2.5	0.20	60	2.20	20	2.40	4
3102503	2.5	0.20	70	2.20	30	2.40	4
3102504	2.5	0.50	50	2.20	10	2.40	4
3102505	2.5	0.50	60	2.20	20	2.40	4
3102506	2.5	0.50	70	2.20	30	2.40	4
3103001	3.0	0.20	60	2.50	8	2.85	6
3103002	3.0	0.20	60	2.50	12	2.85	6
3103003	3.0	0.20	60	2.50	16	2.85	6
3103004	3.0	0.20	70	2.50	20	2.85	6
3103005	3.0	0.20	70	2.50	25	2.85	6

Packed: 1 pc.
Available WXS® coating only.





List 4592 (Continued)

SPEED FEED P1037	CARBIDE	WXS		STUB	30°	SHANK h6
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WXS-CPR, 2 Flute, Stub Length, Long Neck, Corner Radius, Rib Processing

±5µm Corner Radius Tolerance

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
3103006	3.0	0.20	70	2.50	30	2.85	6
3103007	3.0	0.20	80	2.50	35	2.85	6
3103008	3.0	0.30	60	2.50	12	2.85	6
3103009	3.0	0.30	60	2.50	16	2.85	6
3103010	3.0	0.30	70	2.50	20	2.85	6
3103011	3.0	0.30	70	2.50	25	2.85	6
3103012	3.0	0.30	70	2.50	30	2.85	6
3103013	3.0	0.30	80	2.50	35	2.85	6
3103014	3.0	0.50	60	2.50	12	2.85	6
3103015	3.0	0.50	60	2.50	16	2.85	6
3103016	3.0	0.50	70	2.50	20	2.85	6
3103017	3.0	0.50	70	2.50	25	2.85	6
3103018	3.0	0.50	70	2.50	30	2.85	6
3103019	3.0	0.50	80	2.50	35	2.85	6

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOPRO® PHX - List 9592 (p. 730)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
4592	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

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List 4590

SPEED FEED P1038-1040	CARBIDE	WXS		STUB	30°	SHANK h6
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WXS-LN-EBD, 2 Flute, Stub Length, Long Neck, Ball End, Rib Processing

±5µm Corner Radius Tolerance



EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3050100	0.1	45	0.08	0.30	0.09	4
3050101	0.1	45	0.08	0.50	0.09	4
3050201	0.2	45	0.16	0.50	0.18	4
3049921	0.2	45	0.16	0.75	0.18	4
3050202	0.2	45	0.16	1.00	0.18	4
3049922	0.2	45	0.16	1.25	0.18	4
3050203	0.2	45	0.16	1.50	0.18	4
3049923	0.2	45	0.16	1.75	0.18	4
3050204	0.2	45	0.16	2.00	0.18	4
3050205	0.2	45	0.16	2.50	0.18	4
3050206	0.2	45	0.16	3.00	0.18	4
3050301	0.3	45	0.16	0.60	0.28	4
3050302	0.3	45	0.24	1.00	0.28	4
3049932	0.3	45	0.24	1.25	0.28	4
3050303	0.3	45	0.24	1.50	0.28	4
3049933	0.3	45	0.24	1.75	0.28	4
3050304	0.3	45	0.24	2.00	0.28	4
3049934	0.3	45	0.24	2.25	0.28	4
3050305	0.3	45	0.24	2.50	0.28	4
3050306	0.3	45	0.24	3.00	0.28	4
3050307	0.3	45	0.24	3.50	0.28	4
3050308	0.3	45	0.24	4.00	0.28	4
3050309	0.3	45	0.24	4.50	0.28	4
3050310	0.3	45	0.24	5.00	0.28	4
3050401	0.4	45	0.30	0.80	0.37	4
3050402	0.4	45	0.30	1.00	0.37	4
3050403	0.4	45	0.30	1.50	0.37	4
3050404	0.4	45	0.30	2.00	0.37	4
3050405	0.4	45	0.30	2.50	0.37	4
3050406	0.4	45	0.30	3.00	0.37	4
3050407	0.4	45	0.30	3.50	0.37	4
3050408	0.4	45	0.30	4.00	0.37	4
3050409	0.4	45	0.30	4.50	0.37	4
3050410	0.4	45	0.30	5.00	0.37	4
3050411	0.4	45	0.30	5.50	0.37	4
3050412	0.4	45	0.30	6.00	0.37	4
3050500	0.5	45	0.40	1.00	0.45	4
3050501	0.5	45	0.40	1.50	0.45	4
3050502	0.5	45	0.40	2.00	0.45	4
3049952	0.5	45	0.40	2.50	0.45	4
3050503	0.5	45	0.40	3.00	0.45	4
3049953	0.5	45	0.40	3.50	0.45	4
3050504	0.5	45	0.40	4.00	0.45	4
3049954	0.5	45	0.40	4.50	0.45	4
3050505	0.5	45	0.40	5.00	0.45	4
3049955	0.5	45	0.40	5.50	0.45	4
3050506	0.5	45	0.40	6.00	0.45	4
3050507	0.5	45	0.40	7.00	0.45	4
3050508	0.5	45	0.40	8.00	0.45	4
3050509	0.5	45	0.40	9.00	0.45	4

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3050510	0.5	45	0.40	10.00	0.45	4
3050601	0.6	45	0.50	1.20	0.55	4
3050602	0.6	45	0.50	2.00	0.55	4
3049962	0.6	45	0.50	2.50	0.55	4
3050603	0.6	45	0.50	3.00	0.55	4
3049963	0.6	45	0.50	3.50	0.55	4
3050604	0.6	45	0.50	4.00	0.55	4
3049964	0.6	45	0.50	4.50	0.55	4
3050605	0.6	45	0.50	5.00	0.55	4
3049965	0.6	45	0.50	5.50	0.55	4
3050606	0.6	45	0.50	6.00	0.55	4
3049966	0.6	45	0.50	6.50	0.55	4
3050607	0.6	45	0.50	7.00	0.55	4
3049967	0.6	45	0.50	7.50	0.55	4
3050608	0.6	45	0.50	8.00	0.55	4
3049968	0.6	45	0.50	8.50	0.55	4
3050609	0.6	45	0.50	9.00	0.55	4
3049969	0.6	45	0.50	9.50	0.55	4
3050610	0.6	45	0.50	10.00	0.55	4
3050611	0.6	50	0.50	11.00	0.55	4
3050612	0.6	50	0.50	12.00	0.55	4
3050802	0.8	45	0.60	2.00	0.75	4
3050803	0.8	45	0.60	3.00	0.75	4
3050804	0.8	45	0.60	4.00	0.75	4
3050805	0.8	45	0.60	5.00	0.75	4
3050806	0.8	45	0.60	6.00	0.75	4
3050807	0.8	45	0.60	7.00	0.75	4
3050808	0.8	45	0.60	8.00	0.75	4
3050810	0.8	45	0.60	10.00	0.75	4
3050812	0.8	50	0.60	12.00	0.75	4
3051002	1.0	45	0.80	2.00	0.95	4
3051003	1.0	45	0.80	3.00	0.95	4
3051004	1.0	45	0.80	4.00	0.95	4
3051005	1.0	45	0.80	5.00	0.95	4
3051006	1.0	45	0.80	6.00	0.95	4
3051007	1.0	45	0.80	7.00	0.95	4
3051008	1.0	45	0.80	8.00	0.95	4
3051009	1.0	45	0.80	9.00	0.95	4
3051010	1.0	45	0.80	10.00	0.95	4
3051012	1.0	45	0.80	12.00	0.95	4
3051014	1.0	50	0.80	14.00	0.95	4
3051016	1.0	50	0.80	16.00	0.95	4
3051018	1.0	55	0.80	18.00	0.95	4
3051020	1.0	55	0.80	20.00	0.95	4
3051022	1.0	60	0.80	22.00	0.95	4
3051202	1.2	45	1.00	2.40	1.15	4
3051204	1.2	45	1.00	4.00	1.15	4
3051206	1.2	45	1.00	6.00	1.15	4
3051208	1.2	45	1.00	8.00	1.15	4
3051210	1.2	45	1.00	10.00	1.15	4

Packed: 1 pc. Available WXS® coating only.





List 4590 (Continued)

WXS-LN-EBD, 2 Flute, Stub Length, Long Neck, Ball End, Rib Processing

SPEED FEED P1038-1040	CARBIDE	WXS		STUB	30°	SHANK h6
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3051212	1.2	45	1.00	12.00	1.15	4
3051214	1.2	50	1.00	14.00	1.15	4
3051216	1.2	50	1.00	16.00	1.15	4
3051218	1.2	55	1.00	18.00	1.15	4
3051220	1.2	55	1.00	20.00	1.15	4
3051503	1.5	45	1.20	3.00	1.45	4
3051504	1.5	45	1.20	4.00	1.45	4
3051506	1.5	45	1.20	6.00	1.45	4
3051508	1.5	45	1.20	8.00	1.45	4
3051510	1.5	45	1.20	10.00	1.45	4
3051512	1.5	45	1.20	12.00	1.45	4
3051514	1.5	50	1.20	14.00	1.45	4
3051516	1.5	50	1.20	16.00	1.45	4
3051518	1.5	55	1.20	18.00	1.45	4
3051520	1.5	55	1.20	20.00	1.45	4
3051522	1.5	60	1.20	22.00	1.45	4
3051530	1.5	70	1.20	30.00	1.45	4
3051608	1.6	45	1.30	8.00	1.55	4
3051612	1.6	45	1.30	12.00	1.55	4
3051616	1.6	50	1.30	16.00	1.55	4
3051620	1.6	55	1.30	20.00	1.55	4
3052004	2.0	45	1.60	4.00	1.95	4
3052006	2.0	45	1.60	6.00	1.95	4
3052008	2.0	45	1.60	8.00	1.95	4
3052010	2.0	45	1.60	10.00	1.95	4
3052012	2.0	45	1.60	12.00	1.95	4
3052014	2.0	50	1.60	14.00	1.95	4
3052016	2.0	50	1.60	16.00	1.95	4
3052018	2.0	55	1.60	18.00	1.95	4
3052020	2.0	55	1.60	20.00	1.95	4
3052022	2.0	60	1.60	22.00	1.95	4
3052025	2.0	65	1.60	25.00	1.95	4
3052030	2.0	70	1.60	30.00	1.95	4
3052035	2.0	70	1.60	35.00	1.95	4
3052040	2.0	80	1.60	40.00	1.95	4
3052510	2.5	45	2.00	10.00	2.35	4
3052515	2.5	50	2.00	15.00	2.35	4
3052520	2.5	55	2.00	20.00	2.35	4
3052525	2.5	65	2.00	25.00	2.35	4
3052530	2.5	70	2.00	30.00	2.35	4
3052535	2.5	70	2.00	35.00	2.35	4
3053006	3.0	50	2.40	6.00	2.85	6
3053008	3.0	50	2.40	8.00	2.85	6
3053010	3.0	50	2.40	10.00	2.85	6
3053012	3.0	55	2.40	12.00	2.85	6

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3053014	3.0	55	2.40	14.00	2.85	6
3053015	3.0	55	2.40	15.00	2.85	6
3053016	3.0	55	2.40	16.00	2.85	6
3053020	3.0	60	2.40	20.00	2.85	6
3053025	3.0	65	2.40	25.00	2.85	6
3053030	3.0	70	2.40	30.00	2.85	6
3053035	3.0	80	2.40	35.00	2.85	6
3053040	3.0	90	2.40	40.00	2.85	6
3053515	3.5	55	2.80	15.00	3.35	6
3053520	3.5	60	2.80	20.00	3.35	6
3053525	3.5	65	2.80	25.00	3.35	6
3053530	3.5	70	2.80	30.00	3.35	6
3053535	3.5	80	2.80	35.00	3.35	6
3053540	3.5	90	2.80	40.00	3.35	6
3053545	3.5	90	2.80	45.00	3.35	6
3054008	4.0	60	3.20	8.00	3.85	6
3054010	4.0	60	3.20	10.00	3.85	6
3054012	4.0	60	3.20	12.00	3.85	6
3054015	4.0	60	3.20	15.00	3.85	6
3054016	4.0	60	3.20	16.00	3.85	6
3054020	4.0	65	3.20	20.00	3.85	6
3054025	4.0	70	3.20	25.00	3.85	6
3054030	4.0	80	3.20	30.00	3.85	6
3054035	4.0	80	3.20	35.00	3.85	6
3054040	4.0	90	3.20	40.00	3.85	6
3054045	4.0	90	3.20	45.00	3.85	6
3054050	4.0	100	3.20	50.00	3.85	6
3055010	5.0	60	4.00	10.00	4.85	6
3055015	5.0	60	4.00	15.00	4.85	6
3055020	5.0	70	4.00	20.00	4.85	6
3055025	5.0	70	4.00	25.00	4.85	6
3055030	5.0	80	4.00	30.00	4.85	6
3055035	5.0	80	4.00	35.00	4.85	6
3055040	5.0	90	4.00	40.00	4.85	6
3055045	5.0	100	4.00	45.00	4.85	6
3055050	5.0	100	4.00	50.00	4.85	6
3056012	6.0	60	4.80	12.00	5.85	6
3056020	6.0	70	4.80	20.00	5.85	6
3056025	6.0	70	4.80	25.00	5.85	6
3056030	6.0	80	4.80	30.00	5.85	6
3056035	6.0	80	4.80	35.00	5.85	6
3056040	6.0	90	4.80	40.00	5.85	6
3056045	6.0	100	4.80	45.00	5.85	6
3056050	6.0	120	4.80	50.00	5.85	6

Packed: 1 pc. Available WXS® coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4590	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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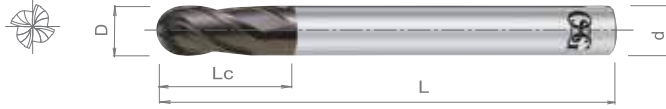


List 4430

WXS-EBM, True 4 Flute, Regular Length, Ball End

SPEED FEED P1041	CARBIDE	WXS	REG	30°	SHANK h6
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Radius Tolerance	
1/4 ≤ D ≤ 1/2	± 0.0006"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
44301111	1/4	3-1/2	1/2	1/4
44301311	5/16	4	5/8	5/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
44301411	3/8	4	3/4	3/8
44301611	1/2	4-3/8	7/8	1/2

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441BN (p. 860-861)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
4430	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

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List 4530

WXS-EBM, True 4 Flute, Regular Length, Ball End

SPEED FEED P1042	CARBIDE	WXS	REG	30°	SHANK h6
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Radius Tolerance	
6 ≤ D ≤ 12	± 0.015mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
45300001	6	90	12	6
45300002	8	100	14	8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
45300003	10	100	18	10
45300004	12	110	22	12

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441BN (p. 860-861)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
4530	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

good best



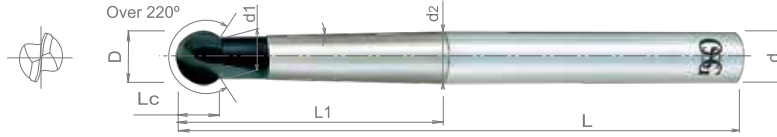


List 4513

WXS-EQD, 2 Flute, Regular Length, Ball End, Sphere Type

SPEED FEED P1043	CARBIDE	WXS	REG	30°	SHANK h6
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Radius Tolerance	
1 ≤ D ≤ 4	±0.05mm
6 ≤ D ≤ 12	±0.015mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Min. Neck Diameter	Max Neck Diameter	Neck Incline	Shank Diameter
	D	L	Lc	L1	d1	d2		d
45130001	1	60	0.7	5	0.85	0.85	-	6
45130002	2	60	1.5	10	1.70	1.70	-	6
45130003	3	70	2.3	15	2.70	2.70	-	6
45130004	4	70	3.0	20	3.70	3.70	-	6
45130005	6	90	4.0	30	4.60	5.90	1.5°	6
45130006	8	100	5.4	40	6.20	7.90	1.5°	8
45130007	10	110	6.7	50	7.70	9.90	1.5°	10
45130008	12	110	8.1	60	9.20	11.90	1.5°	12

Packed: 1 pc. Available WXS® coating only.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4513	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		

good best



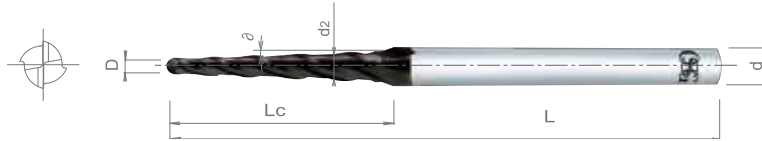


List 4581

WXS-RB-TPB, 4 Flute, Tapered, Ball End, Rib Processing

SPEED FEED P1044	CARBIDE	WXS		25°	SHANK h6
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Side Cutting Edge Incline Tolerance ±0°5'



EDP Number	Mill Diameter	Overall Length	Length of Cut	Max Diameter	Cut Incline	Shank Diameter
	D	L	Lc	d2	α	d
45810026	1.0	45	8	1.13	0.50°	4
45810035	1.0	45	8	1.39	1.50°	4
45810040	1.0	45	12	1.80	2.00°	4
45810072	1.5	45	10	1.82	1.00°	4
45810073	1.5	45	12	1.90	1.00°	4
45810078	1.5	45	12	2.09	1.50°	4
45810083	1.5	45	12	2.29	2.00°	4
45810140	2.0	55	25	2.42	0.50°	4
45810144	2.0	55	20	2.50	0.75°	4
45810145	2.0	55	25	2.63	0.75°	4
45810150	2.0	55	25	2.84	1.00°	4
45810152	2.0	45	12	2.58	1.50°	4
45810154	2.0	55	20	3.00	1.50°	4
45810156	2.0	45	10	2.63	2.00°	4
45810175	2.5	55	25	3.33	1.00°	4
45810178	2.5	50	16	3.27	1.50°	4
45810180	2.5	55	25	3.74	1.50°	4

Packed: 1 pc.
Available WXS® coating only.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4581	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best



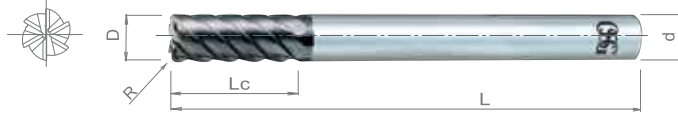


List 4541

WXS-CR-EMS, Regular Length, Corner Radius

SPEED FEED P1045	CARBIDE	WXS	REG	45°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	R	L	Lc	d	
45410000	3	0.2	60	8	6	4
45410001	3	0.5	60	8	6	4
45410002	4	0.2	70	11	6	4
45410003	4	0.5	70	11	6	4
45410004	4	1.0	70	11	6	4
45410005	5	0.2	80	13	6	4
45410006	5	0.5	80	13	6	4
45410007	5	1.0	80	13	6	4
45410008	6	0.2	90	13	6	6
45410009	6	0.5	90	13	6	6
45410010	6	1.0	90	13	6	6
45410011	6	1.5	90	13	6	6
45410012	6	2.0	90	13	6	6
45410013	8	0.5	100	19	8	6
45410014	8	1.0	100	19	8	6
45410015	8	1.5	100	19	8	6
45410016	8	2.0	100	19	8	6
45410017	10	0.5	100	22	10	6
45410018	10	1.0	100	22	10	6
45410019	10	1.5	100	22	10	6
45410020	10	2.0	100	22	10	6
45410021	10	3.0	100	22	10	6
45410022	12	0.5	110	26	12	6
45410023	12	1.0	110	26	12	6
45410024	12	1.5	110	26	12	6
45410025	12	2.0	110	26	12	6
45410026	12	3.0	110	26	12	6

Packed: 1 pc.
Available WXS® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 or HP435
(p. 867-868 or 870)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
4541	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best



List 9010

WXS-MG-EBD, 2 Flute, Stub Length, Ball End



SPEED FEED P1046	CARBIDE	WXS	STUB	30°	SHANK h6
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Radius Tolerance	
1/32 ≤ D ≤ 1/2	+0 / -0.0006"

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
90100111	1/32	2	3/64	1/4
90100311	1/16	2	3/32	1/4
90100711	1/8	2	3/16	1/4
90100911	3/16	2	9/32	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
90101111	1/4	2	3/8	1/4
90101311	5/16	2-3/16	15/32	5/16
90101411	3/8	2-3/16	9/16	3/8
90101611	1/2	2-1/2	11/16	1/2

Packed: 1 pc.
Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.



List 9110

WXS-MG-EBD, 2 Flute, Stub Length, Ball End



SPEED FEED P1046	CARBIDE	WXS	STUB	30°	SHANK h6
---------------------	---------	-----	------	-----	-------------

Radius Tolerance	
1 ≤ D ≤ 10	+0 / -0.01mm

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
91100111	1	50	1.5	6
91100211	2	50	3.0	6
91100311	3	50	4.5	6
91100411	4	50	6.0	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
91100611	6	50	9.0	6
91100811	8	55	12.0	8
91101011	10	55	15.0	10

Packed: 1 pc.
Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9010	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
9110	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

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EXOCARB® MAX

Maximum Performance End Mills for Hardened Steels

List 9011

WXS-MG-LS-EBD, 2 Flute, Stub Length, Long Shank, Ball End

SPEED FEED P1046	CARBIDE	WXS	STUB	30°	SHANK h6
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Radius Tolerance	
1/32 ≤ D ≤ 3/8	+0 / -0.0006"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
90110111	1/32	3	3/64	1/4
90110211	1/16	3	3/32	1/4
90110311	1/8	3	3/16	1/4
90110411	3/16	3	9/32	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
90110511	1/4	3	3/8	1/4
90110611	5/16	3-3/16	15/32	5/16
90110711	3/8	3-3/16	9/16	3/8

Packed: 1 pc. Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.



List 9111

WXS-MG-LS-EBD, 2 Flute, Stub Length, Long Shank, Ball End

SPEED FEED P1046	CARBIDE	WXS	STUB	30°	SHANK h6
---------------------	---------	-----	------	-----	-------------

Radius Tolerance	
1 ≤ D ≤ 10	+0 / -0.01mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
91110111	1	75	1.5	6
91110211	2	75	3.0	6
91110311	3	75	4.5	6
91110411	4	75	6.0	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
91110511	6	75	9.0	6
91110611	8	80	12.0	8
91110711	10	80	15.0	10

Packed: 1 pc. Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3711 (p. 750)

Work Material

List No.	P						M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
	1010 1018	1035 1045	1065	4140 4340														
9011	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
9111	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	

good best



List 9140

WXS-EMS, 6 Flute, Regular Length

SPEED FEED P1050-1051	CARBIDE	WXS	REG	45°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
91400311	3	45	8	6
91400411	4	45	11	6
91400511	5	50	13	6
91400611	6	50	13	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
91400811	8	60	19	8
91401011	10	70	22	10
91401211	12	75	26	12

Packed: 1 pc. Available WXS[®] coating only.
Center cutting applies only to diameter sizes over 5mm.



List 9144

WXS-EMS, 6 Flute, Regular Length, Corner Radius

SPEED FEED P1050-1051	CARBIDE	WXS	REG	45°	SHANK h6
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Milling Diameter Tolerance	
6 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
91440611	6	0.5	50	13	6
91440811	8	0.5	60	19	8
91441011	10	0.5	70	22	10

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
91441111	10	1.0	70	22	10
91441211	12	0.5	75	26	12
91441311	12	1.0	75	26	12

Packed: 1 pc. Available WXS[®] coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO[®] Carb - List HP450 (p. 852)

List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
9140	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9144	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

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List 9191

CBN-SXB, 2 Flute, Ball End, CBN

SPEED FEED P1048	CBN	BR	30°	SHANK h6
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Radius Tolerance	
0.4 ≤ D ≤ 3	+0 / -0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
8525304	0.4	45	0.3	1.2	4
8525305	0.5	45	0.3	1.5	4
8525306	0.6	45	0.4	1.8	4
8525307	0.7	45	0.5	2.1	4
8525308	0.8	45	0.5	2.4	4
8525309	0.9	45	0.6	2.7	4
8525310	1.0	45	0.6	2.5	4
8525210	1.0	50	0.6	2.5	6
8525211	1.1	50	0.7	2.8	6
8525212	1.2	50	0.7	3.0	6
8525213	1.3	50	0.8	3.3	6
8525214	1.4	50	0.8	3.5	6
8525215	1.5	50	0.9	3.8	6
8525216	1.6	50	1.0	4.0	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
8525217	1.7	50	1.0	4.3	6
8525218	1.8	50	1.1	4.5	6
8525219	1.9	50	1.1	4.8	6
8525220	2.0	50	1.2	5.0	6
8525221	2.1	50	1.3	4.2	6
8525222	2.2	50	1.3	4.4	6
8525223	2.3	50	1.4	4.6	6
8525224	2.4	50	1.4	4.8	6
8525225	2.5	50	1.5	5.0	6
8525226	2.6	50	1.6	5.2	6
8525227	2.7	50	1.6	5.4	6
8525228	2.8	50	1.7	5.6	6
8525229	2.9	50	1.7	5.8	6
8525230	3.0	50	1.8	6.0	6

Packed: 1 pc.
Available Bright only.



List 9192

CBN-LN-SXB, 2 Flute, Long Neck, Ball End, CBN

SPEED FEED P1049	CBN	BR	30°	SHANK h6
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Radius Tolerance	
0.4 ≤ D ≤ 3	+0 / -0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
8525622	0.4	45	0.3	2.0	4
8525623	0.4	45	0.3	3.0	4
8525633	0.6	45	0.4	3.0	4
8525634	0.6	45	0.4	4.5	4
8525654	1.0	45	0.6	4.0	4
8525655	1.0	45	0.6	5.0	4
8525656	1.0	45	0.6	6.0	4
8525657	1.0	45	0.6	7.5	4
8525854	1.0	50	0.6	4.0	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
8525855	1.0	50	0.6	5.0	6
8525856	1.0	50	0.6	6.0	6
8525857	1.0	50	0.6	7.5	6
8525877	1.5	50	0.9	7.5	6
8525903	2.0	50	1.2	6.0	6
8525904	2.0	50	1.2	8.0	6
8525905	2.0	50	1.2	10.0	6
8525956	3.0	50	1.8	12.0	6
8525957	3.0	50	1.8	15.0	6

Packed: 1 pc.
Available Bright only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010 1018	1035 1045	1065	4140 4340														
9191															<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
9192															<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best





List 9181

CBN-SXR, 2 Flute, Corner Radius, CBN



SPEED FEED P1047	CBN	BR	30°	SHANK h6
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Milling Diameter Tolerance	
D≤1	+/- 0.010mm
D>1	+/-0.015mm

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	R	L	Lc	L1	d
8526210	0.5	0.05	45	0.3	1.5	4
8526211	0.5	0.10	45	0.3	1.5	4
8526220	1.0	0.05	45	0.6	2.5	4
8526221	1.0	0.10	45	0.6	2.5	4
8526222	1.0	0.20	45	0.6	2.5	4
8526223	1.0	0.30	45	0.6	2.5	4
8526231	1.5	0.10	50	0.9	3.8	6
8526232	1.5	0.20	50	0.9	3.8	6
8526233	1.5	0.30	50	0.9	3.8	6

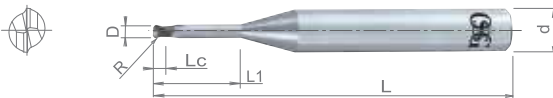
Packed: 1 pc.
Available Bright only.



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	R	L	Lc	L1	d
8526241	2.0	0.10	50	1.2	5.0	6
8526242	2.0	0.20	50	1.2	5.0	6
8526243	2.0	0.30	50	1.2	5.0	6
8526245	2.0	0.50	50	1.2	5.0	6
8526261	3.0	0.10	50	1.8	6.0	6
8526262	3.0	0.20	50	1.8	6.0	6
8526263	3.0	0.30	50	1.8	6.0	6
8526265	3.0	0.50	50	1.8	6.0	6

List 9182

CBN-LN-SXR, 2 Flute, Long Neck, Corner Radius, CBN



SPEED FEED P1047	CBN	BR	30°	SHANK h6
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Milling Diameter Tolerance	
0.5≤D≤3	+0 / -0.015mm

Radius Tolerance	
0.5≤D≤3	+0 / -0.005mm

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	R	L	Lc	L1	d
8526410	0.5	0.05	45	0.3	2.5	4
8526411	0.5	0.10	45	0.3	2.5	4
8526420	1.0	0.05	45	0.6	5.0	4
8526421	1.0	0.10	45	0.6	5.0	4
8526422	1.0	0.20	45	0.6	5.0	4
8526423	1.0	0.30	45	0.6	5.0	4
8526431	1.5	0.10	50	0.9	7.5	6
8526432	1.5	0.20	50	0.9	7.5	6
8526433	1.5	0.30	50	0.9	7.5	6

Packed: 1 pc.
Available Bright only.



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	R	L	Lc	L1	d
8526441	2.0	0.10	50	1.2	10.0	6
8526442	2.0	0.20	50	1.2	10.0	6
8526443	2.0	0.30	50	1.2	10.0	6
8526445	2.0	0.50	50	1.2	10.0	6
8526461	3.0	0.10	50	1.8	12.0	6
8526462	3.0	0.20	50	1.8	12.0	6
8526463	3.0	0.30	50	1.8	12.0	6
8526465	3.0	0.50	50	1.8	12.0	6

Work Material

List No.	P					M			K Cast Iron	N		S Titanium	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels				Aluminum			Nickel Alloy Inconel	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Hardened Steels			
	1010 1018	1035 1045	1065											~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
9181													⊙	⊙	⊙		
9182													⊙	⊙	⊙		

⊙ good ⊕ best



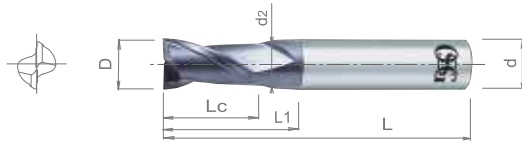


List 7020

2 Flute, Stub Length

SPEED FEED P1052-1053	CARBIDE	DIA		STUB	30°	SHANK h6
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Milling Diameter Tolerance	
1/64 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	Coating Thickness	
	D	L	Lc	L1	d2	d	12µm	20µm
70200016	1/64	1-3/4	3/64	3/32	0.015	1/8	◆	
70200116	1/32	1-3/4	3/32	1/4	0.028	1/8	◆	
70200216	3/64	1-3/4	3/16	1/2	0.040	1/8	◆	
70200316	1/16	1-3/4	3/16	1/2	0.056	1/8	◆	
70200416	5/64	1-3/4	1/4	1/2	0.070	1/8	◆	
70200516	3/32	1-3/4	3/8	1/2	0.088	1/8	◆	
70200716	1/8	1-3/4	1/2	—	—	1/8	◆	
70205716	1/8	1 3/4	1/2	—	—	1/8		◆
70200816	5/32	2	9/16	—	—	5/32	◆	
70200916	3/16	2	3/4	—	—	3/16	◆	
70201116	1/4	2-1/2	3/4	—	—	1/4	◆	
70206116	1/4	2-1/2	3/4	—	—	1/4		◆
70201316	5/16	2-1/2	13/16	—	—	5/16	◆	
70201416	3/8	2-1/2	7/8	—	—	3/8	◆	
70206416	3/8	2-1/2	7/8	—	—	3/8		◆
70201616	1/2	3	1	—	—	1/2	◆	
70206616	1/2	3	1	—	—	1/2		◆

Packed: 1 pc.
Available Diamond coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		Other			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061	Casting						
7020	1010 1018	1035 1045	1065	4140 4340					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input checked="" type="checkbox"/>	

good best

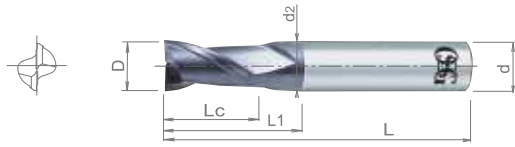


List 7120

D-RG-EDS, 2 Flute, Regular Length

SPEED FEED P1052-1053	CARBIDE	DIA	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 12	+0 / -0.05mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
71200116	1	45	4	4.95	0.95	3
71200216	2	45	10	11.95	1.95	3
71200316	3	50	15	—	—	3
71200416	4	55	15	—	—	4
71200616	6	63	20	—	—	6
71200816	8	63	20	—	—	8
71201016	10	63	25	—	—	10
71201216	12	75	30	—	—	12

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

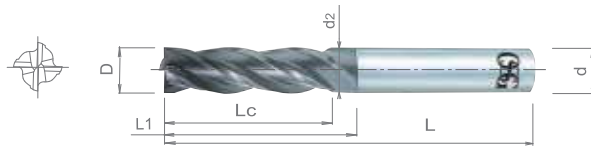


List 7040

D-GF-EMS, 4 Flute, Regular Length

SPEED FEED P1052-1053	CARBIDE	DIA	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
70400316	1/16	1-3/4	3/16	0.056	1/2	1/8
70400416	5/64	1-3/4	1/4	0.070	1/2	1/8
70400516	3/32	1-3/4	3/8	0.088	1/2	1/8
70400716	1/8	1-3/4	1/2	—	—	1/8
70400916	3/16	2	3/4	—	—	3/16
70401116	1/4	2-1/2	3/4	—	—	1/4
70401316	5/16	2-1/2	13/16	—	—	5/16
70401416	3/8	2-1/2	7/8	—	—	3/8
70401616	1/2	3	1	—	—	1/2

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.



Work Material

List No.	P					Die Steels	M			K Cast Iron	N		S		Other				
	Carbon Steels			Alloy Steels	Stainless Steels			Aluminum			Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome			
	Low	Med.	High		300		400	17-4 PH	6061 7075								Casting	Inconel	6Al4V (30 HRC)
7120	1010	1035	1065	4140	4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						<input type="checkbox"/>	
7040	1018	1045									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							<input type="checkbox"/>

good best



List 7041

D-GF-EML, 4 Flute, Long Length

SPEED FEED P1052-1053	CARBIDE	DIA	LONG	30°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
70410716	1/8	3	1	1/8
70410916	3/16	4	1	3/16
70411116	1/4	4	1-1/2	1/4
70411416	3/8	4	1-1/2	3/8
70411616	1/2	5	2	1/2

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.



List 7042

4 Flute, Stub Length, Long Shank

SPEED FEED P1052-1053	CARBIDE	DIA	STUB	30°	SHANK h6
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
70420116	1/16	3	1/16	0.313	0.059	1/16
70420216	3/32	3	3/32	0.469	0.089	3/32
70420316	1/8	3	1/8	0.625	0.119	1/8
70420416	3/16	3	3/16	0.938	0.178	3/16
70420516	1/4	4	1/4	0.750	0.238	1/4
70420616	5/16	4	5/16	0.938	0.297	5/16
70420716	3/8	4	3/8	1.125	0.356	3/8
70420816	1/2	6	1/2	1.500	0.475	1/2

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.



Work Material

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting						
7041	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
7042										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	

good best





List 7072

4 Flute, Stub Length, Long Shank, Corner Radius

SPEED FEED P1052-1053	CARBIDE	DIA	STUB	30°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
70720116	1/8	0.015	3	1/8	0.625	0.119	1/8
70720216	1/8	0.031	3	1/8	0.625	0.119	1/8
70720316	3/16	0.062	3	3/16	0.938	0.178	3/16
70720416	1/4	0.015	4	1/4	0.750	0.238	1/4
70720516	1/4	0.030	4	1/4	0.750	0.238	1/4
70720616	1/4	0.062	4	1/4	0.750	0.238	1/4
70720716	3/8	0.015	4	3/8	1.125	0.356	3/8
70720816	1/2	0.015	6	1/2	1.500	0.475	1/2

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

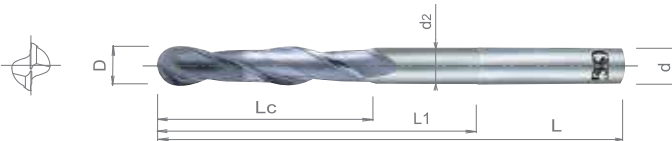


List 7010

D-RG-EBDR, 2 Flute, Regular Length, Ball End

SPEED FEED P1052-1053	CARBIDE	DIA	REG	30°	SHANK h6
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Radius Tolerance	
1/32 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	Coating Thickness	
	D	L	Lc	L1	d2	d	12µm	20µm
70100116	1/32	1-3/4	3/32	1/4	0.028	1/8	◆	
70100216	3/64	1-3/4	3/16	1/2	0.040	1/8	◆	
70100316	1/16	1-3/4	3/16	1/2	0.056	1/8	◆	
70100416	5/64	1-3/4	1/4	1/2	0.070	1/8	◆	
70100516	3/32	1-3/4	3/8	1/2	0.088	1/8	◆	
70100716	1/8	1-3/4	1/2	—	—	1/8	◆	
70105716	1/8	1-3/4	1/2	—	—	1/8		◆
70100816	5/32	2	9/16	—	—	5/32	◆	
70100916	3/16	2	3/4	—	—	3/16	◆	
70101116	1/4	2-1/2	3/4	—	—	1/4	◆	
70106116	1/4	2-1/2	3/4	—	—	1/4		◆
70101316	5/16	2-1/2	13/16	—	—	5/16	◆	
70101416	3/8	2-1/2	7/8	—	—	3/8	◆	
70106416	3/8	2-1/2	7/8	—	—	3/8		◆
70101616	1/2	3	1	—	—	1/2	◆	
70106616	1/2	3	1	—	—	1/2		◆

Packed: 1 pc. Available Diamond coating only.



Work Material

List No.	P					M			K	N		S		Other				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome	
	Low	Med.	High			300	400	17-4 PH		6061	Casting							Inconel
7072	1010	1035	1065	4140	4340					6061	7075							
7010	1018	1045																

good best



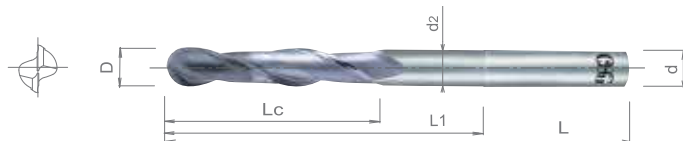


List 7110

D-RG-EBD, 2 Flute, Regular Length, Ball End

SPEED FEED P1052-1053	CARBIDE	DIA	REG	30°	SHANK h6
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Radius Tolerance	
1 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
71100116	1	45	4	4.95	0.95	3
71100216	2	45	10	11.95	1.95	3
71100316	3	50	15	—	—	3
71100416	4	55	15	—	—	4
71100616	6	63	20	—	—	6
71100816	8	63	20	—	—	8
71101016	10	63	25	—	—	10
71101216	12	75	30	—	—	12

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

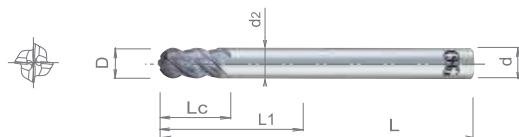


List 7030

D-GF-EBMR, 4 Flute, Regular Length, Ball End

SPEED FEED P1052-1053	CARBIDE	DIA	REG	30°	SHANK h6
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Radius Tolerance	
1/32 ≤ D ≤ 1/2	+0 / -0.001"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
70300116	1/32	1-3/4	3/32	1/4	0.028	1/8
70300216	3/64	1-3/4	3/16	1/2	0.040	1/8
70300316	1/16	1-3/4	3/16	1/2	0.056	1/8
70300416	5/64	1-3/4	1/4	1/2	0.070	1/8
70300516	3/32	1-3/4	3/8	1/2	0.088	1/8
70300716	1/8	1-3/4	1/2	-	-	1/8
70300916	3/16	2	3/4	-	-	3/16
70301116	1/4	2-1/2	3/4	-	-	1/4
70301316	5/16	2-1/2	13/16	-	-	5/16
70301416	3/8	2-1/2	7/8	-	-	3/8
70301616	1/2	3	1	-	-	1/2

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.



Work Material

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting						
7110	1010	1035	1065	4140	4340					<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						
7030	1018	1045								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



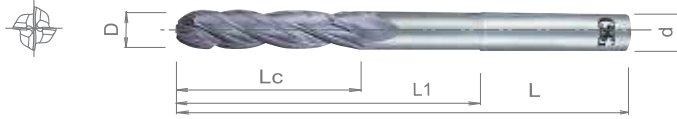


List 7031

D-GF-EBML, 4 Flute, Long Length, Ball End

SPEED FEED P1052-1053	CARBIDE	DIA	LONG	30°	SHANK h6
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Radius Tolerance	
3/16≤D≤1/2	+0 / -0.001"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
70310916	3/16	4	1	3/16
70311116	1/4	4	1-1/2	1/4
70311416	3/8	4	1-1/2	3/8
70311616	1/2	5	2	1/2

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

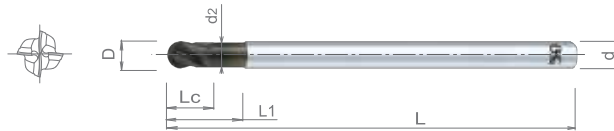


List 7032

4 Flute, Stub Length, Long Shank, Ball End

SPEED FEED P1052-1053	CARBIDE	DIA	STUB	30°	SHANK h6
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Radius Tolerance	
1/16≤D≤1/2	+0 / -0.001"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
70320116	1/16	3	1/16	0.313	0.059	1/16
70320216	3/32	3	3/32	0.469	0.089	3/32
70320316	1/8	3	1/8	0.625	0.119	1/8
70320416	3/16	3	3/16	0.938	0.178	3/16
70320516	1/4	4	1/4	0.750	0.238	1/4
70320616	5/16	4	5/16	0.938	0.297	5/16
70320716	3/8	4	3/8	1.125	0.356	3/8
70320816	1/2	6	1/2	1.500	0.475	1/2

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.



Work Material

List No.	P					M			K	N		S		Other				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome	
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)					
7031	1010	1035	1045	1065	4140	4340											<input type="checkbox"/>	
7032	1018	1045															<input type="checkbox"/>	

good best



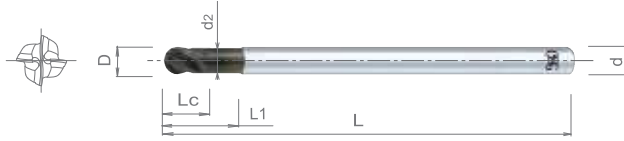


List 7173

4 Flute*, Stub Length, Long Shank, Ball End

SPEED FEED P1052-1053	CARBIDE	DIA		STUB	30°	SHANK h6
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Radius Tolerance	
0.5 ≤ D ≤ 12	+0 / -0.01mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
71730116*	0.5	50	0.5	2.5	0.48	3
71730216	1.0	60	1.0	5.0	0.96	3
71730316	1.5	75	1.5	7.5	1.43	3
71730416	2.0	75	2.0	10.0	1.90	3
71730516	3.0	75	3.0	15.0	2.85	3
71730616	4.0	75	4.0	20.0	3.80	4
71730716	6.0	100	6.0	30.0	5.70	6
71730816	8.0	100	8.0	32.0	7.60	8
71730916	10.0	125	10.0	40.0	9.50	10
71731016	12.0	150	12.0	48.0	11.40	12

Packed: 1 pc. Available Diamond coating only.
 12µm Coating Thickness.
 *0.5mm is 2 flute.



Work Material

List No.	P				Die Steels	M			K	N		S		Other			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7173	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	

good best



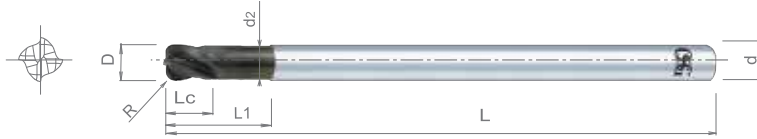


List 7132

4 Flute, Stub Length, Long Shank, Corner Radius

SPEED FEED P1052-1053	CARBIDE	DIA	STUB	30°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
71320116	3	0.5	75	3	15	2.85	3
71320216	4	0.5	75	4	20	3.80	4
71320316	6	0.5	100	6	30	5.70	6
71320416	6	1.0	100	6	30	5.70	6
71320516	8	0.5	100	8	30	7.60	8
71320616	8	1.0	100	8	32	7.60	8
71320716	10	0.5	125	10	40	9.50	10
71320816	10	1.0	125	10	40	9.50	10
71320916	12	0.5	150	12	48	11.40	12
71321016	12	1.0	150	12	48	11.40	12

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

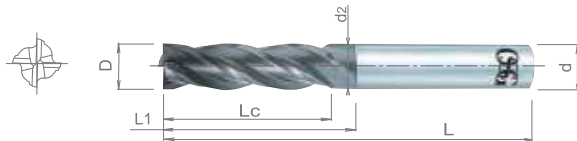


List 7140

4 Flute*, Regular Length

SPEED FEED P1052-1053	CARBIDE	DIA	REG	30°	SHANK h6
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Milling Diameter Tolerance	
0.5 ≤ D ≤ 12	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
71400116	0.5	40	1.5	8	0.48	3
71400216	1.0	40	3	8	0.96	3
71400316	1.5	45	5	8	1.43	3
71400416	2.0	45	6	8	1.91	3
71400516	3.0	45	12	-	-	3
71400616	4.0	50	15	-	-	4
71400716	6.0	60	20	-	-	6
71400816	8.0	60	20	-	-	8
71400916	10.0	60	25	-	-	10
71401016	12.0	75	25	-	-	12

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.
*0.5mm is 2 flute.



Work Material

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7132	1010	1035	1045	1065	4140	4340				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	
7140	1018	1045								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>	

good best



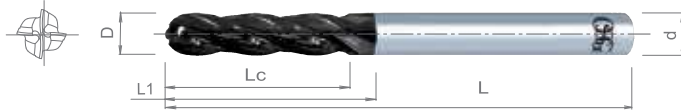


List 7230

DIA-EBDSS, 2 or 4 Flute, Regular Length, Ball End, High Precision

SPEED FEED P1054	CARBIDE	DIA	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1/64 ≤ D ≤ 3/16	+0 / -0.0005"
D = 1/4	+0 / -0.0008"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
72300116	1/64	1-1/2	3/64	1/8	2
72300216	1/32	1-1/2	3/32	1/8	4
72300416	1/16	1-1/2	3/16	1/8	4
72300516	3/32	1-1/2	3/8	1/8	4
72300616	1/8	1-1/2	3/4	1/8	4
72300716	3/16	2	3/4	3/16	4
72300816	1/4	2-1/2	1	1/4	4

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

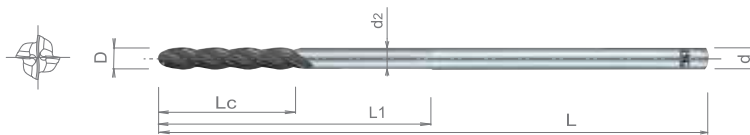


List 7231

DIA-LN-EBM, 2 or 4 Flute, Regular Length, Long Reach, Ball End, High Precision

SPEED FEED P1054	CARBIDE	DIA	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1/64 ≤ D ≤ 1/8	+0 / -0.0004"
3/16 ≤ D ≤ 1/4	+0 / -0.0007"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	Number of Flutes
	D	L	Lc	L1	d2	d	
72310116	1/64	1-1/2	3/64	0.16	0.012	1/8	2
72310216	1/32	1-1/2	3/32	0.31	0.027	1/8	4
72310316	3/64	1-1/2	3/16	0.47	0.043	1/8	4
72310416	1/16	1-1/2	3/16	0.63	0.058	1/8	4
72310516	3/32	2	3/8	0.94	0.088	1/8	4
72310616	1/8	3	3/4	1.50	0.120	1/8	4
72310716	3/16	4	3/4	1.88	0.183	3/16	4
72310816	1/4	4	1	2.50	0.245	1/4	4

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.



Work Material

List No.	P					M	K	N		S		Other					
	Carbon Steels			Alloy Steels	Die Steels			Stainless Steels			Aluminum	Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High					300	400	17-4 PH							
7230	1010	1035	1065	4140	4340			<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>			
7231	1018	1045						<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>			

good best





List 2050

4 Flute, Multiple Lengths, Square End

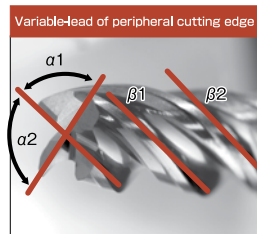
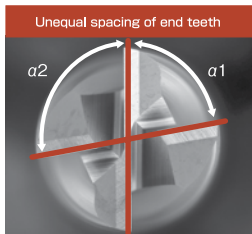
SPEED FEED P1055	CARBIDE	EXO [®]	Var. [°]	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	EDP Number w/ Weldon Flat	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
		D	L	Lc	d
205000111	-	1/8	1-1/2	3/8	1/8
205001111	-	3/16	2	7/16	3/16
205002111	-	1/4	2-1/2	7/16	1/4
205002211	-	1/4	2-1/2	3/4	1/4
205003111	-	5/16	2-1/2	13/16	5/16
205004111	205094111	3/8	2-1/2	1/2	3/8
205004211	205094211	3/8	2-1/2	7/8	3/8
205005111	205095111	7/16	2-3/4	1	7/16
205006111	205096111	1/2	2-1/2	5/8	1/2
205006211	205096211	1/2	3	1	1/2
205006311	205096311	1/2	3	1-1/4	1/2
205007111	205097111	5/8	3-1/2	1-1/4	5/8
205008111	205098111	3/4	4	1-1/2	3/4
205009111	205099111	1	4	1-1/2	1

Packed: 1 pc. Available EXO[®] coating only.



The variable-lead shape stabilizes cutting resistance to isolate vibration.

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO[®] Carb VGX - List VG441 (p. 840)

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
2050	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





EXOCARB® AERO UVX

Unequal Index, Variable Helix, eXotic Materials

List 2052

4 Flute, Multiple Lengths, Corner Radius

SPEED FEED P1055	CARBIDE	EXO		Var.	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	Edp Number w/ Weldon Flat	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
		D	R	L	Lc	d
205200111	-	1/8	0.010	1-1/2	3/8	1/8
205200211	-	1/8	0.015	1-1/2	3/8	1/8
205201111	-	3/16	0.015	2	7/16	3/16
205201211	-	3/16	0.030	2	7/16	3/16
205202111	-	1/4	0.015	2-1/2	3/8	1/4
205202211	-	1/4	0.030	2-1/2	3/8	1/4
205202311	-	1/4	0.015	2-1/2	3/4	1/4
205202411	-	1/4	0.030	2-1/2	3/4	1/4
205203111	-	5/16	0.015	2-1/2	5/8	5/16
205203211	-	5/16	0.030	2-1/2	5/8	5/16
205204111	205294111	3/8	0.030	2-1/2	1/2	3/8
205204211	205294211	3/8	0.030	2-1/2	7/8	3/8
205204311	205294311	3/8	0.045	2-1/2	7/8	3/8
205204411	205294411	3/8	0.060	2-1/2	7/8	3/8
205205111	205295111	7/16	0.015	2-3/4	1	7/16
205205211	205295211	7/16	0.030	2-3/4	1	7/16
205206111	205296111	1/2	0.030	2-1/2	5/8	1/2
205206211	205296211	1/2	0.030	3	1	1/2
205206311	205296311	1/2	0.060	3	1	1/2
205206411	205296411	1/2	0.015	3-1/4	1-1/4	1/2
205206511	205296511	1/2	0.030	3-1/4	1-1/4	1/2
205206611	205296611	1/2	0.045	3-1/4	1-1/4	1/2
205206711	205296711	1/2	0.060	3-1/4	1-1/4	1/2
205206811	205296811	1/2	0.090	3-1/4	1-1/4	1/2
205206911	205296911	1/2	0.125	3-1/4	1-1/4	1/2
205207111	205297111	5/8	0.030	3-1/2	1-1/4	5/8
205207211	205297211	5/8	0.060	3-1/2	1-1/4	5/8
205207311	205297311	5/8	0.090	3-1/2	1-1/4	5/8
205207411	205297411	5/8	0.125	3-1/2	1-1/4	5/8
205208111	205298111	3/4	0.030	3-1/2	1-1/2	3/4
205208211	205298211	3/4	0.060	3-1/2	1-1/2	3/4
205208311	205298311	3/4	0.090	4	1-1/2	3/4
205208411	205298411	3/4	0.125	4	1-1/2	3/4
205209111	205299111	1	0.030	4	1-1/2	1
205209211	205299211	1	0.060	4	1-1/2	1
205209311	205299311	1	0.090	4	1-1/2	1
205209411	205299411	1	0.125	4	1-1/2	1

Packed: 1 pc. Available EXO® coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb VGX - List VG434 (p. 841)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2052	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 3815

SI-WC-RESF, 4 Flute, Low Helix, Corner Chamfer

NEW SPEED FEED P1056 CARBIDE WXL Var.° SHANK h6

Milling Diameter Tolerance	
D ≤ 3/8	+0 / -0.002"
D ≥ 1/2	+0 / -0.003"



EDP Number	Mill Diameter	Chamfer Width	Overall Length	Length of Cut	Shank Diameter
	D	C	L	Lc	d
38150111	1/4	0.020	2-1/2	1/2	1/4
38150911	5/16	0.020	3	5/8	5/16
38151711	3/8	0.020	3	3/4	3/8
38152511	1/2	0.020	3-1/2	1	1/2
38153311	5/8	0.030	4	1-1/4	5/8
38154111	3/4	0.030	4-1/4	1-1/2	3/4
38154911	1	0.030	5	2	1

Packed: 1 pc.
Available WXL® coating only.



List 3820

SI-WC-RESF, 4 Flute, High Helix, Corner Chamfer

NEW SPEED FEED P1056 CARBIDE WXL Var.° SHANK h6

Milling Diameter Tolerance	
D ≤ 3/8	+0 / -0.002"
D ≥ 1/2	+0 / -0.003"



EDP Number	Mill Diameter	Chamfer Width	Overall Length	Length of Cut	Shank Diameter
	D	C	L	Lc	d
38200211	1/4	0.020	2-1/2	1/2	1/4
38201011	5/16	0.020	3	5/8	5/16
38201811	3/8	0.020	3	3/4	3/8
38202611	1/2	0.020	3-1/2	1	1/2
38203411	5/8	0.030	4	1-1/4	5/8
38204211	3/4	0.030	4-1/4	1-1/2	3/4
38205011	1	0.030	5	2	1

Packed: 1 pc.
Available WXL® coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
3815	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
3820	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

☐ good ☐ best



List 3915

SI-WC-RESF, 4 Flute, Low Helix, Corner Chamfer

SPEED FEED P1056 CARBIDE WXL Var. SHANK h6

Milling Diameter Tolerance	
D≤12	+0 / -0.05mm
D>12	+0 / -0.06mm



EDP Number	Mill Diameter	Chamfer Width	Overall Length	Length of Cut	Shank Diameter
	D	C	L	Lc	d
3017406	6	0.5	60	13	6
3017408	8	0.5	80	19	8
3017410	10	0.5	80	22	10
3017412	12	0.5	80	26	12
39150811	14	0.6	85	26	14
39151211	16	0.6	100	32	16
39151611	18	0.6	100	32	18
39152011	20	0.6	105	38	20
39152411	25	0.6	120	45	25

Packed: 1 pc.
 Available WXL® coating only.



List 3920

SI-WC-RESF, 4 Flute, High Helix, Corner Chamfer

SPEED FEED P1056 CARBIDE WXL Var. SHANK h6

Milling Diameter Tolerance	
D≤12	+0 / -0.05mm
D>12	+0 / -0.06mm



EDP Number	Mill Diameter	Chamfer Width	Overall Length	Length of Cut	Shank Diameter
	D	C	L	Lc	d
3017456	6	0.5	60	13	6
3017458	8	0.5	80	19	8
3017460	10	0.5	80	22	10
3017462	12	0.5	80	26	12
39200911	14	0.6	85	26	14
39201311	16	0.6	100	32	16
39201711	18	0.6	100	32	18
39202111	20	0.6	105	38	20
39202511	25	0.6	120	45	25

Packed: 1 pc.
 Available WXL® coating only.



Work Material

List No.	P						M			K	N		S	H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010 1018	1035 1045	1065	4140 4340													
3915	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
3920	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





List 3825

SI-WC-LN-RESF, Long Neck, 4 Flute, Low Helix, Corner Chamfer

NEW SPEED FEED P1056 CARBIDE WXL Var.° SHANK h6

Milling Diameter Tolerance	
D ≤ 3/8	+0 / -0.002"
D ≥ 1/2	+0 / -0.003"



EDP Number	Mill Diameter	Chamfer Width	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	C	L	Lc	L1	d2	d
38250511	1/4	0.020	2-1/2	1/2	1-1/4	0.2382	1/4
38251311	5/16	0.020	3	5/8	1-3/8	0.3007	5/16
38252111	3/8	0.020	3	3/4	1-1/2	0.3632	3/8
38252911	1/2	0.020	3-1/2	1	1-3/4	0.4882	1/2
38253711	5/8	0.030	4	1-1/4	2	0.6053	5/8
38254511	3/4	0.030	4-1/4	1-1/2	2-1/4	0.7264	3/4
38255311	1	0.030	5	2	2-3/4	0.9685	1

Packed: 1 pc.
Available WXL® coating only.



List 3830

SI-WC-LN-RESF, Long Neck, 4 Flute, High Helix, Corner Chamfer

NEW SPEED FEED P1056 CARBIDE WXL Var.° SHANK h6

Milling Diameter Tolerance	
D ≤ 3/8	+0 / -0.002"
D ≥ 1/2	+0 / -0.003"



EDP Number	Mill Diameter	Chamfer Width	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	C	L	Lc	L1	d2	d
38300611	1/4	0.020	2-1/2	1/2	1-1/4	0.2382	1/4
38301411	5/16	0.020	3	5/8	1-3/8	0.3007	5/16
38302211	3/8	0.020	3	3/4	1-1/2	0.3632	3/8
38303011	1/2	0.020	3-1/2	1	1-3/4	0.4882	1/2
38303811	5/8	0.030	4	1-1/4	2	0.6053	5/8
38304611	3/4	0.030	4-1/4	1-1/2	2-1/4	0.7264	3/4
38305411	1	0.030	5	2	2-3/4	0.9685	1

Packed: 1 pc.
Available WXL® coating only.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
3825	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3830	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





EXOCARB® AERO ROUGHER

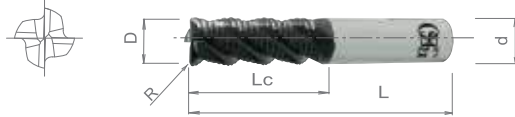
Carbide Rougher for Heavy Milling in Exotic Materials

List 2015

4 Flute, Regular Length, Corner Radius, Rougher

SPEED FEED P1057	CARBIDE	TiAlN	REG	40°	SHANK h6
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Milling Diameter Tolerance	
1/4 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20150111	1/4	0.030	2	3/8	1/4
20150211	1/4	0.030	2-1/2	3/4	1/4
20150311	3/8	0.030	2	1/2	3/8
20150411	3/8	0.030	2-1/2	7/8	3/8
20150511	1/2	0.030	2-1/2	5/8	1/2
20150611	1/2	0.030	3	1-1/4	1/2
20150811	1/2	0.060	3	1-1/4	1/2
20151011	1/2	0.125	3	1-1/4	1/2
20151111	5/8	0.030	3	3/4	5/8
20151211	5/8	0.030	3-1/2	1-1/4	5/8
20151411	5/8	0.060	3-1/2	1-1/4	5/8
20151511	5/8	0.125	3-1/2	1-1/4	5/8
20151911	3/4	0.060	3-1/2	7/8	3/4
20152111	3/4	0.125	4	1-1/2	3/4
20152211	3/4	0.190	4	1-1/2	3/4
20152711	1	0.060	4	1-1/2	1
20152911	1	0.125	4	1-1/2	1
20153211	1	0.190	5	2-1/4	1

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® Carb - List HP400 (p. 855)
Want to turbo-charge performance? Try EXOCARB® AERO - List 3915 or 3920 (p. 802)

Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
2015	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 2100

UVX-TI-5FL, 5 Flute, Multiple Lengths

NEW	SPEED FEED P1058	CARBIDE	EXO®		Var.°	SHANK h6
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Milling Diameter Tolerance	
1/2 ≤ D ≤ 1-1/4	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
21000711	1/2	2-1/2	5/8	1/2
21000811	1/2	3	1	1/2
21000911	1/2	3-1/2	1-1/4	1/2
21001011	1/2	3-1/2	1-5/8	1/2
21001111	5/8	3-1/2	1-1/4	5/8
21001211	5/8	4	1-7/8	5/8
21001311	3/4	4	1-1/2	3/4
21001411	3/4	5	2-1/4	3/4
21001511	1	4	1-1/2	1
21001611	1	6	3	1
21001711	1-1/4	4	1-1/2	1
21001811	1-1/4	6	3	1
21001911	1-1/4	7	4	1

Packed: 1 pc.
Available EXO® coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2100	1010 1018	1035 1045	1065	4140 4340	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input checked="" type="checkbox"/>					

good best





EXOCARB® AERO UVX-Ti

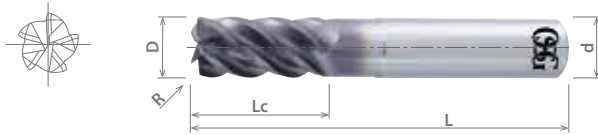
Variable Lead End Mill for Titanium Alloy

List 2106

NEW **SPEED FEED** P1058 **CARBIDE** **EXO®** **Var.°** **SHANK** h6

UVX-TI-CR-5FL, 5 Flute, Multiple Lengths, Corner Radius

Milling Diameter Tolerance	
1/2 ≤ D ≤ 1-1/4	+0/-0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
21062111	1/2	0.030	2-1/2	5/8	1/2
21062211	1/2	0.060	2-1/2	5/8	1/2
21062311	1/2	0.090	2-1/2	5/8	1/2
21062411	1/2	0.120	2-1/2	5/8	1/2
21062511	1/2	0.030	3	1	1/2
21062611	1/2	0.060	3	1	1/2
21062711	1/2	0.090	3	1	1/2
21062811	1/2	0.120	3	1	1/2
21062911	1/2	0.015	3-1/2	1-1/4	1/2
21063011	1/2	0.030	3-1/2	1-1/4	1/2
21063111	1/2	0.060	3-1/2	1-1/4	1/2
21063211	1/2	0.090	3-1/2	1-1/4	1/2
21063311	1/2	0.120	3-1/2	1-1/4	1/2
21063411	1/2	0.015	3-1/2	1-5/8	1/2
21063511	1/2	0.030	3-1/2	1-5/8	1/2
21063611	1/2	0.060	3-1/2	1-5/8	1/2
21063711	1/2	0.090	3-1/2	1-5/8	1/2
21063811	1/2	0.120	3-1/2	1-5/8	1/2
21063911	5/8	0.030	3-1/2	1-1/4	5/8
21064011	5/8	0.060	3-1/2	1-1/4	5/8
21064111	5/8	0.090	3-1/2	1-1/4	5/8
21064211	5/8	0.120	3-1/2	1-1/4	5/8
21064311	5/8	0.030	4	1-7/8	5/8
21064411	5/8	0.060	4	1-7/8	5/8
21064511	5/8	0.090	4	1-7/8	5/8
21064611	5/8	0.120	4	1-7/8	5/8
21064711	3/4	0.030	4	1-1/2	3/4
21064811	3/4	0.060	4	1-1/2	3/4
21064911	3/4	0.090	4	1-1/2	3/4
21065011	3/4	0.120	4	1-1/2	3/4
21065111	3/4	0.150	4	1-1/2	3/4
21065211	3/4	0.030	5	2-1/4	3/4
21065311	3/4	0.060	5	2-1/4	3/4
21065411	3/4	0.090	5	2-1/4	3/4
21065511	3/4	0.120	5	2-1/4	3/4
21065611	3/4	0.150	5	2-1/4	3/4
21065711	1	0.030	4	1-1/2	1
21065811	1	0.060	4	1-1/2	1
21065911	1	0.090	4	1-1/2	1
21066011	1	0.120	4	1-1/2	1
21066111	1	0.150	4	1-1/2	1
21066211	1	0.030	6	3	1
21066311	1	0.060	6	3	1
21066411	1	0.090	6	3	1
21066511	1	0.120	6	3	1
21066611	1	0.150	6	3	1
21066711	1 - 1/4	0.030	4	1-1/2	1
21066811	1 - 1/4	0.060	4	1-1/2	1
21066911	1 - 1/4	0.090	4	1-1/2	1
21067011	1 - 1/4	0.120	4	1-1/2	1
21067111	1 - 1/4	0.150	4	1-1/2	1
21067211	1 - 1/4	0.030	6	3	1
21067311	1 - 1/4	0.060	6	3	1
21067411	1 - 1/4	0.090	6	3	1
21067511	1 - 1/4	0.120	6	3	1

Packed: 1 pc.
Available EXO® coating only.





List 2106 (Continued)

NEW
SPEED FEED P1058
CARBIDE
EXO®
Var.°
SHANK h6

UVX-TI-CR-5FL, 5 Flute, Multiple Lengths, Corner Radius

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
21067611	1 - 1/4	0.150	6	3	1
21067711	1 - 1/4	0.030	7	4	1
21067811	1 - 1/4	0.060	7	4	1
21067911	1 - 1/4	0.090	7	4	1
21068011	1 - 1/4	0.120	7	4	1
21068111	1 - 1/4	0.150	7	4	1

Packed: 1 pc.
Available EXO® coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2106						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>					

good best





EXOCARB® AERO UVX-Ti

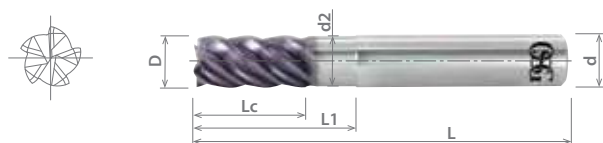
Variable Lead End Mill for Titanium Alloy

List 2104

UVX-TI-LN-5FL, 5 Flute, Regular Length, Reduced Neck, Square End

NEW SPEED FEED P1059 CARBIDE EXO® REG Var.° SHANK h6

Milling Diameter Tolerance	
12 ≤ D ≤ 25	+0/-0.05mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
8555320	12	90	24	36	11.5	12
8555360	16	100	32	48	15.5	16
8555400	20	120	40	60	19.5	20
8555450	25	140	50	75	24.5	25

Packed: 1 pc.
Available EXO® coating only.

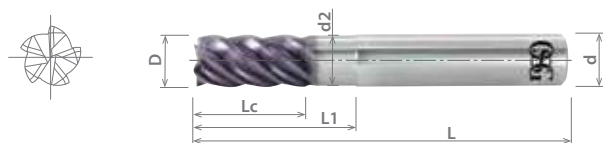


List 2102

UVX-TI-LN-5FL, 5 Flute, Regular Length, Reduced Neck, Square End

NEW SPEED FEED P1058 CARBIDE EXO® REG Var.° SHANK h6

Milling Diameter Tolerance	
1/2 ≤ D ≤ 1-1/4	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
21020011	1/2	3-1/2	1	1-1/2	0.480	1/2
21020111	5/8	4	1-1/4	1-7/8	0.605	5/8
21020211	3/4	6-1/2	1-1/2	2-1/4	0.730	3/4
21020311	1	5-1/2	2	3	0.980	1
21020411	1-1/4	6	2-1/2	3-3/4	1.230	1

Packed: 1 pc.
Available EXO® coating only.



Work Material

List No.	P					M			K Cast Iron	N		S Titanium	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum			Nickel Alloy	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
2104						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>					
2102						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>					

good best





List 2108

UVX-TI-LN-CR-5FL, 5 Flute, Regular Length, Reduced Neck, Corner Radius

NEW
SPEED FEED P1058
CARBIDE
EXO
REG
Var.
SHANK h6

Milling Diameter Tolerance	
$1/2 \leq D \leq 1-1/4$	+0/-0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
21080011	1/2	0.03	3-1/2	1	1-1/2	0.480	1/2
21080111	1/2	0.06	3-1/2	1	1-1/2	0.480	1/2
21080211	1/2	0.09	3-1/2	1	1-1/2	0.480	1/2
21080311	1/2	0.12	3-1/2	1	1-1/2	0.480	1/2
21080411	5/8	0.03	4	1-1/4	1-7/8	0.605	5/8
21080511	5/8	0.06	4	1-1/4	1-7/8	0.605	5/8
21080611	5/8	0.09	4	1-1/4	1-7/8	0.605	5/8
21080711	5/8	0.12	4	1-1/4	1-7/8	0.605	5/8
21080811	3/4	0.03	6-1/2	1-1/2	2-1/4	0.730	3/4
21080911	3/4	0.06	6-1/2	1-1/2	2-1/4	0.730	3/4
21081011	3/4	0.09	6-1/2	1-1/2	2-1/4	0.730	3/4
21081111	3/4	0.12	6-1/2	1-1/2	2-1/4	0.730	3/4
21081211	3/4	0.15	6-1/2	1-1/2	2-1/4	0.730	3/4
21081311	1	0.03	5-1/2	2	3	0.980	1
21081411	1	0.06	5-1/2	2	3	0.980	1
21081511	1	0.09	5-1/2	2	3	0.980	1
21081611	1	0.12	5-1/2	2	3	0.980	1
21081711	1	0.15	5-1/2	2	3	0.980	1
21081811	1-1/4	0.03	6	2-1/2	3-3/4	1.230	1
21081911	1-1/4	0.06	6	2-1/2	3-3/4	1.230	1
21082011	1-1/4	0.09	6	2-1/2	3-3/4	1.230	1
21082111	1-1/4	0.12	6	2-1/2	3-3/4	1.230	1
21082211	1-1/4	0.15	6	2-1/2	3-3/4	1.230	1

Packed: 1 pc.
Available EXO® coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2108						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>					

good best





EXOCARB® AERO UVX-Ti

Variable Lead End Mill for Titanium Alloy

List 2110

UVX-TI-LN-CR-5FL, 5 Flute, Regular Length, Reduced Neck, Corner Radius

NEW
SPEED FEED P1059
CARBIDE
EXO
REG
Var.
SHANK h6

Milling Diameter Tolerance	
12 ≤ D ≤ 25	+0/-0.05mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
8555321	12	1.0	90	24	36	11.5	12
8555322	12	1.5	90	24	36	11.5	12
8555323	12	2.0	90	24	36	11.5	12
8555324	12	2.5	90	24	36	11.5	12
8555325	12	3.0	90	24	36	11.5	12
8555326	12	4.0	90	24	36	11.5	12
8555361	16	1.0	100	32	48	15.5	16
8555362	16	1.5	100	32	48	15.5	16
8555363	16	2.0	100	32	48	15.5	16
8555364	16	2.5	100	32	48	15.5	16
8555365	16	3.0	100	32	48	15.5	16
8555366	16	4.0	100	32	48	15.5	16
8555401	20	1.0	120	40	60	19.5	20
8555402	20	1.5	120	40	60	19.5	20
8555403	20	2.0	120	40	60	19.5	20
8555404	20	2.5	120	40	60	19.5	20
8555405	20	3.0	120	40	60	19.5	20
8555406	20	4.0	120	40	60	19.5	20
8555407	20	5.0	120	40	60	19.5	20

Packed: 1 pc.
Available EXO® coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2110	1010 1018	1035 1045	1065	4140 4340		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input checked="" type="checkbox"/>					

good best



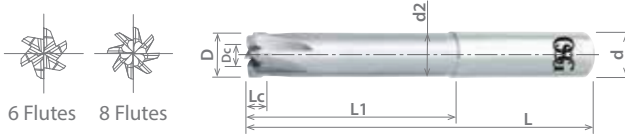


List 2080

HFC-Ti, 6 & 8 Flute

SPEED FEED P1060	CARBIDE	BR		SHANK h6
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Milling Diameter Tolerance	
5/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Effective Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	No. of Flutes
	D	Dc	L	Lc	L1	d2	d	
20806250	5/8	0.304	4.72	0.197	2.76	0.586	5/8	6
20807500	3/4	0.365	4.72	0.197	2.76	0.711	3/4	8
20801000	1	0.486	4.72	0.197	2.76	0.961	1	8

Packed: 1 pc.
Available Bright only.



List 2081

HFC-Ti, 6 & 8 Flute

SPEED FEED P1060	CARBIDE	BR		SHANK h6
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Milling Diameter Tolerance	
16 ≤ D ≤ 25	+0 / -0.05mm



EDP Number	Mill Diameter	Effective Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	No. of Flutes
	D	Dc	L	Lc	L1	d2	d	
8555716	16	7.77	120	5	70	15	16	6
8555720	20	9.72	120	5	70	19	20	8
8555725	25	12.15	120	5	70	24	25	8

Packed: 1 pc.
Available Bright only.



Work Material

List No.	P						M			K	N		S	H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2080													<input type="checkbox"/>				
2081													<input type="checkbox"/>				

good best





EXOCARB® AERO DLC

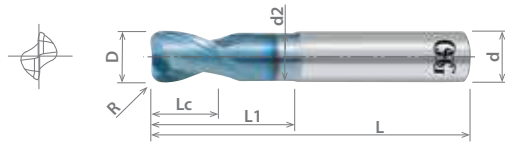
High Speed Carbide End Mills for Aluminum Alloy

List 2863

AERO-EDS, 2 Flute, Stub Length, Corner Radius

NEW	SPEED FEED P1061	CARBIDE	DLC		STUB		SHANK h6
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Milling Diameter Tolerance	
1/2 ≤ D ≤ 1	+0 / -0.0012"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
28630000	1/2	0.030	4	3/4	2.205	0.461	1/2
28630100	1/2	0.060	4	3/4	2.205	0.461	1/2
28630200	1/2	0.090	4	3/4	2.205	0.461	1/2
28630400	1/2	0.120	4	3/4	2.205	0.461	1/2
28630600	5/8	0.030	4	1	2.205	0.559	5/8
28630700	5/8	0.060	4	1	2.205	0.559	5/8
28630800	5/8	0.090	4	1	2.205	0.559	5/8
28630900	5/8	0.120	4	1	2.205	0.559	5/8
28631000	5/8	0.190	4	1	2.205	0.559	5/8
28631200	3/4	0.030	4	1-1/8	2.205	0.669	3/4
28631300	3/4	0.060	4	1-1/8	2.205	0.669	3/4
28631400	3/4	0.090	4	1-1/8	2.205	0.669	3/4
28631500	3/4	0.120	4	1-1/8	2.205	0.669	3/4
28631600	3/4	0.190	4	1-1/8	2.205	0.669	3/4
28631800	7/8	0.030	4	1-5/16	2.205	0.787	7/8
28631900	7/8	0.060	4	1-5/16	2.205	0.787	7/8
28632000	7/8	0.090	4	1-5/16	2.205	0.787	7/8
28632100	7/8	0.120	4	1-5/16	2.205	0.787	7/8
28632200	7/8	0.190	4	1-5/16	2.205	0.787	7/8
28632400	1	0.030	4	1-1/2	2.205	0.921	1
28632500	1	0.060	4	1-1/2	2.205	0.921	1
28632600	1	0.090	4	1-1/2	2.205	0.921	1
28632700	1	0.120	4	1-1/2	2.205	0.921	1
28632800	1	0.190	4	1-1/2	2.205	0.921	1

Packed: 1 pc.
Available DLC coating only.



Work Material

List No.	P				Die Steels	M			K	N		S	H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum			Nickel Alloy	Titanium			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
2863	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



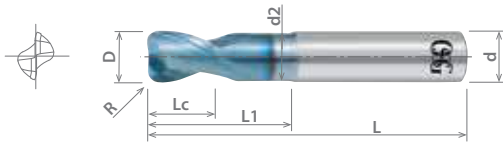


List 2963

AERO-EDS, 2 Flute, Stub Length, Corner Radius

NEW	SPEED FEED P1061	CARBIDE	DLC		STUB	25°	SHANK h6
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Milling Diameter Tolerance	
12 ≤ D ≤ 25	+0 / -0.03mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
8528822	12	1.0	90	14	40	11.0	12
8528823	12	1.6	90	14	40	11.0	12
8528826	12	3.0	90	14	40	11.0	12
8528862	16	1.0	100	18	45	14.4	16
8528863	16	1.6	100	18	45	14.4	16
8528866	16	3.0	100	18	45	14.4	16
8528902	20	1.0	110	22	56	18.0	20
8528903	20	1.6	110	22	56	18.0	20
8528906	20	3.0	110	22	56	18.0	20
8528952	25	1.0	110	27	56	23.0	25
8528953	25	1.6	110	27	56	23.0	25
8528956	25	3.0	110	27	56	23.0	25

Packed: 1 pc.
Available DLC coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2963									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best





EXOCARB® AERO DLC-CR

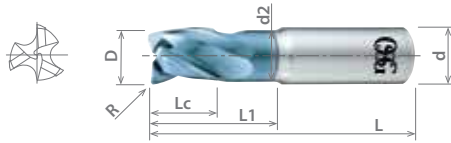
High Speed Carbide End Mills for Aluminum Alloy

List 2873

AERO-ETS, 3 Flute, Stub Length, Square & Corner Radius

NEW SIZES	SPEED FEED P1062	CARBIDE	DLC		STUB	30°	SHANK h6
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Milling Diameter Tolerance	
1/2 ≤ D ≤ 1	+0 / -0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
28730050	1/2	-	4	3/4	2.205	0.461	1/2
28730000	1/2	0.030	4	3/4	2.205	0.461	1/2
28730100	1/2	0.060	4	3/4	2.205	0.461	1/2
28730200	1/2	0.090	4	3/4	2.205	0.461	1/2
28730300	1/2	0.120	4	3/4	2.205	0.461	1/2
28731050	5/8	-	4	1	2.205	0.559	5/8
28731000	5/8	0.030	4	1	2.205	0.559	5/8
28731100	5/8	0.060	4	1	2.205	0.559	5/8
28731200	5/8	0.090	4	1	2.205	0.559	5/8
28731300	5/8	0.120	4	1	2.205	0.559	5/8
28731400	5/8	0.190	4	1	2.205	0.559	5/8
28732050	3/4	-	4	1-1/8	2.205	0.669	3/4
28732100	3/4	0.030	4	1-1/8	2.205	0.669	3/4
28732200	3/4	0.060	4	1-1/8	2.205	0.669	3/4
28732300	3/4	0.090	4	1-1/8	2.205	0.669	3/4
28732400	3/4	0.120	4	1-1/8	2.205	0.669	3/4
28732500	3/4	0.190	4	1-1/8	2.205	0.669	3/4
28734050	7/8	-	4	1-5/16	2.205	0.787	7/8
28734400	7/8	0.030	4	1-5/16	2.205	0.787	7/8
28734500	7/8	0.060	4	1-5/16	2.205	0.787	7/8
28734600	7/8	0.090	4	1-5/16	2.205	0.787	7/8
28734700	7/8	0.120	4	1-5/16	2.205	0.787	7/8
28734800	7/8	0.190	4	1-5/16	2.205	0.787	7/8
28735050	1	-	4	1-1/2	2.205	0.921	1
28735500	1	0.030	4	1-1/2	2.205	0.921	1
28735600	1	0.060	4	1-1/2	2.205	0.921	1
28735700	1	0.090	4	1-1/2	2.205	0.921	1
28735800	1	0.120	4	1-1/2	2.205	0.921	1
28735900	1	0.190	4	1-1/2	2.205	0.921	1

Packed: 1 pc.
Available DLC coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2041 (p. 826)

Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low 1010 1018	Med. 1035 1045	High 1065			4140 4340	300	400		17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2873									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>								

good best



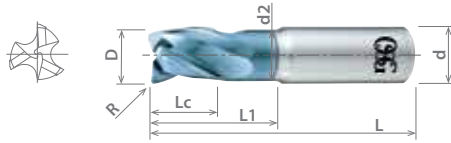


List 2973

AERO-ETS, 3 Flute, Stub Length, Square & Corner Radius

NEW SIZES	SPEED FEED P1062	CARBIDE	DLC		STUB		SHANK h6
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Milling Diameter Tolerance	
12 ≤ D ≤ 25	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
8533249	12	-	100	18	55	11.0	12
8533250	12	1.0	100	18	55	11.0	12
8533251	12	1.6	100	18	55	11.0	12
8533252	12	3.0	100	18	55	11.0	12
8533253	16	-	100	24	55	14.4	16
8533254	16	1.0	100	24	55	14.4	16
8533255	16	1.6	100	24	55	14.4	16
8533256	16	3.0	100	24	55	14.4	16
8533257	16	4.0	100	24	55	14.4	16
8533258	16	5.0	100	24	55	14.4	16
8533259	20	-	100	30	55	18.0	20
8533260	20	1.0	100	30	55	18.0	20
8533261	20	1.6	100	30	55	18.0	20
8533262	20	3.0	100	30	55	18.0	20
8533263	20	4.0	100	30	55	18.0	20
8533264	20	5.0	100	30	55	18.0	20
8533265	25	-	100	37.5	55	23.0	25
8533266	25	1.0	100	37.5	55	23.0	25
8533267	25	1.6	100	37.5	55	23.0	25
8533268	25	3.0	100	37.5	55	23.0	25
8533269	25	4.0	100	37.5	55	23.0	25
8533270	25	5.0	100	37.5	55	23.0	25

Packed: 1 pc.
Available DLC coating only.



Work Material																
List No.	P					M			K	N		S	H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum			Nickel Alloy	Titanium	Hardened Steels	
		Low	Med.			High	4140	300	400	17-4 PH	Cast Iron	6061			Casting	Inconel
	1010	1035	1065	4340	7075											
2973	1018	1045							<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best





EXOCARB® AERO DLC-CR-OIL

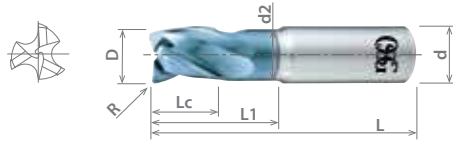
High Speed Coolant-Through End Mills for Aluminum Alloy

List 2874

AERO-O-ETS, 3 Flute, Stub Length, Coolant-Through, Square & Corner Radius

NEW SIZES	SPEED FEED P1063	CARBIDE	DLC		STUB		30°	SHANK h6
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Milling Diameter Tolerance	
5/8 ≤ D ≤ 1	+0 / -0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
28740050	5/8	-	4	1.016	2.205	0.559	5/8
28741550	3/4	-	4	1.142	2.205	0.669	3/4
28740000	3/4	0.030	4	1.142	2.205	0.669	3/4
28740500	3/4	0.060	4	1.142	2.205	0.669	3/4
28741000	3/4	0.090	4	1.142	2.205	0.669	3/4
28741500	3/4	0.120	4	1.142	2.205	0.669	3/4
28742000	3/4	0.190	4	1.142	2.205	0.669	3/4
28741050	7/8	-	4	1.327	2.205	0.787	7/8
28740550	1	-	4	1.523	2.205	0.921	1
28742500	1	0.030	4	1.523	2.205	0.921	1
28743000	1	0.060	4	1.523	2.205	0.921	1
28743500	1	0.090	4	1.523	2.205	0.921	1
28744000	1	0.120	4	1.523	2.205	0.921	1
28744500	1	0.190	4	1.523	2.205	0.921	1

Packed: 1 pc.
Available DLC coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2041 (p. 826)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
2874	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



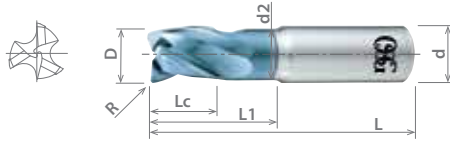


List 2974

AERO-O-ETS, 3 Flute, Stub Length, Coolant-Through, Square & Corner Radius

NEW SIZES	SPEED FEED P1063	CARBIDE	DLC		STUB		30°	SHANK h6
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Milling Diameter Tolerance	
20 ≤ D ≤ 25	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
8533300	20	-	100	30.0	55	18	20
8533301	20	1.0	100	30.0	55	18	20
8533302	20	1.6	100	30.0	55	18	20
8533303	20	3.0	100	30.0	55	18	20
8533304	20	4.0	100	30.0	55	18	20
8533305	20	5.0	100	30.0	55	18	20
8533306	25	-	100	37.5	55	23	25
8533307	25	1.0	100	37.5	55	23	25
8533308	25	1.6	100	37.5	55	23	25
8533309	25	3.0	100	37.5	55	23	25
8533310	25	4.0	100	37.5	55	23	25
8533311	25	5.0	100	37.5	55	23	25

Packed: 1 pc.
Available DLC coating only.



Work Material																		
List No.	P				M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
2974																		

good best





EXOCARB® AERO DLC

High Speed Carbide End Mills for Aluminum Alloy

List 2843

AERO-ETL, 3 Flute, Long Length, Square & Corner Radius

NEW SIZES	SPEED FEED P1064	CARBIDE	DLC	LONG	35°	SHANK h6
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Milling Diameter Tolerance	
1/2 ≤ D ≤ 1	+0 / -0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
28430000	1/2	-	4-1/2	2.024	1/2
28430400	1/2	0.030	4-1/2	2.024	1/2
28430550	1/2	0.060	4-1/2	2.024	1/2
28430600	1/2	0.090	4-1/2	2.024	1/2
28430700	1/2	0.120	4-1/2	2.024	1/2
28430800	1/2	0.150	4-1/2	2.024	1/2
28430900	1/2	0.190	4-1/2	2.024	1/2
28431000	5/8	-	4-1/2	2.024	5/8
28431550	5/8	0.030	4-1/2	2.024	5/8
28431600	5/8	0.060	4-1/2	2.024	5/8
28431700	5/8	0.090	4-1/2	2.024	5/8
28431800	5/8	0.120	4-1/2	2.024	5/8
28431900	5/8	0.150	4-1/2	2.024	5/8
28432050	5/8	0.190	4-1/2	2.024	5/8
28432000	3/4	-	4-1/2	2.024	3/4
28432600	3/4	0.030	4-1/2	2.024	3/4
28432700	3/4	0.060	4-1/2	2.024	3/4
28432800	3/4	0.090	4-1/2	2.024	3/4
28432900	3/4	0.120	4-1/2	2.024	3/4
28433050	3/4	0.150	4-1/2	2.024	3/4
28433100	3/4	0.190	4-1/2	2.024	3/4
28433500	7/8	-	4-1/2	2.024	7/8
28433800	7/8	0.030	4-1/2	2.024	7/8
28433900	7/8	0.060	4-1/2	2.024	7/8
28434050	7/8	0.090	4-1/2	2.024	7/8
28434100	7/8	0.120	4-1/2	2.024	7/8
28434200	7/8	0.150	4-1/2	2.024	7/8
28434300	7/8	0.190	4-1/2	2.024	7/8
28434500	1	-	4-1/2	2.024	1
28434900	1	0.030	4-1/2	2.024	1
28435050	1	0.030	4-1/2	2.024	1
28435100	1	0.090	4-1/2	2.024	1
28435200	1	0.120	4-1/2	2.024	1
28435300	1	0.150	4-1/2	2.024	1
28435400	1	0.190	4-1/2	2.024	1

Packed: 1 pc.
Available DLC coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try EXOCARB® AERO - List 2042 (p. 827)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2843	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best





List 2943

AERO-ETL, 3 Flute, Long Length, Square & Corner Radius

NEW SIZES	SPEED FEED P1064	CARBIDE	DLC	LONG	35°	SHANK h6
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Milling Diameter Tolerance	
12 ≤ D ≤ 20	+0 / -0.02mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
8533350	12	-	110	50	12
8533351	12	1.0	110	50	12
8533352	12	1.6	110	50	12
8533353	12	3.0	110	50	12
8533354	12	4.0	110	50	12
8533355	16	-	110	50	16
8533356	16	1.0	110	50	16
8533357	16	1.6	110	50	16
8533358	16	3.0	110	50	16
8533359	16	4.0	110	50	16
8533360	16	5.0	110	50	16
8533361	20	-	110	50	20
8533362	20	1.0	110	50	20
8533363	20	1.6	110	50	20
8533364	20	3.0	110	50	20
8533365	20	4.0	110	50	20
8533366	20	5.0	110	50	20

Packed: 1 pc.
Available DLC coating only.



Work Material

List No.	P					M			K	N		S	H										
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels									
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC					
2943	1010	1035	1065	4140						6061													
	1018	1045		4340						7075													

good best





EXOCARB® AERO DLC

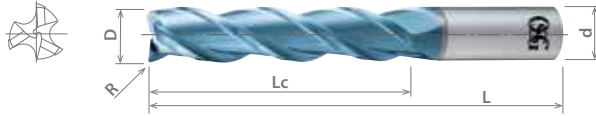
High Speed Carbide End Mills for Aluminum Alloy

List 2853

AERO-ETXL, 3 Flute, Extra Long Length, Square & Corner Radius

NEW	SPEED FEED P1065	CARBIDE	DLC		EXTRA LONG	35°	SHANK h6
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Milling Diameter Tolerance	
3/4 ≤ D ≤ 1	+0 / -0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
28530000	3/4	-	6-1/2	4	3/4
28530100	3/4	0.030	6-1/2	4	3/4
28530200	3/4	0.060	6-1/2	4	3/4
28530300	3/4	0.090	6-1/2	4	3/4
28530400	3/4	0.120	6-1/2	4	3/4
28530500	3/4	0.150	6-1/2	4	3/4
28530600	3/4	0.190	6-1/2	4	3/4

Packed: 1 pc.
Available DLC coating only.



Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2853	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best





List 2953

AERO-ETXL, 3 Flute, Extra Long Length, Square & Corner Radius

NEW	SPEED FEED P1065	CARBIDE	DLC		EXTRA LONG	35°	SHANK h6
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Milling Diameter Tolerance	
3/4 ≤ D ≤ 1	+0 / -0.0008"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
8533400	20	-	160	100	20
8533401	20	1.0	160	100	20
8533402	20	1.6	160	100	20
8533403	20	3.0	160	100	20
8533404	20	4.0	160	100	20
8533405	20	5.0	160	100	20

Packed: 1 pc.
Available DLC coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2953	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



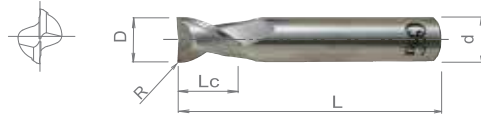


List 2021

2 Flute, Stub Length, Square & Corner Radius

SPEED FEED P1066	CARBIDE	BR		STUB	30°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20210100	1/8	-	1-1/2	1/4	1/8
20210200	1/8	0.01	1-1/2	1/4	1/8
20210500	5/32	-	2	5/16	3/16
20210600	5/32	0.02	2	5/16	3/16
20210900	3/16	-	2	5/16	3/16
20211000	3/16	0.02	2	5/16	3/16
20211300	7/32	-	2-1/2	3/8	1/4
20211400	7/32	0.02	2-1/2	3/8	1/4
20211700	1/4	-	2-1/2	3/8	1/4
20211800	1/4	0.02	2-1/2	3/8	1/4
20211900	1/4	0.03	2-1/2	3/8	1/4
20212000	1/4	0.06	2-1/2	3/8	1/4
20212100	9/32	-	2-1/2	7/16	5/16
20212500	5/16	-	2-1/2	7/16	5/16
20212600	5/16	0.02	2-1/2	7/16	5/16
20212700	5/16	0.03	2-1/2	7/16	5/16
20212900	11/32	-	2-1/2	1/2	3/8
20213000	11/32	0.02	2-1/2	1/2	3/8
20213300	3/8	-	2-1/2	1/2	3/8
20213400	3/8	0.02	2-1/2	1/2	3/8
20213500	3/8	0.03	2-1/2	1/2	3/8

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20213600	3/8	0.06	2-1/2	1/2	3/8
20213700	13/32	-	2-3/4	9/16	7/16
20214100	7/16	-	2-3/4	9/16	7/16
20214200	7/16	0.02	2-3/4	9/16	7/16
20214500	15/32	-	3	5/8	1/2
20214900	1/2	-	3	5/8	1/2
20215000	1/2	0.02	3	5/8	1/2
20215100	1/2	0.03	3	5/8	1/2
20215200	1/2	0.06	3	5/8	1/2
20215300	5/8	-	3-1/2	3/4	5/8
20215400	5/8	0.03	3-1/2	3/4	5/8
20215500	5/8	0.06	3-1/2	3/4	5/8
20215600	5/8	0.09	3-1/2	3/4	5/8
20215700	3/4	-	4	1	3/4
20215800	3/4	0.06	4	1	3/4
20215900	3/4	0.09	4	1	3/4
20216000	3/4	0.12	4	1	3/4
20216100	1	-	4	1-1/4	1
20216200	1	0.06	4	1-1/4	1
20216300	1	0.09	4	1-1/4	1
20216400	1	0.12	4	1-1/4	1

Packed: 1 pc.
 EDPs above are stocked standard, DLC coating available upon request.
 Additional corner radii available upon request.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 412 or 495 (p. 878-879 or 884)
 Want to turbo-charge performance? Try EXOCARB® DIAMOND - List 7020 (p. 790)

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
2021										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best



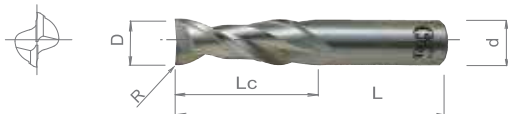


List 2022

2 Flute, Regular Length, Square & Corner Radius

SPEED FEED P1066	CARBIDE	BR		REG	30°	SHANK h6
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Milling Diameter Tolerance	
1/8≤D≤1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20220100	1/8	-	1-1/2	3/8	1/8
20220200	1/8	0.01	1-1/2	3/8	1/8
20220500	5/32	-	2	9/16	3/16
20220600	5/32	0.02	2	9/16	3/16
20220900	3/16	-	2	9/16	3/16
20221000	3/16	0.02	2	9/16	3/16
20221300	7/32	-	2-1/2	3/4	1/4
20221400	7/32	0.02	2-1/2	3/4	1/4
20221700	1/4	-	2-1/2	3/4	1/4
20221800	1/4	0.02	2-1/2	3/4	1/4
20221900	1/4	0.03	2-1/2	3/4	1/4
20222000	1/4	0.06	2-1/2	3/4	1/4
20222100	9/32	-	2-1/2	13/16	5/16
20222200	9/32	0.02	2-1/2	13/16	5/16
20222500	5/16	-	2-1/2	13/16	5/16
20222600	5/16	0.02	2-1/2	13/16	5/16
20222700	5/16	0.03	2-1/2	13/16	5/16
20222900	11/32	-	2-1/2	1	3/8
20223000	11/32	0.02	2-1/2	1	3/8
20223300	3/8	-	2-1/2	1	3/8
20223400	3/8	0.02	2-1/2	1	3/8
20223500	3/8	0.03	2-1/2	1	3/8
20223600	3/8	0.06	2-1/2	1	3/8

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20223700	13/32	-	2-3/4	1	7/16
20223800	13/32	0.02	2-3/4	1	7/16
20224100	7/16	-	2-3/4	1	7/16
20224200	7/16	0.02	2-3/4	1	7/16
20224500	15/32	-	3	1-1/4	1/2
20224600	15/32	0.02	3	1-1/4	1/2
20224900	1/2	-	3	1-1/4	1/2
20225000	1/2	0.02	3	1-1/4	1/2
20225100	1/2	0.03	3	1-1/4	1/2
20225200	1/2	0.06	3	1-1/4	1/2
20225300	5/8	-	3-1/2	1-5/8	5/8
20225400	5/8	0.03	3-1/2	1-5/8	5/8
20225500	5/8	0.06	3-1/2	1-5/8	5/8
20225600	5/8	0.09	3-1/2	1-5/8	5/8
20225700	3/4	-	4	1-5/8	3/4
20225800	3/4	0.06	4	1-5/8	3/4
20225900	3/4	0.09	4	1-5/8	3/4
20226000	3/4	0.12	4	1-5/8	3/4
20226100	1	-	5	2	1
20226200	1	0.06	5	2	1
20226300	1	0.09	5	2	1
20226400	1	0.12	5	2	1

Packed: 1 pc.
EDPs above are stocked standard, DLC coating available upon request.
Additional corner radii available upon request.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 402 or 495 (p. 873-875 or 884)

List No.	Work Material														
	P				M			K	N		S	H			
	Carbon Steels			Alloy Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels		
	Low	Med.	High	4140 4340	300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
	1010 1018	1035 1045	1065												
2022								<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



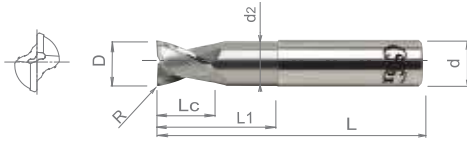


List 2023

SPEED FEED P1066	CARBIDE	BR		REG	30°	SHANK h6
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2 Flute, Regular Length, Reduced Neck, Square & Corner Radius

Milling Diameter Tolerance	
1/4 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
20230100	1/4	-	2-1/2	1/4	1-1/8	0.246	1/4
20230200	1/4	0.02	2-1/2	1/4	1-1/8	0.246	1/4
20230300	1/4	0.03	2-1/2	1/4	1-1/8	0.246	1/4
20230400	1/4	0.06	2-1/2	1/4	1-1/8	0.246	1/4
20230500	1/2	-	3	1/2	1-3/8	0.496	1/2
20230600	1/2	0.02	3	1/2	1-3/8	0.496	1/2
20230700	1/2	0.03	3	1/2	1-3/8	0.496	1/2
20230800	1/2	0.06	3	1/2	1-3/8	0.496	1/2
20230900	5/8	-	3-1/2	5/8	1-5/8	0.621	5/8
20231000	5/8	0.03	3-1/2	5/8	1-5/8	0.621	5/8
20231100	5/8	0.06	3-1/2	5/8	1-5/8	0.621	5/8
20231200	5/8	0.09	3-1/2	5/8	1-5/8	0.621	5/8
20231300	3/4	-	4	3/4	2	0.746	3/4
20231400	3/4	0.06	4	3/4	2	0.746	3/4
20231500	3/4	0.09	4	3/4	2	0.746	3/4
20231600	3/4	0.12	4	3/4	2	0.746	3/4
20231700	1	-	5	1	2-5/8	0.992	1
20231800	1	0.06	5	1	2-5/8	0.992	1
20231900	1	0.09	5	1	2-5/8	0.992	1
20232000	1	0.12	5	1	2-5/8	0.992	1

Packed: 1 pc.

EDPs above are stocked standard, DLC coating available upon request.



Work Material

List No.	P				Die Steels	M			Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
2023										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



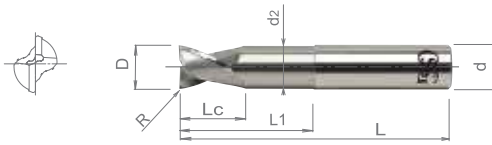


List 2024

2 Flute, Long Length, Reduced Neck, Square & Corner Radius

SPEED FEED P1066	CARBIDE	BR	LONG	30°	SHANK h6
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Milling Diameter Tolerance	
1/4 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
20240100	1/4	-	4	1/4	2-1/8	0.246	1/4
20240200	1/4	0.02	4	1/4	2-1/8	0.246	1/4
20240300	1/4	0.03	4	1/4	2-1/8	0.246	1/4
20240400	1/4	0.06	4	1/4	2-1/8	0.246	1/4
20240500	1/2	-	4	1/2	2-1/8	0.496	1/2
20240600	1/2	0.02	4	1/2	2-1/8	0.496	1/2
20240700	1/2	0.03	4	1/2	2-1/8	0.496	1/2
20240800	1/2	0.06	4	1/2	2-1/8	0.496	1/2
20240900	5/8	-	6	5/8	2-3/8	0.621	5/8
20241000	5/8	0.03	6	5/8	2-3/8	0.621	5/8
20241100	5/8	0.06	6	5/8	2-3/8	0.621	5/8
20241200	5/8	0.09	6	5/8	2-3/8	0.621	5/8
20241300	3/4	-	6	3/4	2-1/2	0.746	3/4
20241400	3/4	0.06	6	3/4	2-1/2	0.746	3/4
20241500	3/4	0.09	6	3/4	2-1/2	0.746	3/4
20241600	3/4	0.12	6	3/4	2-1/2	0.746	3/4
20241700	1	-	6	1	3-3/8	0.992	1
20241800	1	0.06	6	1	3-3/8	0.992	1
20241900	1	0.09	6	1	3-3/8	0.992	1
20242000	1	0.12	6	1	3-3/8	0.992	1

Packed: 1 pc.
EDPs above are stocked standard, DLC coating available upon request.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2024										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



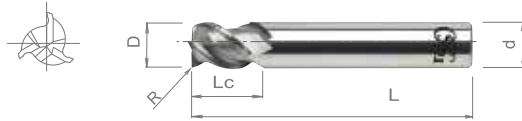


List 2041

3 Flute, Stub Length, Square & Corner Radius

SPEED FEED P1067	CARBIDE	BR		STUB	45°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20410100	1/8	-	1-1/2	1/4	1/8
20410200	1/8	0.01	1-1/2	1/4	1/8
20410900	3/16	-	2	5/16	3/16
20411000	3/16	0.02	2	5/16	3/16
20411700	1/4	-	2-1/2	3/8	1/4
20411800	1/4	0.02	2-1/2	3/8	1/4
20411900	1/4	0.03	2-1/2	3/8	1/4
20412000	1/4	0.06	2-1/2	3/8	1/4
20412500	5/16	-	2-1/2	7/16	5/16
20412600	5/16	0.02	2-1/2	7/16	5/16
20412700	5/16	0.03	2-1/2	7/16	5/16
20413300	3/8	-	2-1/2	1/2	3/8
20413400	3/8	0.02	2-1/2	1/2	3/8
20413500	3/8	0.03	2-1/2	1/2	3/8
20413600	3/8	0.06	2-1/2	1/2	3/8
20414100	7/16	-	2-3/4	9/16	7/16
20414200	7/16	0.02	2-3/4	9/16	7/16

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20414900	1/2	-	3	5/8	1/2
20415000	1/2	0.02	3	5/8	1/2
20415100	1/2	0.03	3	5/8	1/2
20415200	1/2	0.06	3	5/8	1/2
20415300	5/8	-	3-1/2	3/4	5/8
20415400	5/8	0.03	3-1/2	3/4	5/8
20415500	5/8	0.06	3-1/2	3/4	5/8
20415600	5/8	0.09	3-1/2	3/4	5/8
20415700	3/4	-	4	1	3/4
20415800	3/4	0.06	4	1	3/4
20415900	3/4	0.09	4	1	3/4
20416000	3/4	0.12	4	1	3/4
20416100	1	-	4	1-1/4	1
20416200	1	0.06	4	1-1/4	1
20416300	1	0.09	4	1-1/4	1
20416400	1	0.12	4	1-1/4	1

Packed: 1 pc.
EDPs above are stocked standard, DLC coating available upon request.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 403 (p. 873-875)

Want to turbo-charge performance? Try EXOCARB® AERO DLC - List 2873 or 2874 (p. 814 or 816)

Work Material

List No.	P					M			K Cast Iron	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
2041										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best



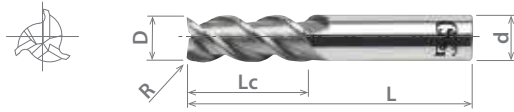


List 2042

3 Flute, Regular Length, Square & Corner Radius

SPEED FEED P1068	CARBIDE	BR	REG	45°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20420100	1/8	-	1-1/2	3/8	1/8
20420200	1/8	0.01	1-1/2	3/8	1/8
20420900	3/16	-	2	9/16	3/16
20421000	3/16	0.02	2	9/16	3/16
20421700	1/4	-	2-1/2	5/8	1/4
20421800	1/4	0.02	2-1/2	5/8	1/4
20421900	1/4	0.03	2-1/2	5/8	1/4
20422000	1/4	0.06	2-1/2	5/8	1/4
20422500	5/16	-	2-1/2	13/16	5/16
20422600	5/16	0.02	2-1/2	13/16	5/16
20422700	5/16	0.03	2-1/2	13/16	5/16
20423300	3/8	-	2-1/2	1	3/8
20423400	3/8	0.02	2-1/2	1	3/8
20423500	3/8	0.03	2-1/2	1	3/8
20423600	3/8	0.06	2-1/2	1	3/8
20424100	7/16	-	2-3/4	1-1/4	7/16
20424200	7/16	0.02	2-3/4	1-1/4	7/16

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
	D	R	L	Lc	d
20424900	1/2	-	3	1-1/4	1/2
20425000	1/2	0.02	3	1-1/4	1/2
20425100	1/2	0.03	3	1-1/4	1/2
20425200	1/2	0.06	3	1-1/4	1/2
20425300	5/8	-	3-1/2	1-5/8	5/8
20425400	5/8	0.03	3-1/2	1-5/8	5/8
20425500	5/8	0.06	3-1/2	1-5/8	5/8
20425600	5/8	0.09	3-1/2	1-5/8	5/8
20425700	3/4	-	4	1-5/8	3/4
20425800	3/4	0.06	4	1-5/8	3/4
20425900	3/4	0.09	4	1-5/8	3/4
20426000	3/4	0.12	4	1-5/8	3/4
20426100	1	-	5	2	1
20426200	1	0.06	5	2	1
20426300	1	0.09	5	2	1
20426400	1	0.12	5	2	1



Packed: 1 pc.

EDPs above are stocked standard, DLC coating available upon request.

OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 403 (p. 873-875)

Want to turbo-charge performance? Try EXOCARB® AERO DLC - List 2843 (p. 818)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2042	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



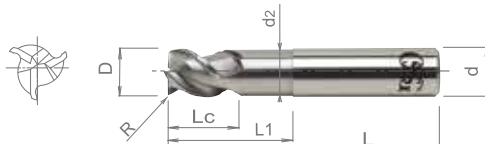


List 2043

3 Flute, Regular Length, Reduced Neck, Square & Corner Radius

SPEED FEED P1068	CARBIDE	BR	REG	45°	SHANK h6
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Milling Diameter Tolerance	
1/4 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
20430100	1/4	-	2-1/2	1/4	1-1/8	0.246	1/4
20430200	1/4	0.02	2-1/2	1/4	1-1/8	0.246	1/4
20430300	1/4	0.03	2-1/2	1/4	1-1/8	0.246	1/4
20430400	1/4	0.06	2-1/2	1/4	1-1/8	0.246	1/4
20430500	1/2	-	3	1/2	1-3/8	0.496	1/2
20430600	1/2	0.02	3	1/2	1-3/8	0.496	1/2
20430700	1/2	0.03	3	1/2	1-3/8	0.496	1/2
20430800	1/2	0.06	3	1/2	1-3/8	0.496	1/2
20430900	5/8	-	3-1/2	5/8	1-5/8	0.621	5/8
20431000	5/8	0.03	3-1/2	5/8	1-5/8	0.621	5/8
20431100	5/8	0.06	3-1/2	5/8	1-5/8	0.621	5/8
20431200	5/8	0.09	3-1/2	5/8	1-5/8	0.621	5/8
20431300	3/4	-	4	3/4	2	0.746	3/4
20431400	3/4	0.06	4	3/4	2	0.746	3/4
20431500	3/4	0.09	4	3/4	2	0.746	3/4
20431600	3/4	0.12	4	3/4	2	0.746	3/4
20431700	1	-	5	1	2-5/8	0.992	1
20431800	1	0.06	5	1	2-5/8	0.992	1
20431900	1	0.09	5	1	2-5/8	0.992	1
20432000	1	0.12	5	1	2-5/8	0.992	1

Packed: 1 pc.
EDPs above are stocked standard, DLC coating available upon request.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
2043									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>							

good best



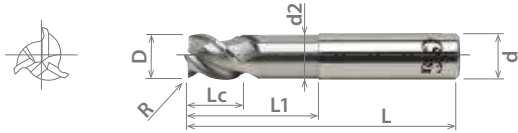


List 2048

3 Flute, Long Length, Reduced Neck, Square & Corner Radius

SPEED FEED P1068	CARBIDE	BR	LONG	45°	SHANK h6
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Milling Diameter Tolerance	
1/4 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
20480100	1/4	-	4	1/4	2-1/8	0.246	1/4
20480200	1/4	0.02	4	1/4	2-1/8	0.246	1/4
20480300	1/4	0.03	4	1/4	2-1/8	0.246	1/4
20480400	1/4	0.06	4	1/4	2-1/8	0.246	1/4
20480500	1/2	-	4	1/2	2-1/8	0.496	1/2
20480600	1/2	0.02	4	1/2	2-1/8	0.496	1/2
20480700	1/2	0.03	4	1/2	2-1/8	0.496	1/2
20480800	1/2	0.06	4	1/2	2-1/8	0.496	1/2
20480900	5/8	-	6	5/8	2-3/8	0.621	5/8
20481000	5/8	0.03	6	5/8	2-3/8	0.621	5/8
20481100	5/8	0.06	6	5/8	2-3/8	0.621	5/8
20481200	5/8	0.09	6	5/8	2-3/8	0.621	5/8
20481300	3/4	-	6	3/4	2-1/2	0.746	3/4
20481400	3/4	0.06	6	3/4	2-1/2	0.746	3/4
20481500	3/4	0.09	6	3/4	2-1/2	0.746	3/4
20481600	3/4	0.12	6	3/4	2-1/2	0.746	3/4
20481700	1	-	6	1	3-3/8	0.992	1
20481800	1	0.06	6	1	3-3/8	0.992	1
20481900	1	0.09	6	1	3-3/8	0.992	1
20482000	1	0.12	6	1	3-3/8	0.992	1

Packed: 1 pc.

EDPs above are stocked standard, DLC coating available upon request.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2048										<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



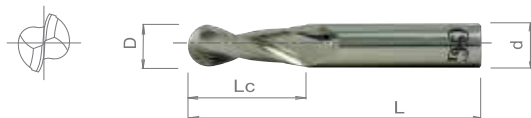


List 2010

2 Flute, Regular Length, Ball End

SPEED FEED P1069	CARBIDE	BR	REG	30°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
20100100	1/8	1-1/2	3/8	1/8
20100200	3/16	2	9/16	3/16
20100300	1/4	2-1/2	3/4	1/4
20100400	5/16	2-1/2	13/16	5/16
20100500	3/8	2-1/2	1	3/8
20100600	7/16	2-3/4	1	7/16
20100700	1/2	3	1-1/4	1/2
20100800	5/8	3-1/2	1-5/8	5/8
20100900	3/4	4	1-5/8	3/4
20101000	1	5	2	1

Packed: 1 pc.
Available Bright finish only.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 402BN (p. 891-893)
Want to turbo-charge performance? Try EXOCARB® DIAMOND - List 7010 (p. 793)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
2010	1010 1018	1035 1045	1065	4140 4340						<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



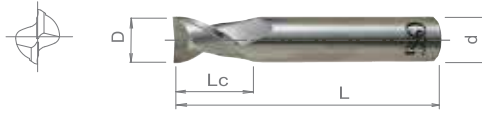


List 8120

CA-RG-EDS, 2 Flute, Regular Length

SPEED FEED P1070	CARBIDE	BR		REG	30°	SHANK h6
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Milling Diameter Tolerance	
D ≤ 12	+0 / -0.02mm
D > 12	+0 / -0.03mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
8502010	1.0	40	2.5	4
8502015	1.5	40	4.0	4
8502020	2.0	40	6.0	4
8502025	2.5	40	8.0	4
8502030	3.0	45	8.0	6
8502035	3.5	45	10.0	6
8502040	4.0	45	11.0	6
8502045	4.5	45	11.0	6
8502050	5.0	50	13.0	6
8502055	5.5	50	13.0	6
8502060	6.0	50	13.0	6
8502065	6.5	60	16.0	8
8502070	7.0	60	16.0	8
8502075	7.5	60	16.0	8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
8502080	8.0	60	19.0	8
8502085	8.5	70	19.0	10
8502090	9.0	70	19.0	10
8502095	9.5	70	19.0	10
8502100	10.0	70	22.0	10
8502105	10.5	75	22.0	12
8502110	11.0	75	22.0	12
8502115	11.5	75	22.0	12
8502120	12.0	75	26.0	12
8502130	13.0	85	26.0	12
8502140	14.0	85	26.0	12
8502150	15.0	90	26.0	16
8502160	16.0	100	32.0	16

Packed: 1 pc.
Available Bright finish only.



OSG's Performance & Savings

Don't require ultra-high performance? Try CARBIDE - List 402 (p. 873-875)
Want to turbo-charge performance? Try EXOCARB® DIAMOND - List 7120 (p. 791)

List No.	Work Material															
	P				M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels		
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
8120									<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>						

good best



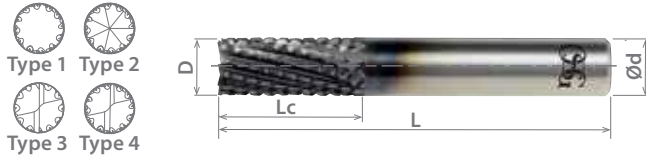


List 2061

Multiple Flutes, Regular Length, Nicked Router

SPEED FEED P1071	CARBIDE	DIA		15°	SHANK h6
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Tolerance +0/-0.002"



EDP Number	Mill Diameter	Length of Cut	OAL	Shank Diameter	Number of Flutes	Type	Corner Radius
	D	Lc	L	d			
20610116	1/8	1/4	1-1/2	1/8	6	2	-
20611116	1/8	3/8	1-1/2	1/8	6	3	-
20612116	1/8	1/2	1-1/2	1/8	8	3	-
20610216	3/16	3/8	2	3/16	6	2	-
20611216	3/16	9/16	2	3/16	6	3	-
20612216	3/16	3/4	2	3/16	8	3	-
20610316	1/4	1/2	2-1/2	1/4	8	2	-
20613416	1/4	3/4	2-1/2	1/4	8	2	-
20612316	1/4	3/4	2-1/2	1/4	10	2	-
20612416	1/4	3/4	2-1/2	1/4	12	2	-
20611316	1/4	3/4	2-1/2	1/4	10	3	-
20613216	1/4	1	3	1/4	8	2	-
20614316	1/4	1	3	1/4	10	2	-
20614400	1/4	1	3	1/4	12	2	-
20614416	1/4	1	3	1/4	12	2	-
20617316	1/4	1	3	1/4	12	2	0.030
20613316	1/4	1	3	1/4	10	3	-
20616316	1/4	1	3	1/4	8	4	-
20616416	1/4	1	3	1/4	12	4	-
20615316	1/4	1-1/4	4	1/4	12	1	-
20615216	1/4	1-1/4	4	1/4	8	2	-
20610416	5/16	1	2-1/2	5/16	10	3	-
20610516	3/8	3/4	2-1/2	3/8	12	2	-
20612516	3/8	1-1/8	3	3/8	12	2	-
20616816	3/8	1-1/8	3	3/8	12	2	0.030
20611516	3/8	1-1/8	3	3/8	12	3	-
20616516	3/8	1-1/4	3	3/8	12	4	-
20614516	3/8	1-1/2	4	3/8	12	2	-
20613516	3/8	1-1/2	4	3/8	12	3	-
20615516	3/8	2	4	3/8	12	1	-
20616716	1/2	7/8	2-7/8	1/2	14	1	-
20611716	1/2	1	3	1/2	14	2	-
20613716	1/2	1	3	1/2	14	2	0.030
20610716	1/2	1	3	1/2	14	3	-
20615716	1/2	1	3	1/2	14	4	-
20612716	1/2	2	4	1/2	16	2	-

Red EDP numbers indicate the item is uncoated. All others Diamond coating only.



- Type 1 - Non End Cutting
- Type 2 - Burr End
- Type 3 - End Mill Cut
- Type 4 - Drill Point

Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
2061	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Good Best





List 2066

4 Flute, Regular Length, 30° Compression Router

SPEED FEED P1071	CARBIDE	DIA		30°	SHANK h6
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Tolerance
+0/-0.002"



EDP Number	Mill Diameter	Compression Length	Length of Cut	OAL	Shank Diameter
	D	L2	Lc	L	d
20660116	1/8	1/8	0.560	1-1/2	1/8
20660316	1/4	1/4	0.750	2-1/2	1/4
20660516	3/8	3/8	0.875	3	3/8
20660716	1/2	1/2	1.500	3	1/2

Packed: 1 pc. Available Diamond coating only.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
2066	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

Good Best





List 2064

4 Flute, Regular Length, 45° Compression Router

SPEED FEED P1071	CARBIDE	DIA		SHANK h6
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Tolerance +0/-0.002"



EDP Number	Mill Diameter	Compression Length	Length of Cut	OAL	Shank Diameter
	D	L2	Lc	L	d
20642516	1/4	1/4	3/4	3	1/4
20643516	3/8	3/8	3/4	3	3/8
20643616	3/8	3/8	2	4	3/8
20645016	1/2	1/2	1	3	1/2
20645116	1/2	1/2	2	4	1/2

Packed: 1 pc. Available Diamond coating only.



Work Material

List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
2064	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				

Good Best





List 2068

2 Flute, Regular Length, 60° Compression Router

SPEED FEED P1072	CARBIDE	DIA		SHANK h6
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Tolerance +0/-0.002"



EDP Number	Mill Diameter	Compression Length	Length of Cut	OAL	Shank Diameter
	D	L2	Lc	L	d
20682516	1/4	0.188	3/4	3	1/4
20683516	3/8	0.281	3/4	3	3/8
20683616	3/8	0.281	2	4	3/8
20685016	1/2	0.375	1	3	1/2
20685116	1/2	0.375	2	4	1/2

Packed: 1 pc. Available Diamond coating only.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
2068	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

Good Best





List 2680

Multiple Flute, Regular Length, Roughing Router

SPEED FEED P1073	CARBIDE	DIA		15°	SHANK h6
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Tolerance +0/-0.002"



EDP Number	Mill Diameter	Length of Cut	OAL	Shank Diameter	Number of Flutes
	D	Lc	L	d	
26809316	15/64	3/4	2-1/2	1/4	4
26805316	1/4	1/2	2-1/2	1/4	4
26800316	1/4	3/4	2-1/2	1/4	4
26806316	1/4	1	3	1/4	4
26809416	5/16	15/16	3	3/8	6
26809516	23/64	1-1/8	3	3/8	6
26805516	3/8	3/4	3	3/8	6
26800516	3/8	1-1/8	3	3/8	6
26809616	7/16	1-5/16	3	1/2	8
26809716	31/64	1-1/2	3	1/2	8
26805716	1/2	1	3	1/2	8
26800716	1/2	1-1/2	3	1/2	8

Packed: 1 pc. Available Diamond coating only.



Work Material

List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
2680	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

Good Best





List 2650

Multiple Flute, Regular Length, Non End Cutting, Finishing Router

SPEED FEED P1074	CARBIDE	DIA	15°	SHANK h6
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Tolerance +0/-0.002"



EDP Number	Mill Diameter	Length of Cut	OAL	Shank Diameter	Number of Flutes
	D	Lc	L	d	
26500316	1/4	3/4	2-1/2	1/4	8
26501316	1/4	1	3	1/4	8
26500616	3/8	1-1/8	3	3/8	12
26501516	3/8	1-1/2	3	3/8	12
26500716	1/2	1-1/2	4	1/2	14
26501716	1/2	2	4	1/2	14

Packed: 1 pc. Available Diamond coating only.



Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
2650	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			

Good Best





CARBIDE AERO-HBC 60

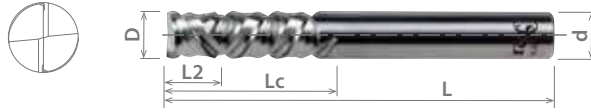
Carbide Router for Honeycomb & Other Composites

List 668

2 Flute, Regular Length, 60° Compression Router

SPEED FEED P1072	CARBIDE	BR		60°	SHANK h6
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Tolerance +0/-0.0015"



EDP Number	Mill Diameter	Compression Length	Length of Cut	OAL	Shank Diameter
	D	L2	Lc	L	d
668-2501	1/4	0.188	3/4	2 1/2	1/4
668-3751	3/8	0.281	3/4	3	3/8
668-3752	3/8	0.281	2	4	3/8
668-5001	1/2	0.375	1	3	1/2
668-5002	1/2	0.375	2	4	1/2

Packed: 1 pc.



Work Material

List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/ Ti/ CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
668			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				

Good Best



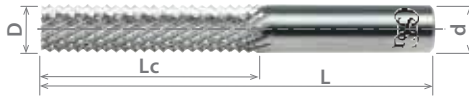
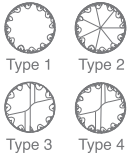


List 641R

Regular Length, General Purpose Router

SPEED FEED P1075	CARBIDE	BR		30°	SHANK h6
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Tolerance +0/-0.003"



EDP Number	Mill Diameter	Length of Cut	OAL	Shank Diameter	Type
	D	Lc	L	d	
641-1871	3/16	1	3	1/4	1
641-1872	3/16	1	3	1/4	2
641-1873	3/16	1	3	1/4	3
641-1874	3/16	1	3	1/4	4
641-2501	1/4	1	3	1/4	1
641-2502	1/4	1	3	1/4	2
641-2503	1/4	1	3	1/4	3
641-2504	1/4	1	3	1/4	4
641-3751	3/8	1	3	3/8	1
641-3752	3/8	1	3	3/8	2
641-3753	3/8	1	3	3/8	3
641-3754	3/8	1	3	3/8	4
641-5001	1/2	1	3	1/2	1
641-5002	1/2	1	3	1/2	2
641-5003	1/2	1	3	1/2	3
641-5004	1/2	1	3	1/2	4

Packed: 1 pc.



Type #1 - Non End Cutting
 Type #2 - Burr End
 Type #3 - End Mill Cut
 Type #4 - Drill Point

Work Material												
List No.	Carbon Fiber (CFRP)	Glass Fiber (GFRP)	Aramid Fiber (AFRP)	Honeycomb					Carbon/Carbon	Carbon Fiber/Aluminum Stack	Carbon Fiber/Titanium Stack	Carbon Fiber/Al/Ti/CRES Stack
				CFRP/Nomex	GFRP/Nomex	AFRP	CFRP/Al	Al/Al				
641R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			

Good Best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG441

4 Flute, Multiple Lengths, Square End



SPEED FEED P1076	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
1/8 ≤ D ≤ 1	+0 / -0.0015"

EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Overall Length	Length of Cut	Shank Diameter
		D	L	Lc	d
VG441-1250	-	1/8	1-1/2	3/8	1/8
VG441-1875	-	3/16	2	7/16	3/16
VG441-2500	-	1/4	2-1/2	7/16	1/4
VG441-2501	-	1/4	2-1/2	3/4	1/4
VG441-2502	-	1/4	3-1/4	1-1/4	1/4
VG441-3125	-	5/16	2-1/2	13/16	5/16
VG441-3126	-	5/16	3-1/4	1-1/4	5/16
VG441-3127	-	5/16	4	1-5/8	5/16
VG441-3750	VG441-3752	3/8	2-1/2	1/2	3/8
VG441-3751	VG441-3753	3/8	2-1/2	7/8	3/8
VG441-3754	VG441-3755	3/8	4	1-1/2	3/8
VG441-3756	VG441-3757	3/8	4	2-1/2	3/8
VG441-4375	VG441-4376	7/16	2-3/4	1	7/16
VG441-5007	VG441-5000	1/2	2-1/2	5/8	1/2
VG441-5008	VG441-5001	1/2	3	1	1/2
VG441-5009	VG441-5002	1/2	3-1/2	1-1/4	1/2
VG441-5010	VG441-5003	1/2	4	1-1/2	1/2
VG441-5011	VG441-5004	1/2	4	2	1/2
VG441-5012	VG441-5005	1/2	4	2-1/2	1/2
VG441-5013	VG441-5006	1/2	5	3	1/2
VG441-6255	VG441-6250	5/8	3	3/4	5/8
VG441-6256	VG441-6251	5/8	3-1/2	1-1/4	5/8
VG441-6257	VG441-6252	5/8	5	1-5/8	5/8
VG441-6258	VG441-6253	5/8	5	2-1/4	5/8
VG441-6259	VG441-6254	5/8	6	3	5/8
VG441-7506	VG441-7500	3/4	3-1/2	7/8	3/4
VG441-7507	VG441-7501	3/4	4	1-1/2	3/4
VG441-7508	VG441-7502	3/4	4	1-5/8	3/4
VG441-7509	VG441-7503	3/4	5	2-1/4	3/4
VG441-7510	VG441-7504	3/4	6	3	3/4
VG441-7511	VG441-7505	3/4	6-1/4	4	3/4
VG441-1005	VG441-1000	1	4	1-1/2	1
VG441-1006	VG441-1001	1	5	2	1
VG441-1007	VG441-1002	1	5	2-1/2	1
VG441-1008	VG441-1003	1	6	3	1
VG441-1009	VG441-1004	1	7	4	1

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 849-850)
Want to turbo-charge performance? Try EXOCARB® AERO - List 2050 (p. 799)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VG441	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best



List VG434

4 Flute, Multiple Lengths, Corner Radius



SPEED FEED P1076	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
1/8 ≤ D ≤ 1	+0 / -0.0015"

EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
		D	R	L	Lc	d
VG434-1250	-	1/8	0.010	1-1/2	3/8	1/8
VG434-1251	-	1/8	0.015	1-1/2	3/8	1/8
VG434-1875	-	3/16	0.015	2	7/16	3/16
VG434-1876	-	3/16	0.030	2	7/16	3/16
VG434-2500	-	1/4	0.015	2-1/2	7/16	1/4
VG434-2501	-	1/4	0.030	2-1/2	7/16	1/4
VG434-2502	-	1/4	0.015	2-1/2	3/4	1/4
VG434-2503	-	1/4	0.030	2-1/2	3/4	1/4
VG434-2504	-	1/4	0.060	2-1/2	3/4	1/4
VG434-3125	-	5/16	0.015	2-1/2	13/16	5/16
VG434-3126	-	5/16	0.030	2-1/2	13/16	5/16
VG434-3750	VG434-3754	3/8	0.030	2-1/2	1/2	3/8
VG434-3751	VG434-3755	3/8	0.030	2-1/2	7/8	3/8
VG434-3752	VG434-3756	3/8	0.045	2-1/2	7/8	3/8
VG434-3753	VG434-3757	3/8	0.060	2-1/2	7/8	3/8
VG434-3759	VG434-3758	3/8	0.015	2-1/2	7/8	3/8
VG434-4375	VG434-4377	7/16	0.015	2-3/4	1	7/16
VG434-4376	VG434-4378	7/16	0.030	2-3/4	1	7/16
VG434-5021	VG434-5020	1/2	0.015	2-1/2	5/8	1/2
VG434-5009	VG434-5000	1/2	0.030	2-1/2	5/8	1/2
VG434-5010	VG434-5001	1/2	0.030	3	1	1/2
VG434-5011	VG434-5002	1/2	0.060	3	1	1/2
VG434-5012	VG434-5003	1/2	0.015	3-1/2	1-1/4	1/2
VG434-5013	VG434-5004	1/2	0.030	3-1/2	1-1/4	1/2
VG434-5014	VG434-5005	1/2	0.045	3-1/2	1-1/4	1/2
VG434-5015	VG434-5006	1/2	0.060	3-1/2	1-1/4	1/2
VG434-5016	VG434-5007	1/2	0.090	3-1/2	1-1/4	1/2
VG434-5017	VG434-5008	1/2	0.125	3-1/2	1-1/4	1/2
VG434-5019	VG434-5018	1/2	0.020	4	1-1/2	1/2
VG434-6254	VG434-6250	5/8	0.030	3-1/2	1-1/4	5/8
VG434-6255	VG434-6251	5/8	0.060	3-1/2	1-1/4	5/8
VG434-6256	VG434-6252	5/8	0.090	3-1/2	1-1/4	5/8
VG434-6257	VG434-6253	5/8	0.125	3-1/2	1-1/4	5/8
VG434-7504	VG434-7500	3/4	0.030	4	1-1/2	3/4
VG434-7505	VG434-7501	3/4	0.060	4	1-1/2	3/4
VG434-7506	VG434-7502	3/4	0.090	4	1-1/2	3/4
VG434-7507	VG434-7503	3/4	0.125	4	1-1/2	3/4
VG434-7510	VG434-7508	3/4	0.020	4	1-5/8	3/4
VG434-7511	VG434-7509	3/4	0.060	5	2-1/4	3/4
VG434-1004	VG434-1000	1	0.030	4	1-1/2	1
VG434-1005	VG434-1001	1	0.060	4	1-1/2	1
VG434-1006	VG434-1002	1	0.090	4	1-1/2	1
VG434-1007	VG434-1003	1	0.125	4	1-1/2	1

Packed: 1 pc.
Available TiAlN coating only.



Work Material

List No.	P						M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
VG434	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG436

4 Flute, Multiple Lengths, Corner Chamfer



SPEED FEED P1076	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
1/8 ≤ D ≤ 1	+0 / -0.0015"

EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Corner Chamfer	Overall Length	Length of Cut	Shank Diameter
		D	C	L	Lc	d
VG436-1252	-	1/8	0.010	1-1/2	1/8	1/8
VG436-1250	-	1/8	0.010	1-1/2	1/4	1/8
VG436-1251	-	1/8	0.010	1-1/2	1/2	1/8
VG436-1875	-	3/16	0.010	2	5/16	3/16
VG436-1876	-	3/16	0.010	2-1/4	5/8	3/16
VG436-2500	-	1/4	0.016	2	3/8	1/4
VG436-2501	-	1/4	0.016	2-1/2	3/4	1/4
VG436-3125	-	5/16	0.016	2	1/2	5/16
VG436-3126	-	5/16	0.016	2-1/2	3/4	5/16
-	VG436-3750	3/8	0.020	2	1/2	3/8
-	VG436-3751	3/8	0.020	2-1/2	7/8	3/8
-	VG436-4375	7/16	0.020	2-1/2	5/8	7/16
-	VG436-4376	7/16	0.020	2-3/4	7/8	7/16
-	VG436-5000	1/2	0.020	2-1/2	5/8	1/2
-	VG436-5001	1/2	0.020	3	1	1/2
-	VG436-5002	1/2	0.020	3-1/2	1-1/4	1/2
-	VG436-5003	1/2	0.020	4	1-1/2	1/2
-	VG436-6250	5/8	0.020	3	3/4	5/8
-	VG436-6251	5/8	0.020	3-1/2	1-1/4	5/8
-	VG436-6252	5/8	0.020	4-1/8	1-5/8	5/8
-	VG436-7500	3/4	0.020	3-1/2	7/8	3/4
-	VG436-7501	3/4	0.020	4	1-1/2	3/4
-	VG436-7502	3/4	0.020	4	1-5/8	3/4
-	VG436-1000	1	0.020	4	1-1/2	1
-	VG436-1001	1	0.020	5	2	1

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 (p. 867-868)

Want to turbo-charge performance? Try EXOCARB® AERO - List 2052 (p. 800)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VG436	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

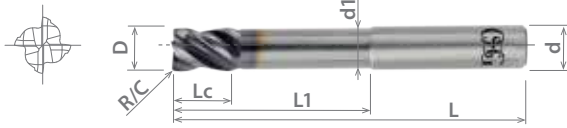


List VG446

4 Flute, Multiple Lengths, Reduced Neck, Corner Radius/Corner Chamfer

SPEED FEED P1077	CARBIDE	TiAlN		35°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
1/4 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Corner Radius	Corner Chamfer	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
		D	R	C	L	Lc	L1	d1	d
VG446-2500	-	1/4	0.015	-	4	3/8	1-1/4	0.235	1/4
VG446-2501	-	1/4	0.030	-	4	3/8	1-1/4	0.235	1/4
VG446-2502	-	1/4	-	0.016	4	3/8	1-1/4	0.235	1/4
-	VG446-3750	3/8	0.030	-	4	1/2	1-7/8	0.353	3/8
-	VG446-3751	3/8	0.060	-	4	1/2	1-7/8	0.353	3/8
-	VG446-3752	3/8	-	0.020	4	1/2	1-7/8	0.353	3/8
-	VG446-5000	1/2	0.030	-	4	5/8	2-1/4	0.470	1/2
-	VG446-5001	1/2	0.060	-	4	5/8	2-1/4	0.470	1/2
-	VG446-5002	1/2	0.120	-	4	5/8	2-1/4	0.470	1/2
-	VG446-5003	1/2	-	0.020	4	5/8	2-1/4	0.470	1/2
-	VG446-6250	5/8	0.060	-	4 - 1/8	3/4	2-1/4	0.588	5/8
-	VG446-6251	5/8	0.120	-	4 - 1/8	3/4	2-1/4	0.588	5/8
-	VG446-6252	5/8	-	0.020	4 - 1/8	3/4	2-1/4	0.588	5/8
-	VG446-6253	5/8	-	0.020	5	3/4	3-1/8	0.588	5/8
-	VG446-7500	3/4	-	0.020	4 - 1/4	1	2-1/4	0.705	3/4
-	VG446-7501	3/4	0.030	-	5 - 1/4	1	3-1/4	0.705	3/4
-	VG446-7502	3/4	0.060	-	5 - 1/4	1	3-1/4	0.705	3/4
-	VG446-7503	3/4	0.120	-	5 - 1/4	1	3-1/4	0.705	3/4
-	VG446-7504	3/4	-	0.020	5 - 1/4	1	3-1/4	0.705	3/4
-	VG446-1000	1	-	0.020	4 - 1/2	1-1/8	2-1/4	0.940	1
-	VG446-1001	1	0.030	-	5 - 1/2	1-1/8	3-1/4	0.940	1
-	VG446-1002	1	0.060	-	5 - 1/2	1-1/8	3-1/4	0.940	1
-	VG446-1003	1	0.120	-	5 - 1/2	1-1/8	3-1/4	0.940	1
-	VG446-1004	1	-	0.020	5 - 1/2	1-1/8	3-1/4	0.940	1
-	VG446-1005	1	-	0.020	6 - 1/2	1-1/8	4-1/4	0.940	1

Packed: 1 pc.
Available TiAlN coating only.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
VG446	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG464

4 Flute, Multiple Lengths, Extended Length, Square End/Corner Chamfer



SPEED FEED P1077	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
1/4 ≤ D ≤ 1	+0 / -0.0015"

EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Corner Chamfer	Overall Length	Length of Cut	Shank Diameter
		D	C	L	Lc	d
VG464-2500	-	1/4	-	4	3/8	1/4
VG464-2501	-	1/4	0.016	4	3/8	1/4
-	VG464-3750	3/8	-	4	1/2	3/8
-	VG464-3751	3/8	0.020	4	1/2	3/8
-	VG464-5000	1/2	-	5	5/8	1/2
-	VG464-5001	1/2	0.020	5	5/8	1/2
-	VG464-5002	1/2	-	6	5/8	1/2
-	VG464-5003	1/2	0.020	6	5/8	1/2
-	VG464-6250	5/8	-	6	3/4	5/8
-	VG464-6251	5/8	0.020	6	3/4	5/8
-	VG464-6252	5/8	-	7	3/4	5/8
-	VG464-6253	5/8	0.020	7	3/4	5/8
-	VG464-7500	3/4	-	6	1	3/4
-	VG464-7501	3/4	0.020	6	1	3/4
-	VG464-7502	3/4	-	7	1	3/4
-	VG464-7503	3/4	0.020	7	1	3/4
-	VG464-1000	1	-	6	1-1/8	1
-	VG464-1001	1	0.020	6	1-1/8	1
-	VG464-1002	1	-	7	1-1/8	1
-	VG464-1003	1	0.020	7	1-1/8	1

Packed: 1 pc.
Available TiAlN coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
VG464	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

good best



List VG441BN

4 Flute, Multiple Lengths, Ball Nose



SPEED FEED P1078	CARBIDE	TiAlN		SHANK h6
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Milling Diameter Tolerance	
Size	inch
1/8 ≤ D ≤ 1-1/4	+0 / -0.0015"

EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Overall Length	Length of Cut	Shank Diameter
		D	L	Lc	d
VG441-1250-BN	-	1/8	2	1/2	1/8
VG441-1875-BN	-	3/16	2-1/4	5/8	3/16
VG441-2500-BN	-	1/4	2-1/2	3/4	1/4
-	VG441-3125-BN	5/16	2-1/2	3/4	5/16
-	VG441-3750-BN	3/8	2-1/2	7/8	3/8
-	VG441-4375-BN	7/16	2-1/2	7/8	7/16
-	VG441-5000-BN	1/2	3	1	1/2
-	VG441-5010-BN	1/2	3	1-1/4	1/2
-	VG441-6250-BN	5/8	3-1/2	1-1/4	5/8
-	VG441-7500-BN	3/4	4	1-1/2	3/4
-	VG441-1000-BN	1	4	1-1/2	1
-	VG441-1010-BN	1-1/4	5	2-1/4	1-1/4

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441BN (p. 860-861)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
VG441BN	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best





HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG541

5 Flute, Multiple Lengths, Square End



SPEED FEED P1079	CARBIDE	TiAlN	38°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
1/8 ≤ D ≤ 1	+0 / -0.0015"

EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Overall Length	Length of Cut	Shank Diameter
		D	L	Lc	d
VG541-1249	-	1/8	1-1/2	9/32	1/8
VG541-1250	-	1/8	1-1/2	3/8	1/8
VG541-1875	-	3/16	2	7/16	3/16
VG541-1874	-	3/16	2-1/4	5/8	3/16
VG541-2500	-	1/4	2	3/8	1/4
VG541-2501	-	1/4	2-1/2	3/4	1/4
VG541-3125	-	5/16	2	15/32	5/16
VG541-3124	-	5/16	2-1/2	3/4	5/16
VG541-3750	VG541-3752	3/8	2	1/2	3/8
VG541-3751	VG541-3753	3/8	2-1/2	7/8	3/8
VG541-5007	VG541-5000	1/2	2-1/2	5/8	1/2
VG541-5009	VG541-5002	1/2	3-1/2	1-1/4	1/2
VG541-6255	VG541-6250	5/8	3	3/4	5/8
VG541-6256	VG541-6251	5/8	3-1/2	1-1/4	5/8
VG541-7512	VG541-7513	3/4	4	1-1/8	3/4
VG541-7507	VG541-7501	3/4	4	1-1/2	3/4
VG541-1010	VG541-1011	1	4	1-1/4	1
VG541-1005	VG541-1000	1	4	1-1/2	1

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP455 (p. 859)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
VG541	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



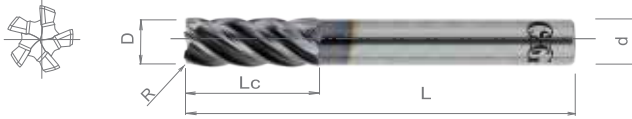


List VG534

5 Flute, Multiple Lengths, Corner Radius

SPEED FEED P1079	CARBIDE	TiAlN	38°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
3/16 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
		D	R	L	Lc	d
VG534-1875	-	3/16	0.015	2	7/16	3/16
VG534-1876	-	3/16	0.030	2	7/16	3/16
VG534-1877	-	3/16	0.015	2-1/4	5/8	3/16
VG534-1878	-	3/16	0.030	2-1/4	5/8	3/16
VG534-2505	-	1/4	0.015	2	3/8	1/4
VG534-2506	-	1/4	0.030	2	3/8	1/4
VG534-2507	-	1/4	0.060	2	3/8	1/4
VG534-2502	-	1/4	0.015	2-1/2	3/4	1/4
VG534-2503	-	1/4	0.030	2-1/2	3/4	1/4
VG534-2504	-	1/4	0.060	2-1/2	3/4	1/4
VG534-3122	-	5/16	0.015	2-1/2	3/4	5/16
VG534-3123	-	5/16	0.030	2-1/2	3/4	5/16
VG534-3124	-	5/16	0.060	2-1/2	3/4	5/16
VG534-3764	VG534-3758	3/8	0.015	2	1/2	3/8
VG534-3765	VG534-3759	3/8	0.030	2	1/2	3/8
VG534-3766	VG534-3760	3/8	0.060	2	1/2	3/8
VG534-3751	VG534-3755	3/8	0.015	2-1/2	7/8	3/8
VG534-3752	VG534-3756	3/8	0.030	2-1/2	7/8	3/8
VG534-3753	VG534-3757	3/8	0.060	2-1/2	7/8	3/8
VG534-5024	VG534-5018	1/2	0.015	2-1/2	5/8	1/2
VG534-5009	VG534-5000	1/2	0.030	2-1/2	5/8	1/2
VG534-5025	VG534-5019	1/2	0.060	2-1/2	5/8	1/2
VG534-5026	VG534-5020	1/2	0.090	2-1/2	5/8	1/2
VG534-5027	VG534-5021	1/2	0.120	2-1/2	5/8	1/2
VG534-5010	VG534-5001	1/2	0.030	3	1	1/2
VG534-5011	VG534-5002	1/2	0.060	3	1	1/2
VG534-5012	VG534-5003	1/2	0.015	3-1/2	1-1/4	1/2
VG534-5013	VG534-5004	1/2	0.030	3-1/2	1-1/4	1/2
VG534-5015	VG534-5006	1/2	0.060	3-1/2	1-1/4	1/2
VG534-5016	VG534-5007	1/2	0.090	3-1/2	1-1/4	1/2
VG534-5017	VG534-5008	1/2	0.120	3-1/2	1-1/4	1/2
VG534-6265	VG534-6258	5/8	0.030	3	3/4	5/8
VG534-6266	VG534-6259	5/8	0.060	3	3/4	5/8
VG534-6267	VG534-6260	5/8	0.090	3	3/4	5/8
VG534-6254	VG534-6250	5/8	0.030	3-1/2	1-1/4	5/8
VG534-6255	VG534-6251	5/8	0.060	3-1/2	1-1/4	5/8
VG534-6256	VG534-6252	5/8	0.090	3-1/2	1-1/4	5/8
VG534-7515	VG534-7508	3/4	0.030	4	1-1/8	3/4
VG534-7516	VG534-7509	3/4	0.060	4	1-1/8	3/4
VG534-7517	VG534-7510	3/4	0.090	4	1-1/8	3/4
VG534-7518	VG534-7511	3/4	0.120	4	1-1/8	3/4
VG534-7504	VG534-7500	3/4	0.030	4	1-1/2	3/4

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
VG534	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

good best



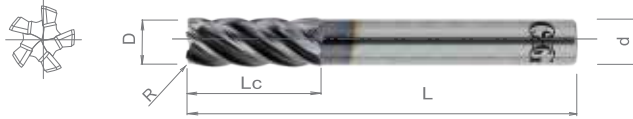


HY-PRO® CARB VGX

High Performance Variable Geometry End Mills

List VG534 (Continued)

5 Flute, Multiple Lengths, Corner Radius



SPEED FEED P1079	CARBIDE	TiAlN	38°	SHANK h6
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Milling Diameter Tolerance	
Size	inch
3/16 ≤ D ≤ 1	+0 / -0.0015"

EDP Number	EDP Number w/ Weldon Flat	Milling Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
		D	R	L	Lc	d
VG534-7505	VG534-7501	3/4	0.060	4	1-1/2	3/4
VG534-7506	VG534-7502	3/4	0.090	4	1-1/2	3/4
VG534-7507	VG534-7503	3/4	0.120	4	1-1/2	3/4
VG534-1017	VG534-1010	1	0.030	4	1-1/4	1
VG534-1018	VG534-1011	1	0.060	4	1-1/4	1
VG534-1019	VG534-1012	1	0.090	4	1-1/4	1
VG534-1020	VG534-1013	1	0.120	4	1-1/4	1
VG534-1004	VG534-1000	1	0.030	4	1-1/2	1
VG534-1005	VG534-1001	1	0.060	4	1-1/2	1
VG534-1006	VG534-1002	1	0.090	4	1-1/2	1
VG534-1007	VG534-1003	1	0.120	4	1-1/2	1

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP455 (p. 859)

Want to turbo-charge performance? Try EXOPRO® - List 2055 (p. 725)

Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
VG534	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



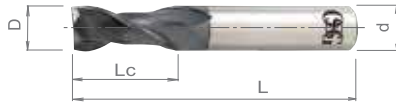


List HP421, HP441

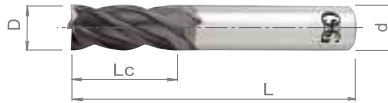
Inch Sizes, Multiple Flutes

SPEED FEED P1080-1082	CARBIDE	TiAIN	35°	SHANK h6
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Milling Diameter Tolerance	
3/64 ≤ D ≤ 1	+0 / -0.0015"



HP421



HP441

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List HP421 (2 Flute)	List HP441 (4 Flute)				
TiAIN	TiAIN	D	L	Lc	d
HP421-0469	HP441-0469	3/64	1-1/2	9/64	1/8
HP421-0625	HP441-0625	1/16	1-1/2	3/16	1/8
HP421-0781	HP441-0781	5/64	1-1/2	1/4	1/8
HP421-0938	HP441-0938	3/32	1-1/2	5/16	1/8
HP421-1094	HP441-1094	7/64	1-1/2	3/8	1/8
HP421-1250	HP441-1250	1/8	1-1/2	1/2	1/8
HP421-1406	HP441-1406	9/64	2	1/2	3/16
HP421-1562	HP441-1562	5/32	2	9/16	3/16
HP421-1719	HP441-1719	11/64	2	9/16	3/16
HP421-1875	HP441-1875	3/16	2	5/8	3/16
HP421-2031	HP441-2031	13/64	2-1/2	5/8	1/4
HP421-2188	HP441-2188	7/32	2-1/2	5/8	1/4
HP421-2500	HP441-2500	1/4	2-1/2	3/4	1/4
HP421-2812	HP441-2812	9/32	2-1/2	3/4	5/16
HP421-3125	HP441-3125	5/16	2-1/2	13/16	5/16
HP421-3438	HP441-3438	11/32	2-1/2	7/8	3/8
HP421-3750	HP441-3750	3/8	2-1/2	1	3/8
HP421-4062	HP441-4062	13/32	2-3/4	1	7/16
HP421-4375	HP441-4375	7/16	2-3/4	1	7/16
HP421-5000	HP441-5000	1/2	3	1	1/2
HP421-5625	HP441-5625	9/16	3-1/2	1-1/8	9/16
HP421-6250	HP441-6250	5/8	3-1/2	1-1/4	5/8
HP421-6875	HP441-6875	11/16	4	1-3/8	3/4
HP421-7500	HP441-7500	3/4	4	1-1/2	3/4
HP421-8750	HP441-8750	7/8	4	1-1/2	7/8
HP421-1000	HP441-1000	1	4	1-1/2	1

Packed: 1 pc.
Available TiAIN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3620, 3621, 3720 or 3721 (p. 745, 751 or 752)

Work Material

Chart applies to all list numbers above	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





HY-PRO® CARB

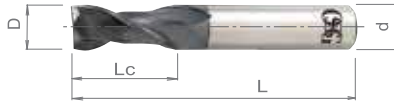
Performance Sub-Micrograin Carbide End Mills

List HP421, HP441

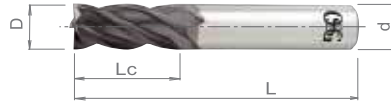
Metric Sizes, Multiple Flutes

SPEED FEED P1080-1082	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 25	+0 / -0.038mm



HP421



HP441

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List HP421 (2 Flute)	List HP441 (4 Flute)				
TiAlN	TiAlN	D	L	Lc	d
HP421-0394	HP441-0394	1.0	39	3	3
HP421-0591	HP441-0591	1.5	39	5	3
HP421-0787	HP441-0787	2.0	39	7	3
HP421-0984	HP441-0984	2.5	39	8	3
HP421-1181	HP441-1181	3.0	39	10	3
HP421-1378	HP441-1378	3.5	51	12	4
HP421-1575	HP441-1575	4.0	51	14	4
HP421-1772	HP441-1772	4.5	51	14	5
HP421-1968	HP441-1968	5.0	51	16	5
HP421-2362	HP441-2362	6.0	64	19	6
HP421-2756	HP441-2756	7.0	64	19	8
HP421-3150	HP441-3150	8.0	64	21	8
HP421-3543	HP441-3543	9.0	70	22	10
HP421-3937	HP441-3937	10.0	70	25	10
HP421-4331	HP441-4331	11.0	70	25	11
HP421-4724	HP441-4724	12.0	76	25	12
HP421-5512	HP441-5512	14.0	89	30	14
HP421-6299	HP441-6299	16.0	89	32	16
HP421-7087	HP441-7087	18.0	102	35	18
HP421-7874	HP441-7874	20.0	102	38	20
HP421-8661	HP441-8661	22.0	102	38	22
HP421-9843	HP441-9843	25.0	102	38	25

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3620, 3621, 3720 or 3721 (p. 745, 751 or 752)

Work Material

Chart applies to all list numbers above	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
	1010	1035	1045	1065	4140	4340	300	400	17-4 PH	6061	7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

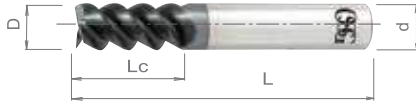


List HP460

3 Flute, Inch Sizes, High Helix

SPEED FEED P1083-1084	CARBIDE	TiAlN		60°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP460-1250	1/8	1-1/2	1/2	1/8
HP460-1875	3/16	2	5/8	3/16
HP460-2500	1/4	2-1/2	3/4	1/4
HP460-3125	5/16	2-1/2	13/16	5/16
HP460-3750	3/8	2-1/2	1	3/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP460-4375	7/16	2-3/4	1	7/16
HP460-5000	1/2	3	1	1/2
HP460-6250	5/8	3-1/2	1-1/4	5/8
HP460-7500	3/4	4	1-1/2	3/4
HP460-1000	1	4	1-1/2	1

Packed: 1 pc.
Available TiAlN coating only.

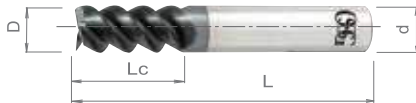


List HP460

3 Flute, Metric Sizes, High Helix

SPEED FEED P1083-1084	CARBIDE	TiAlN		60°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP460-1181	3	64	12	6
HP460-1575	4	64	14	6
HP460-1968	5	64	16	6
HP460-2362	6	64	19	6
HP460-3150	8	64	21	8
HP460-3937	10	70	25	10

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP460-4724	12	76	25	12
HP460-5512	14	89	29	14
HP460-6299	16	89	32	16
HP460-7087	18	102	38	18
HP460-7874	20	102	38	20
HP460-9843	25	102	38	25

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 4445 (p. 765)

Work Material

List No.	P				Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels		Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
HP460	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





HY-PRO® CARB

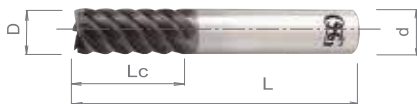
Performance Sub-Micrograin Carbide End Mills

List HP450

Multiple Flute, Inch Sizes

SPEED FEED P1085	CARBIDE	TiAlN	50°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
TiAlN	D	L	Lc	d	
HP450-1250	1/8	1-1/2	1/2	1/8	4
HP450-1875	3/16	2	5/8	3/16	4
HP450-2500	1/4	2-1/2	3/4	1/4	6
HP450-3125	5/16	2-1/2	13/16	5/16	6
HP450-3750	3/8	2-1/2	1	3/8	6
HP450-4375	7/16	2-3/4	1	7/16	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
TiAlN	D	L	Lc	d	
HP450-5000	1/2	3	1	1/2	6
HP450-5625	9/16	3-1/2	1-1/8	9/16	6
HP450-6250	5/8	3-1/2	1-1/4	5/8	6
HP450-7500	3/4	4	1-1/2	3/4	6
HP450-8750	7/8	4	1-1/2	7/8	6
HP450-1000	1	4	1-1/2	1	8

Packed: 1 pc.
Available TiAlN coating only.



List HP450

Multiple Flute, Metric Sizes

SPEED FEED P1085	CARBIDE	TiAlN	50°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
TiAlN	D	L	Lc	d	
HP450-1181	3	51	10	6	4
HP450-1575	4	51	14	6	4
HP450-1969	5	51	16	6	4
HP450-2362	6	64	19	6	6
HP450-3150	8	64	21	8	6
HP450-3937	10	64	25	10	6
HP450-4724	12	76	25	12	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
TiAlN	D	L	Lc	d	
HP450-5512	14	89	30	14	6
HP450-6299	16	89	35	16	6
HP450-7087	18	102	35	18	6
HP450-7874	20	102	38	20	6
HP450-8661	22	102	38	22	6
HP450-9843	25	102	38	25	8

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4440 or 4540 (p. 768 or 769)

Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
HP450	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



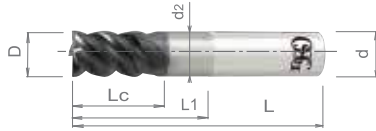


List HP453

4 Flute, Metric Sizes, Super Tough Mills

SPEED FEED P1087	CARBIDE	TiAlN		50°	SHANK h6
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Milling Diameter Tolerance	
4 ≤ D ≤ 20	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	L	Lc	L1	d2	d
HP453-1575	4	60	6	12	3.9	6
HP453-2362	6	60	9	18	5.9	6
HP453-3150	8	75	12	24	7.9	8
HP453-3937	10	80	15	30	9.9	10
HP453-4724	12	102	18	36	11.9	12
HP453-6299	16	110	24	48	15.9	16
HP453-7874	20	125	30	60	19.9	20

Packed: 1 pc.
Available TiAlN coating only.

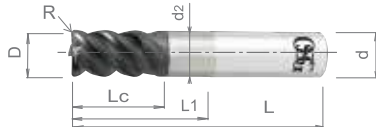


List HP456

4 Flute, Metric Sizes, Super Tough Mills, Corner Radius

SPEED FEED P1087	CARBIDE	TiAlN		50°	SHANK h6
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Milling Diameter Tolerance	
6 ≤ D ≤ 12	+0 / -0.038mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	R	L	Lc	L1	d2	d
HP456-2363	6	0.5	60	9	18	5.9	6
HP456-2364	6	1.0	60	9	18	5.9	6
HP456-3151	8	0.5	75	12	24	7.9	8
HP456-3152	8	1.0	75	12	24	7.9	8
HP456-3938	10	0.5	80	15	30	9.9	10
HP456-3939	10	1.0	80	15	30	9.9	10
HP456-4725	12	0.5	102	18	36	11.9	12
HP456-4726	12	1.0	102	18	36	11.9	12
HP456-4727	12	1.5	102	18	36	11.9	12

Packed: 1 pc.
Available TiAlN coating only.



Work Material

Chart applies to all list numbers above	P						M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
	1010	1035	1045	1065	4140	4340	300	400	17-4 PH	6061	7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP451

4 Flute, Inch Sizes, Super Tough Mills

SPEED FEED P1086-1087	CARBIDE	TiAlN		50°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP451-1250	1/8	2-1/4	3/4	1/8
HP451-1875	3/16	2-1/4	3/4	3/16
HP451-2500	1/4	3	1-1/8	1/4
HP451-3125	5/16	3	1-1/8	5/16
HP451-3750	3/8	3	1-1/8	3/8
HP451-4375	7/16	4	2	7/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP451-5000	1/2	4	2	1/2
HP451-6250	5/8	5	2-1/4	5/8
HP451-7500	3/4	5	2-1/4	3/4
HP451-1000	1	5	2-1/4	1



Packed: 1 pc.
Available TiAlN coating only.

List HP451

4 Flute, Metric Sizes, Super Tough Mills

SPEED FEED P1086-1087	CARBIDE	TiAlN		50°	SHANK h6
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Milling Diameter Tolerance	
4 ≤ D ≤ 20	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP451-1575	4	60	12	6
HP451-2362	6	60	15	6
HP451-3150	8	75	20	8
HP451-3937	10	80	25	10

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP451-4724	12	102	30	12
HP451-6299	16	110	40	16
HP451-7874	20	125	45	20



Packed: 1 pc.
Available TiAlN coating only.

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP451	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



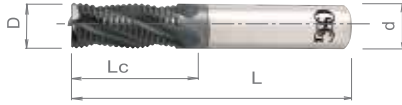


List HP400

4 Flute, Inch Sizes, Rougher

SPEED FEED P1088-1089	CARBIDE	TiAlN	30°	SHANK h6
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Milling Diameter Tolerance	
1/4 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP400-2500	1/4	2-1/2	3/4	1/4
HP400-3125	5/16	2-1/2	3/4	5/16
HP400-3750	3/8	2-1/2	1	3/8
HP400-5000	1/2	3	1-1/4	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP400-6250	5/8	3-1/2	1-5/8	5/8
HP400-7500	3/4	4	1-5/8	3/4
HP400-1000	1	4	1-3/4	1

Packed: 1 pc.
Available TiAlN coating only.



List HP400

4 Flute, Metric Sizes, Rougher

SPEED FEED P1088-1089	CARBIDE	TiAlN	30°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP400-1181	3	64	10	6
HP400-1575	4	64	14	6
HP400-1968	5	64	15	6
HP400-2362	6	64	19	6
HP400-3150	8	64	21	8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP400-3937	10	70	25	10
HP400-4724	12	76	25	12
HP400-6299	16	89	32	16
HP400-7874	20	102	38	20
HP400-9843	25	102	38	25

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® AERO - List 2015 (p. 804)

Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
HP400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP410

2 Flute, Inch Sizes, Short Length, Necked

SPEED FEED P1090	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 3/16	+0 / -0.0015"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	L	Lc	L1	d2	d
HP410-0312	1/32	2-1/2	3/64	5/16	0.029	1/4
HP410-0625	1/16	2-1/2	3/32	5/8	0.060	1/4
HP410-0938	3/32	2-1/2	9/64	15/16	0.091	1/4
HP410-1250	1/8	3	3/16	1-1/4	0.123	1/4
HP410-1875	3/16	4	9/32	1-7/8	0.183	1/4

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3791 (p. 748-749)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
HP410	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best



List HP410

2 Flute, Metric Sizes, Short Length, Necked

SPEED FEED P1090	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
0.5 ≤ D ≤ 2.5	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	L	Lc	L1	d2	d
HP410-0197	0.5	60	0.7	2.5	0.45	6
HP410-0236	0.6	60	0.9	3.0	0.55	6
HP410-0315	0.8	60	1.2	4.0	0.75	6
HP410-0394	1.0	60	1.5	5.0	0.95	6
HP410-0472	1.2	60	1.8	6.0	1.15	6
HP410-0551	1.4	60	2.1	7.0	1.35	6
HP410-0591	1.5	60	2.3	7.5	1.45	6
HP410-0630	1.6	60	2.4	8.0	1.55	6
HP410-0709	1.8	60	2.7	9.0	1.75	6
HP410-0787	2.0	60	3.0	10.0	1.95	6
HP410-0984	2.5	60	3.7	12.5	2.40	6

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3791 (p. 748-749)

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP410	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP411

4 Flute, Inch Sizes, Short Length, Long Neck

SPEED FEED P1091	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1/4	+0 / -0.0015"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	L	Lc	L1	d2	d
HP411-1250	1/8	3	3/16	5/8	0.119	1/4
HP411-1875	3/16	3	9/32	15/16	0.182	1/4
HP411-2500	1/4	4	3/8	1-1/4	0.244	1/4

Packed: 1 pc.
Available TiAlN coating only.



List HP411

4 Flute, Metric Sizes, Short Length, Long Neck

SPEED FEED P1091	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 6	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	L	Lc	L1	d2	d
HP411-1181	3.0	70	4.5	15.0	2.85	6
HP411-1378	3.5	70	5.3	17.5	3.35	6
HP411-1575	4.0	70	6.0	20.0	3.85	6
HP411-1969	5.0	80	7.5	25.0	4.85	6
HP411-2362	6.0	90	9.0	30.0	5.85	6

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3794 (p. 763-764)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP411	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

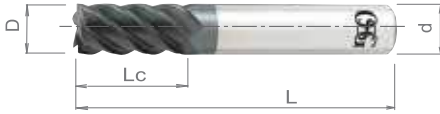


List HP455

5 Flute, Inch Sizes, **Corner Protection**

SPEED FEED P1092	CARBIDE	TiAlN		45°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.0015"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP455-1250	1/8	1-1/2	1/2	1/8
HP455-1562	5/32	2	9/16	3/16
HP455-1875	3/16	2	5/8	3/16
HP455-2188	7/32	2-1/2	5/8	1/4
HP455-2500	1/4	2-1/2	3/4	1/4
HP455-2812	9/32	2-1/2	3/4	5/16
HP455-3125	5/16	2-1/2	13/16	5/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP455-3750	3/8	2-1/2	1	3/8
HP455-4375	7/16	2-3/4	1	7/16
HP455-5000	1/2	3	1	1/2
HP455-5625	9/16	3-1/2	1-1/8	9/16
HP455-6250	5/8	3-1/2	1-1/4	5/8
HP455-7500	3/4	4	1-1/2	3/4
HP455-1000	1	4	1-1/2	1

Packed: 1 pc.
Available TiAlN coating only.



List HP455

5 Flute, Metric Sizes, **Corner Protection**

SPEED FEED P1092	CARBIDE	TiAlN		45°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP455-1181	3	39	9	3
HP455-1575	4	51	14	4
HP455-1968	5	51	16	5
HP455-2362	6	64	19	6
HP455-2756	7	64	19	8
HP455-3150	8	64	21	8
HP455-3937	10	70	22	10

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP455-4331	11	70	25	11
HP455-4724	12	76	25	12
HP455-5512	14	89	30	14
HP455-6299	16	89	32	16
HP455-7874	20	102	38	20
HP455-9843	25	102	38	25

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try HY-PRO® CARB VGX - List VG534 (p. 847-848)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP455	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

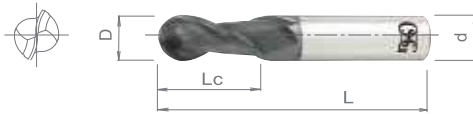


List HP421BN, HP441BN

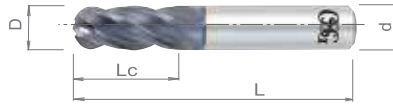
2 or 4 Flute, Metric Sizes, Ball End

SPEED FEED P1093-1094	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 25	+0 / -0.038mm



HP421BN



HP441BN

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List HP421BN1 (2 Flute)	List HP441BN (4 Flute)				
TiAlN	TiAlN	D	L	Lc	d
HP421-0394-BN	HP441-0394-BN	1.0	39	3	3
HP421-0591-BN	HP441-0591-BN	1.5	39	5	3
HP421-0787-BN	HP441-0787-BN	2.0	39	7	3
HP421-0984-BN	HP441-0984-BN	2.5	39	8	3
HP421-1181-BN	HP441-1181-BN	3.0	39	10	3
HP421-1378-BN	HP441-1378-BN	3.5	51	12	4
HP421-1575-BN	HP441-1575-BN	4.0	51	14	4
HP421-1772-BN	HP441-1772-BN	4.5	51	14	5
HP421-1968-BN	HP441-1968-BN	5.0	51	16	5
HP421-2362-BN	HP441-2362-BN	6.0	64	19	6
HP421-2756-BN	HP441-2756-BN	7.0	64	19	8
HP421-3150-BN	HP441-3150-BN	8.0	64	21	8
HP421-3543-BN	HP441-3543-BN	9.0	70	22	10
HP421-3937-BN	HP441-3937-BN	10.0	70	25	10
HP421-4331-BN	HP441-4331-BN	11.0	70	25	11
HP421-4724-BN	HP441-4724-BN	12.0	76	25	12
HP421-5512-BN	HP441-5512-BN	14.0	89	30	14
HP421-6299-BN	HP441-6299-BN	16.0	89	32	16
HP421-7087-BN	HP441-7087-BN	18.0	102	35	18
HP421-7874-BN	HP441-7874-BN	20.0	102	38	20
HP421-8661-BN	HP441-8661-BN	22.0	102	38	22
HP421-9843-BN	HP441-9843-BN	25.0	102	38	25

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3710 (p. 738)
or EXOCARB® WXS® - List 4530 (p. 781)

Work Material

Chart applies to all list numbers above	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP416

2 Flute, Inch Sizes, Ball End



SPEED FEED P1095-1096	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 1/2	+0 / -0.0015"

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP416-0312	1/32	2-1/2	1/16	1/4
HP416-0625	1/16	2-1/2	1/8	1/4
HP416-0938	3/32	2-1/2	3/16	1/4
HP416-1250	1/8	3	1/4	1/4
HP416-1875	3/16	3	3/8	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP416-2500	1/4	3	1/2	1/4
HP416-3125	5/16	4	5/8	5/16
HP416-3750	3/8	4	3/4	3/8
HP416-5000	1/2	4	1	1/2

Packed: 1 pc.
Available TiAlN coating only.



List HP416

2 Flute, Metric Sizes, Ball End



SPEED FEED P1095-1096	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 25	+0 / -0.038mm

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP416-0394	1.0	50	2.5	4
HP416-0472	1.2	50	3.0	4
HP416-0551	1.4	50	3.5	4
HP416-0591	1.5	50	4.0	4
HP416-0630	1.6	50	4.0	4
HP416-0709	1.8	50	4.5	4
HP416-0787	2.0	50	5.0	6
HP416-0984	2.5	60	6.0	6
HP416-1181	3.0	60	8.0	6
HP416-1378	3.5	70	8.0	6
HP416-1575	4.0	70	8.0	6
HP416-1576	4.0	60	8.0	4
HP416-1772	4.5	80	10.0	6
HP416-1969	5.0	80	10.0	6
HP416-2165	5.5	90	12.0	6
HP416-2362	6.0	90	12.0	6
HP416-2559	6.5	90	14.0	8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
TiAlN	D	L	Lc	d
HP416-2756	7.0	90	14.0	8
HP416-2953	7.5	90	14.0	8
HP416-3150	8.0	100	14.0	8
HP416-3346	8.5	100	18.0	10
HP416-3543	9.0	100	18.0	10
HP416-3740	9.5	100	18.0	10
HP416-3937	10.0	100	18.0	10
HP416-4331	11.0	100	22.0	12
HP416-4724	12.0	110	22.0	12
HP416-5118	13.0	110	26.0	16
HP416-5512	14.0	110	26.0	16
HP416-5906	15.0	110	30.0	16
HP416-6299	16.0	140	30.0	16
HP416-7087	18.0	140	34.0	20
HP416-7874	20.0	160	38.0	20
HP416-9843	25.0	180	50.0	25

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3610 or 3710 (p. 737 or 738)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High							6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP416	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

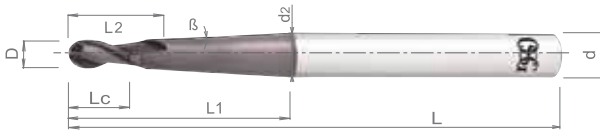
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List HP418

2 Flute, Inch Sizes, Pencil Neck, Ball End



SPEED FEED P1097-1098	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
3/32 ≤ D ≤ 3/8	+0 / -0.0015"

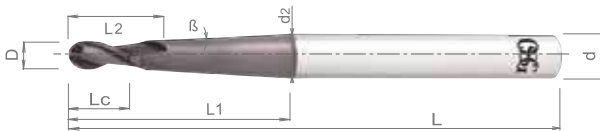
EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Non-Taper Neck Length	Maximum Neck Diameter	Neck Incline	Shank Diameter
TiAlN	D	L	Lc	L1	L2	d2	β	d
HP418-0938	3/32	3	0.160	1.60	0.200	0.240	3°	1/4
HP418-1250	1/8	3	0.225	1.60	0.270	0.217	2°	1/4
HP418-1875	3/16	3-1/2	0.312	1.90	0.390	0.312	2°	5/16
HP418-2500	1/4	4	0.400	2.25	0.500	0.375	2°	3/8
HP418-3750	3/8	4	0.600	2.25	0.750	0.500	2°	1/2

Packed: 1 pc.
Available TiAlN coating only.



List HP418

2 Flute, Metric Sizes, Pencil Neck, Ball End



SPEED FEED P1097-1098	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 12	+0 / -0.038mm

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Non-Taper Neck Length	Maximum Neck Diameter	Neck Incline	Shank Diameter
TiAlN	D	L	Lc	L1	L2	d2	B	d
HP418-0390	1	60	2.5	20.0	4.0	3.8	5.0°	6
HP418-0391	1	80	2.5	40.0	4.0	4.8	3.0°	6
HP418-0392	1	70	2.5	20.0	4.0	1.8	1.5°	6
HP418-0780	2	60	5.0	20.0	7.0	4.3	5.0°	6
HP418-0781	2	80	5.0	40.0	7.0	5.5	3.0°	6
HP418-0782	2	70	5.0	20.0	7.0	2.7	1.5°	6
HP418-1180	3	70	8.0	30.0	10.5	5.0	3.0°	6
HP418-1181	3	90	8.0	50.0	10.5	5.1	1.5°	6
HP418-1570	4	70	8.0	28.0	10.5	6.0	3.0°	6
HP418-1571	4	90	8.0	48.0	10.5	6.0	1.5°	6
HP418-1960	5	90	10.0	40.0	12.5	8.0	3.0°	8
HP418-1961	5	110	10.0	60.0	12.5	7.5	1.5°	8
HP418-2360	6	90	12.0	33.5	14.5	8.0	3.0°	8
HP418-2361	6	110	12.0	52.0	14.5	8.0	1.5°	8
HP418-3150	8	100	14.0	35.5	16.5	10.0	3.0°	10
HP418-3151	8	120	14.0	54.5	16.5	10.0	1.5°	10
HP418-3930	10	110	18.0	39.5	20.5	12.0	3.0°	12
HP418-3931	10	130	18.0	58.5	20.5	12.0	1.5°	12
HP418-4720	12	140	22.0	60.0	25.0	16.0	3.0°	16
HP418-4721	12	160	22.0	80.0	25.0	14.9	1.5°	16

Packed: 1 pc.
Available TiAlN coating only.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
HP418	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP419

2 Flute, Inch Sizes, Necked, Ball End

SPEED FEED P1099-1100	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 3/16	+0 / -0.0015"



EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP419-0312	1/32	2-1/2	1/32	5/16	0.029	1/4
HP419-0625	1/16	2-1/2	1/16	5/8	0.060	1/4
HP419-0938	3/32	2-1/2	3/32	15/16	0.091	1/4

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP419-1250	1/8	3	1/8	1-1/4	0.123	1/4
HP419-1875	3/16	4	3/16	1-7/8	0.183	1/4

Packed: 1 pc.
Available TiAlN coating only.



List HP419

2 Flute, Metric Sizes, Necked, Ball End

SPEED FEED P1099-1100	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
0.5 ≤ D ≤ 6	+0 / -0.038mm



EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP419-0197	0.5	60	0.5	2.5	0.45	6
HP419-0236	0.6	60	0.6	3.0	0.55	6
HP419-0315	0.8	60	0.8	4.0	0.75	6
HP419-0394	1.0	60	1.0	5.0	0.95	6
HP419-0472	1.2	60	1.2	6.0	1.15	6
HP419-0551	1.4	60	1.4	7.0	1.35	6
HP419-0591	1.5	60	1.5	7.5	1.45	6
HP419-0630	1.6	60	1.6	8.0	1.55	6

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP419-0709	1.8	60	1.8	9.0	1.75	6
HP419-0787	2.0	60	2.0	10.0	1.95	6
HP419-0984	2.5	60	2.5	12.5	2.40	6
HP419-1181	3.0	70	3.0	15.0	2.85	6
HP419-1378	3.5	70	3.5	17.5	3.35	6
HP419-1575	4.0	70	4.0	20.0	3.85	6
HP419-1969	5.0	80	5.0	25.0	4.85	6
HP419-2362	6.0	90	6.0	30.0	5.85	6

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3690 or 3790 (p. 741 or 742-744)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP419	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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List HP419L

2 Flute, Metric Sizes, Long Neck, Ball End

SPEED FEED P1099-1100	CARBIDE	TiAlN	30°	SHANK h6
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Milling Diameter Tolerance	
0.6 ≤ D ≤ 3	+0 / -0.038mm



EDP Number	Mill Diameter	Overall Diameter	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	L	Lc	L1	d2	d
HP419L-0236	0.6	60	0.6	6	0.55	6
HP419L-0315	0.8	60	0.8	8	0.75	6
HP419L-0394	1.0	60	1.0	10	0.95	6
HP419L-0472	1.2	60	1.2	12	1.15	6
HP419L-0551	1.4	60	1.4	12	1.35	6
HP419L-0591	1.5	60	1.5	12	1.45	6
HP419L-0630	1.6	60	1.6	16	1.55	6
HP419L-0709	1.8	60	1.8	16	1.75	6
HP419L-0787	2.0	60	2.0	16	1.95	6
HP419L-1181	3.0	70	3.0	30	2.85	6

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3790 (p. 742-744)

List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP419L	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP413

2 Flute, Inch Sizes, Ball End



SPEED FEED P1099-1100	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 3/16	+0 / -0.0015"

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP413-0312	1/32	2-1/2	1/32	5/32	0.029	1/4
HP413-0625	1/16	2-1/2	1/16	5/16	0.060	1/4
HP413-0938	3/32	2-1/2	3/32	15/32	0.091	1/4

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP413-1250	1/8	3	1/8	5/8	0.123	1/4
HP413-1875	3/16	4	3/16	15/16	0.183	1/4

Packed: 1 pc.
Available TiAlN coating only.



List HP413

2 Flute, Metric Sizes, Ball End



SPEED FEED P1099-1100	CARBIDE	TiAlN		30°	SHANK h6
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Milling Diameter Tolerance	
1 ≤ D ≤ 6	+0 / -0.038mm

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP413-0394	1.0	50	1.0	2.5	0.95	6
HP413-0472	1.2	50	1.2	3.0	1.15	6
HP413-0551	1.4	50	1.4	3.5	1.35	6
HP413-0591	1.5	50	1.5	3.8	1.45	6
HP413-0630	1.6	50	1.6	4.0	1.55	6
HP413-0709	1.8	50	1.8	4.5	1.75	6
HP413-0787	2.0	50	2.0	5.0	1.95	6

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
TiAlN	D	L	Lc	L1	d2	d
HP413-0984	2.5	50	2.5	5.0	2.40	6
HP413-1181	3.0	50	3.0	6.0	2.85	6
HP413-1378	3.5	50	3.5	6.0	3.35	6
HP413-1575	4.0	50	4.0	6.0	3.85	6
HP413-1969	5.0	50	5.0	7.5	4.85	6
HP413-2362	6.0	50	6.0	9.0	5.85	6

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3610 or 3710 (p. 737 or 738)

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
HP413	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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List HP432, HP434

2 or 4 Flute, Inch Sizes, Corner Radius

SPEED FEED P1101-1104	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.0015"



EDP Number		Mill Dia.	Corner Radius	Overall Length	Length of Cut	Shank Dia.
List HP432 (2 Flute)	List HP434 (4 Flute)					
TiAlN	TiAlN	D	R	L	Lc	d
HP432-1251	HP434-1251	1/8	0.015	1-1/2	1/2	1/8
HP432-1872	HP434-1872	3/16	0.020	2	5/8	3/16
HP432-2502	HP434-2502	1/4	0.020	2-1/2	3/4	1/4
HP432-2503	HP434-2503	1/4	0.030	2-1/2	3/4	1/4
HP432-3122	HP434-3122	5/16	0.020	2-1/2	13/16	5/16
HP432-3123	HP434-3123	5/16	0.030	2-1/2	13/16	5/16
HP432-3752	HP434-3752	3/8	0.020	2-1/2	1	3/8
HP432-3753	HP434-3753	3/8	0.030	2-1/2	1	3/8
HP432-5002	HP434-5002	1/2	0.020	3	1	1/2
HP432-5003	HP434-5003	1/2	0.030	3	1	1/2
HP432-5006	HP434-5006	1/2	0.060	3	1	1/2
HP432-6253	HP434-6253	5/8	0.030	3-1/2	1-1/4	5/8
HP432-6256	HP434-6256	5/8	0.060	3-1/2	1-1/4	5/8
HP432-6259	HP434-6259	5/8	0.090	3-1/2	1-1/4	5/8
HP432-7506	HP434-7506	3/4	0.060	4	1-1/2	3/4
HP432-7509	HP434-7509	3/4	0.090	4	1-1/2	3/4
HP432-7512	HP434-7512	3/4	0.125	4	1-1/2	3/4
HP432-1006	HP434-1006	1	0.060	4	1-1/2	1
HP432-1009	HP434-1009	1	0.090	4	1-1/2	1
HP432-1012	HP434-1012	1	0.125	4	1-1/2	1

Packed: 1 pc.
Available TiAlN coating only.



Work Material																	
Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010	1035	1065	4140	4340												
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





List HP432, HP434

2 or 4 Flute, Metric Sizes, Corner Radius

SPEED FEED P1101-1104	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.038mm



EDP Number		Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
List HP432 (2 Flute)	List HP434 (4 Flute)					
TiAlN	TiAlN	D	R	L	Lc	d
HP432-1181	HP434-1181	3	0.2	60	8	6
HP432-1182	HP434-1182	3	0.5	60	8	6
HP432-1575	HP434-1575	4	0.2	70	11	6
HP432-1576	HP434-1576	4	0.5	70	11	6
HP432-1577	HP434-1577	4	1.0	70	11	6
HP432-1960	HP434-1960	5	0.2	80	13	6
HP432-1961	HP434-1961	5	0.5	80	13	6
HP432-1962	HP434-1962	5	1.0	80	13	6
HP432-2360	HP434-2360	6	0.2	80	13	6
HP432-2361	HP434-2361	6	0.5	80	13	6
HP432-2362	HP434-2362	6	1.0	80	13	6
HP432-2363	HP434-2363	6	1.5	80	13	6
HP432-2364	HP434-2364	6	2.0	80	13	6
HP432-3150	HP434-3150	8	0.5	100	19	8
HP432-3151	HP434-3151	8	1.0	100	19	8
HP432-3152	HP434-3152	8	1.5	100	19	8
HP432-3153	HP434-3153	8	2.0	100	19	8
HP432-3930	HP434-3930	10	0.5	100	22	10
HP432-3931	HP434-3931	10	1.0	100	22	10
HP432-3932	HP434-3932	10	1.5	100	22	10
HP432-3933	HP434-3933	10	2.0	100	22	10
HP432-3934	HP434-3934	10	3.0	100	22	10
HP432-4720	HP434-4720	12	0.5	110	26	12
HP432-4721	HP434-4721	12	1.0	110	26	12
HP432-4722	HP434-4722	12	1.5	110	26	12
HP432-4723	HP434-4723	12	2.0	110	26	12
HP432-4724	HP434-4724	12	3.0	110	26	12

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3770 or 3771 (p. 761 or 762)

Work Material

Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



List HP433

2 Flute, Metric Sizes, Corner Radius

SPEED FEED P1101-1104	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.038mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
Tialn	D	R	L	Lc	L1	d2	d
HP433-1181	3	0.2	60	4.5	14	2.8	6
HP433-1182	3	0.5	60	4.5	14	2.8	6
HP433-1575	4	0.2	70	6.0	25	3.7	6
HP433-1576	4	0.5	70	6.0	25	3.7	6
HP433-1577	4	1.0	70	6.0	25	3.7	6
HP433-1960	5	0.2	80	7.5	30	4.6	6
HP433-1961	5	0.5	80	7.5	30	4.6	6
HP433-1962	5	1.0	80	7.5	30	4.6	6
HP433-2360	6	0.2	80	9.0	35	5.5	6
HP433-2361	6	0.5	80	9.0	35	5.5	6
HP433-2362	6	1.0	80	9.0	35	5.5	6
HP433-2363	6	1.5	80	9.0	35	5.5	6
HP433-2364	6	2.0	80	9.0	35	5.5	6
HP433-3150	8	0.5	100	12.0	40	7.4	8
HP433-3151	8	1.0	100	12.0	40	7.4	8
HP433-3152	8	1.5	100	12.0	40	7.4	8
HP433-3153	8	2.0	100	12.0	40	7.4	8
HP433-3930	10	0.5	100	15.0	45	9.2	10
HP433-3931	10	1.0	100	15.0	45	9.2	10
HP433-3932	10	1.5	100	15.0	45	9.2	10
HP433-3933	10	2.0	100	15.0	45	9.2	10
HP433-3934	10	3.0	100	15.0	45	9.2	10
HP433-4720	12	0.5	110	18.0	50	11.0	12
HP433-4721	12	1.0	110	18.0	50	11.0	12
HP433-4722	12	1.5	110	18.0	50	11.0	12
HP433-4723	12	2.0	110	18.0	50	11.0	12
HP433-4724	12	3.0	110	18.0	50	11.0	12

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3770 (p. 761)

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
HP433	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





HY-PRO® CARB

Performance Sub-Micrograin Carbide End Mills

List HP435

4 Flute, Metric Sizes, Corner Radius

SPEED FEED P1102-1104	CARBIDE	TiAlN	35°	SHANK h6
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Milling Diameter Tolerance	
3 ≤ D ≤ 12	+0 / -0.038mm



EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
TiAlN	D	R	L	Lc	L1	d2	d
HP435-1181	3	0.2	60	4.5	14	2.8	6
HP435-1182	3	0.5	60	4.5	14	2.8	6
HP435-1575	4	0.2	70	6.0	25	3.7	6
HP435-1576	4	0.5	70	6.0	25	3.7	6
HP435-1577	4	1.0	70	6.0	25	3.7	6
HP435-1960	5	0.2	80	7.5	30	4.6	6
HP435-1961	5	0.5	80	7.5	30	4.6	6
HP435-1962	5	1.0	80	7.5	30	4.6	6
HP435-2360	6	0.2	80	9.0	35	5.5	6
HP435-2361	6	0.5	80	9.0	35	5.5	6
HP435-2362	6	1.0	80	9.0	35	5.5	6
HP435-2363	6	1.5	80	9.0	35	5.5	6
HP435-2364	6	2.0	80	9.0	35	5.5	6
HP435-3150	8	0.5	100	12.0	40	7.4	8
HP435-3151	8	1.0	100	12.0	40	7.4	8
HP435-3152	8	1.5	100	12.0	40	7.4	8
HP435-3153	8	2.0	100	12.0	40	7.4	8
HP435-3930	10	0.5	100	15.0	45	9.2	10
HP435-3931	10	1.0	100	15.0	45	9.2	10
HP435-3932	10	1.5	100	15.0	45	9.2	10
HP435-3933	10	2.0	100	15.0	45	9.2	10
HP435-3934	10	3.0	100	15.0	45	9.2	10
HP435-4720	12	0.5	110	18.0	50	11.0	12
HP435-4721	12	1.0	110	18.0	50	11.0	12
HP435-4722	12	1.5	110	18.0	50	11.0	12
HP435-4723	12	2.0	110	18.0	50	11.0	12
HP435-4724	12	3.0	110	18.0	50	11.0	12

Packed: 1 pc.
Available TiAlN coating only.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3771 (p. 762)

Work Material

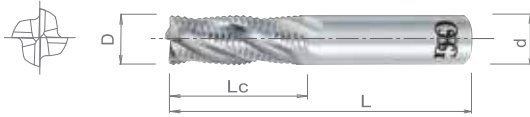
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
HP435	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



List 400

4 Flute, Inch Sizes, Roughy Mills



SPEED FEED P1112-1113	CARBIDE	BR	ROUGH	
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Milling Diameter Tolerance	
1/4 ≤ D ≤ 1	+0 / -0.002"

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
400-2500	1/4	2-1/2	3/4	1/4
400-3125	5/16	2-1/2	3/4	5/16
400-3750	3/8	2-1/2	1	3/8
400-5000	1/2	3	1-1/4	1/2

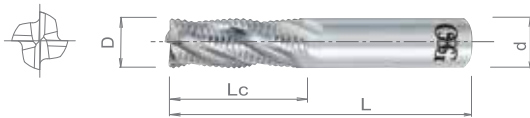
EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
400-6250	5/8	3-1/2	1-5/8	5/8
400-7500	3/4	4	1-5/8	3/4
400-1000	1	4	1-3/4	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 400

4 Flute, Metric Sizes, Roughy Mills



SPEED FEED P1112-1113	CARBIDE	BR	ROUGH	
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Milling Diameter Tolerance	
6 ≤ D ≤ 25	+0 / -0.05mm

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
400-2362	6	64	19	6
400-3150	8	64	19	8
400-3937	10	70	25	10
400-4724	12	76	25	12

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
400-6299	16	89	32	16
400-7874	20	102	38	20
400-9843	25	102	38	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
400	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



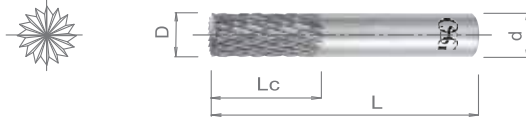


List 415

Standard Cut, Toughy Mills, (For use on lighter finishing cuts)

CARBIDE	BR	15°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1/4	+0 / -0.003"
5/16 ≤ D ≤ 1/2	+0 / -0.004"
9/16 ≤ D ≤ 1	+0 / -0.005"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
415-1250	1/8	1-1/2	1/2	1/8
415-1562	5/32	2	9/16	3/16
415-1875	3/16	2	5/8	3/16
415-2188	7/32	2-1/2	5/8	1/4
415-2500	1/4	2-1/2	3/4	1/4
415-3125	5/16	2-1/2	13/16	5/16
415-3750	3/8	2-1/2	1	3/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
415-4375	7/16	2-3/4	1	7/16
415-5000	1/2	3	1	1/2
415-5625	9/16	3-1/2	1-1/8	9/16
415-6250	5/8	3-1/2	1-1/4	5/8
415-7500	3/4	4	1-1/2	3/4
415-8750	7/8	4	1-1/2	7/8
415-1000	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

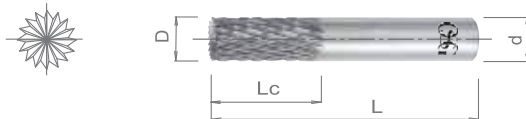


List 415C

Coarse Cut, Toughy Mills, (For use on heavy cuts)

CARBIDE	BR	15°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1/4	+0 / -0.003"
5/16 ≤ D ≤ 1/2	+0 / -0.004"
9/16 ≤ D ≤ 1	+0 / -0.005"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
415-1251	1/8	1-1/2	1/2	1/8
415-1561	5/32	2	9/16	3/16
415-1871	3/16	2	5/8	3/16
415-2181	7/32	2-1/2	5/8	1/4
415-2501	1/4	2-1/2	3/4	1/4
415-3121	5/16	2-1/2	13/16	5/16
415-3751	3/8	2-1/2	1	3/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
415-4371	7/16	2-3/4	1	7/16
415-5001	1/2	3	1	1/2
415-5621	9/16	3-1/2	1-1/8	9/16
415-6251	5/8	3-1/2	1-1/4	5/8
415-7501	3/4	4	1-1/2	3/4
415-8751	7/8	4	1-1/2	7/8
415-1001	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
Chart applies to all list numbers above	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010	1035	1065	4140	4340												
-			<input type="checkbox"/>	<input type="checkbox"/>									<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best



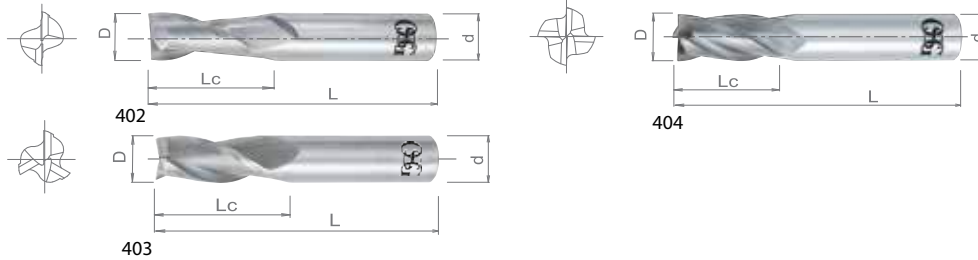


List 402, 403, 404

2, 3, or 4 Flute, Inch Sizes

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR	30°
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 1	+0 / -0.002"



EDP Number						Mill Diameter	Overall Length	Length of Cut	Shank Diameter	
List 402 (2 Flute)		List 403 (3 Flute)		List 404 (4 Flute)						
Bright	TiCN	TiAlN	Bright	TiAlN	Bright	TiAlN	D	L	Lc	d
402-0312	—	402-031211	—	—	404-0312	404-031211	1/32	1-1/2	1/8	1/8
402-0469	—	402-046911	—	—	404-0469	404-046911	3/64	1-1/2	9/64	1/8
402-0625	—	402-062511	403-0625	403-062511	404-0625	404-062511	1/16	1-1/2	3/16	1/8
402-0781	—	402-078111	403-0781	403-078111	404-0781	404-078111	5/64	1-1/2	1/4	1/8
402-0938	—	402-093811	403-0938	403-093811	404-0938	404-093811	3/32	1-1/2	5/16	1/8
402-0939	—	—	403-0939	—	404-0939	404-093911	3/32	1-1/2	3/8	1/8
402-1094	—	402-109411	403-1094	403-109411	404-1094	404-109411	7/64	1-1/2	3/8	1/8
402-1250	—	402-125011	403-1250	403-125011	404-1250	404-125011	1/8	1-1/2	1/2	1/8
402-1406	—	402-140611	403-1406	403-140611	404-1406	404-140611	9/64	2	1/2	3/16
402-1562	—	402-156211	403-1562	403-156211	404-1562	404-156211	5/32	2	9/16	3/16
402-1719	—	402-171911	403-1719	403-171911	404-1719	404-171911	11/64	2	9/16	3/16
402-1875	—	402-187511	403-1875	403-187511	404-1875	404-187511	3/16	2	5/8	3/16
402-2031	—	402-203111	403-2031	403-203111	404-2031	404-203111	13/64	2-1/2	5/8	1/4
402-2188	—	402-218811	403-2188	403-218811	404-2188	404-218811	7/32	2-1/2	5/8	1/4
402-2344	—	402-234411	403-2344	403-234411	404-2344	404-234411	15/64	2-1/2	3/4	1/4
402-2500	—	402-250011	403-2500	403-250011	404-2500	404-250011	1/4	2-1/2	3/4	1/4
402-2656	—	402-265611	403-2656	403-265611	404-2656	404-265611	17/64	2-1/2	3/4	5/16
402-2812	—	402-281211	403-2812	403-281211	404-2812	404-281211	9/32	2-1/2	3/4	5/16
402-2969	—	402-296911	403-2969	403-296911	404-2969	404-296911	19/64	2-1/2	13/16	5/16
402-3125	—	402-312511	403-3125	403-312511	404-3125	404-312511	5/16	2-1/2	13/16	5/16
402-3281	—	402-328111	—	—	404-3281	404-328111	21/64	2-1/2	7/8	3/8
402-3438	—	402-343811	—	—	404-3438	404-343811	11/32	2-1/2	7/8	3/8
402-3594	—	402-359411	—	—	404-3594	404-359411	23/64	2-1/2	7/8	3/8
402-3750	402-375008	402-375011	403-3750	403-375011	404-3750	404-375011	3/8	2-1/2	1	3/8
402-3906	—	402-390611	—	—	404-3906	404-390611	25/64	2-3/4	1	7/16
402-4062	—	402-406211	—	—	404-4062	404-406211	13/32	2-3/4	1	7/16
402-4219	—	402-421911	—	—	404-4219	404-421911	27/64	2-3/4	1	7/16
402-4375	—	402-437511	403-4375	403-437511	404-4375	404-437511	7/16	2-3/4	1	7/16
402-4531	—	402-453111	—	—	404-4531	404-453111	29/64	3	1	1/2
402-4688	—	402-468811	—	—	404-4688	404-468811	15/32	3	1	1/2
402-4844	—	402-484411	—	—	404-4844	404-484411	31/64	3	1	1/2
402-5000	—	402-500011	403-5000	403-500011	404-5000	404-500011	1/2	3	1	1/2

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

continued on next page

List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High	300		400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC			
402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
403	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
404	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



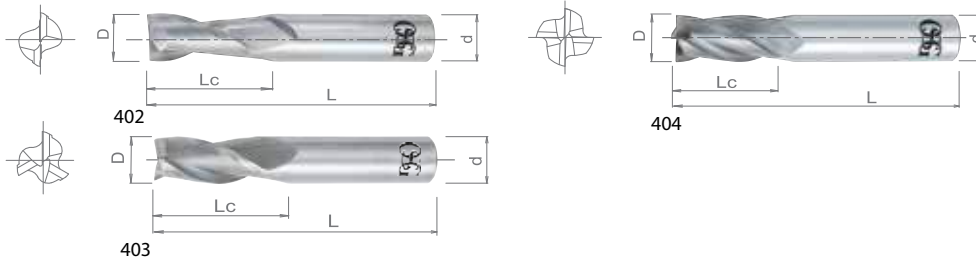


List 402, 403, 404 (Continued)

2, 3, or 4 Flute, Inch Sizes

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR		30°
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 1	+0 / -0.002"



EDP Number							Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 402 (2 Flute)		List 403 (3 Flute)		List 404 (4 Flute)						
Bright	TiCN	TiAlN	Bright	TiAlN	Bright	TiAlN	D	L	Lc	d
402-5625	402-562508	402-562511	403-5625	403-562511	404-5625	404-562511	9/16	3-1/2	1-1/8	9/16
402-6250	—	402-625011	403-6250	403-625011	404-6250	404-625011	5/8	3-1/2	1-1/4	5/8
402-6875	—	402-687511	403-6875	403-687511	404-6875	404-687511	11/16	4	1-3/8	3/4
402-7500	—	402-750011	403-7500	403-750011	404-7500	404-750011	3/4	4	1-1/2	3/4
402-8750	—	402-875011	403-8750	403-875011	404-8750	404-875011	7/8	4	1-1/2	7/8
402-1000	—	402-100011	403-1000	403-100011	404-1000	404-100011	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
403	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
404	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

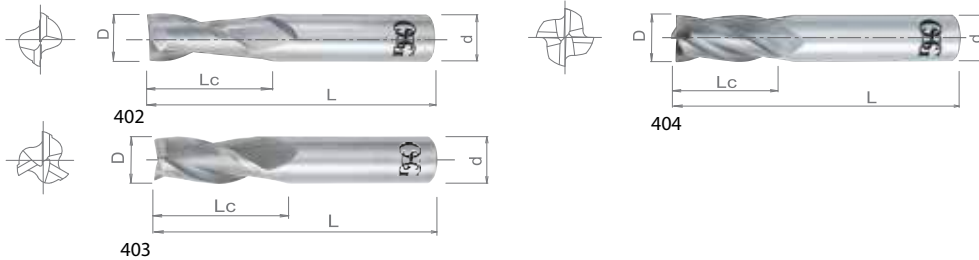
good best



List 402, 403, 404

2, 3, or 4 Flute, Metric Sizes

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR		
Milling Diameter Tolerance						
0.5 ≤ D ≤ 3			+0 / -0.05mm			



EDP Number						Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 402 (2 Flute)		List 403 (3 Flute)		List 404 (4 Flute)					
Bright	TiAlN	Bright	TiAlN	Bright	TiAlN	D	L	Lc	d
402-0197	402-019711	—	—	—	—	0.5	39	1.5	3
402-0394	402-039411	403-0394	403-039411	404-0394	404-039411	1.0	39	3	3
402-0591	402-059111	403-0591	403-059111	404-0591	404-059111	1.5	39	5	3
402-0787	402-078711	403-0787	403-078711	404-0787	404-078711	2.0	39	7	3
402-0984	402-098411	403-0984	403-098411	404-0984	404-098411	2.5	39	8	3
402-1181	402-118111	403-1181	403-118111	404-1181	404-118111	3.0	39	10	3
402-1378	402-137811	403-1378	403-137811	404-1378	404-137811	3.5	51	12	4
402-1575	402-157511	403-1575	403-157511	404-1575	404-157511	4.0	51	14	4
402-1772	402-177211	403-1772	403-177211	404-1772	404-177211	4.5	51	14	5
402-1968	402-196811	403-1968	403-196811	404-1968	404-196811	5.0	51	16	5
402-2362	402-236211	403-2362	403-236211	404-2362	404-236211	6.0	64	19	6
402-2756	402-275611	403-2756	403-275611	404-2756	404-275611	7.0	64	19	8
402-3150	402-315011	403-3150	403-315011	404-3150	404-315011	8.0	64	21	8
402-3543	402-354311	403-3543	403-354311	404-3543	404-354311	9.0	70	22	10
402-3937	402-393711	403-3937	403-393711	404-3937	404-393711	10.0	70	25	10
402-4331	402-433111	403-4331	403-433111	404-4331	404-433111	11.0	70	25	11
402-4724	402-472411	403-4724	403-472411	404-4724	404-472411	12.0	76	25	12
402-5512	402-551211	403-5512	403-551211	404-5512	404-551211	14.0	89	30	14
402-6299	402-629911	403-6299	403-629911	404-6299	404-629911	16.0	89	32	16
402-7087	402-708711	403-7087	403-708711	404-7087	404-708711	18.0	102	35	18
402-7874	402-787411	403-7874	403-787411	404-7874	404-787411	20.0	102	38	20
402-8661	402-866111	403-8661	403-866111	404-8661	404-866111	22.0	102	38	22
402-9843	402-984311	403-9843	403-984311	404-9843	404-984311	25.0	102	38	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					Die Steels	M			K	N		Nickel Alloy	S	H			
	Carbon Steels			Alloy Steels	Stainless Steels			Aluminum			Titanium	Hardened Steels						
	Low	Med.	High		300		400	17-4 PH	6061 7075			Casting			6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
402	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
403	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
404	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best



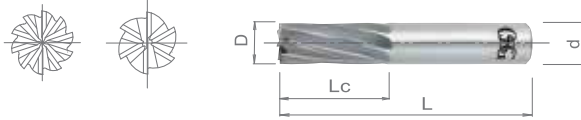


List 408

Multiple Flute, Slow Spiral

SPEED FEED P1107-1108	CARBIDE	BR		15°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
Bright	D	L	Lc	d	
408-1250	1/8	1-1/2	1/2	1/8	5
408-1562	5/32	2	9/16	3/16	6
408-1875	3/16	2	5/8	3/16	6
408-2500	1/4	2-1/2	3/4	1/4	6
408-2812	9/32	2-1/2	3/4	5/16	6
408-3125	5/16	2-1/2	13/16	5/16	6
408-3750	3/8	2-1/2	1	3/8	8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
Bright	D	L	Lc	d	
408-4375	7/16	2-3/4	1	7/16	8
408-5000	1/2	3	1	1/2	8
408-5625	9/16	3-1/2	1-1/8	9/16	8
408-6250	5/8	3-1/2	1-1/4	5/8	10
408-6875	11/16	4	1-3/8	3/4	10
408-7500	3/4	4	1-1/2	3/4	10
408-1000	1	4	1-1/2	1	14

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 409

4 Flute, Slow Spiral

SPEED FEED P1107-1108	CARBIDE	TiAlN	BR		15°
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	
Bright	TiAlN	D	L	Lc	d
409-0625	-	1/16	1-1/2	3/16	1/8
409-0781	-	5/64	1-1/2	1/4	1/8
409-0938	-	3/32	1-1/2	3/8	1/8
409-1094	-	7/64	1-1/2	7/16	1/8
409-1250	-	1/8	1-1/2	1/2	1/8
409-1562	-	5/32	2	9/16	3/16
409-1875	-	3/16	2	5/8	3/16
409-2188	-	7/32	2-1/2	5/8	1/4
409-2500	-	1/4	2-1/2	3/4	1/4
409-2812	-	9/32	2-1/2	3/4	5/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	
Bright	TiAlN	D	L	Lc	d
409-3125	-	5/16	2-1/2	13/16	5/16
409-3750	409-375011	3/8	2-1/2	1	3/8
409-4375	-	7/16	2-3/4	1	7/16
409-5000	-	1/2	3	1	1/2
409-5625	-	9/16	3-1/2	1-1/8	9/16
409-6250	-	5/8	3-1/2	1-1/4	5/8
409-6875	-	11/16	4	1-3/8	3/4
409-7500	-	3/4	4	1-1/2	3/4
409-8750	-	7/8	4	1-1/2	7/8
409-1000	-	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010 1018	1035 1045	1065	4140 4340													
408	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
409	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

good best

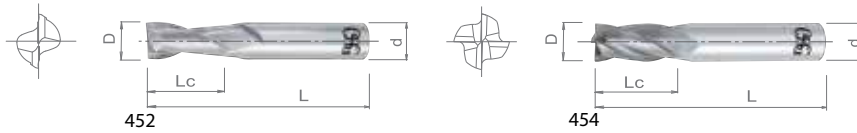


List 452, 454

2, or 4 Flute, Plus Tolerance

SPEED FEED P1105-1108	CARBIDE	TiAlN	BR		30°
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1	+0.001" / -0



EDP Number			Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 452 (2 Flute)		List 454 (4 Flute)				
Bright	TiAlN	Bright	D	L	Lc	d
452-0625	-	454-0625	1/16	1-1/2	3/16	1/8
452-0938	-	454-0938	3/32	1-1/2	5/16	1/8
452-1250	-	454-1250	1/8	1-1/2	1/2	1/8
452-1562	-	454-1562	5/32	2	9/16	3/16
452-1875	-	454-1875	3/16	2	5/8	3/16
452-2188	-	454-2188	7/32	2-1/2	5/8	1/4
452-2500	452-250011	454-2500	1/4	2-1/2	3/4	1/4
452-2812	-	454-2812	9/32	2-1/2	3/4	5/16
452-3125	-	454-3125	5/16	2-1/2	13/16	5/16
452-3750	-	454-3750	3/8	2-1/2	1	3/8
452-4375	-	454-4375	7/16	2-3/4	1	7/16
452-5000	-	454-5000	1/2	3	1	1/2
452-5625	-	454-5625	9/16	3-1/2	1-1/8	9/16
452-6250	-	454-6250	5/8	3-1/2	1-1/4	5/8
452-6875	-	454-6875	11/16	4	1-3/8	3/4
452-7500	-	454-7500	3/4	4	1-1/2	3/4
452-1000	-	454-1000	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																			
Chart applies to all list numbers above	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



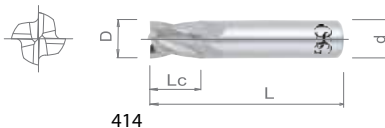
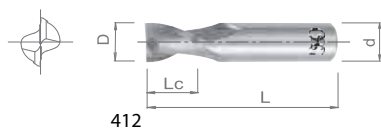


List 412, 414

2 or 4 Flute, Inch Sizes, Stub Length

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR		30°
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 3/4	+0 / -0.002"



EDP Number					Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 412 (2 Flute)			List 414 (4 Flute)					
Bright	TiCN	TiAlN	Bright	TiAlN	D	L	Lc	d
412-0312	412-031208	412-031211	414-0312	414-031211	1/32	1-1/2	5/64	1/8
412-0469	-	412-046911	414-0469	414-046911	3/64	1-1/2	3/32	1/8
412-0625	-	412-062511	414-0625	414-062511	1/16	1-1/2	1/8	1/8
412-0781	-	-	414-0781	414-078111	5/64	1-1/2	5/32	1/8
412-0938	412-093808	-	414-0938	414-093811	3/32	1-1/2	3/16	1/8
412-1094	-	-	414-1094	414-109411	7/64	1-1/2	7/32	1/8
412-1250	-	412-125011	414-1250	414-125011	1/8	1-1/2	1/4	1/8
412-1406	-	-	414-1406	414-140611	9/64	2	9/32	3/16
412-1562	412-156208	-	414-1562	414-156211	5/32	2	5/16	3/16
412-1875	412-187508	412-187511	414-1875	414-187511	3/16	2	3/8	3/16
412-2188	-	-	414-2188	414-218811	7/32	2	7/16	1/4
412-2500	-	412-250011	414-2500	414-250011	1/4	2	1/2	1/4
412-3125	-	412-312511	414-3125	414-312511	5/16	2	1/2	5/16
412-3750	-	412-375011	414-3750	414-375011	3/8	2	5/8	3/8
412-4375	-	-	414-4375	414-437511	7/16	2-1/2	5/8	7/16
412-5000	412-500008	412-500011	414-5000	414-500011	1/2	2-1/2	5/8	1/2
412-6250	-	-	414-6250	414-625011	5/8	3	3/4	5/8
412-7500	-	-	414-7500	414-750011	3/4	3	1	3/4

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P						M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

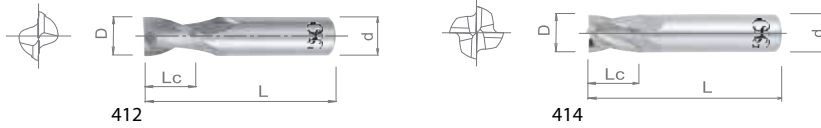


List 412, 414

2 or 4 Flute, Metric Sizes, Stub Length

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR		30°
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Milling Diameter Tolerance	
1 ≤ D ≤ 12	+0 / -0.05mm



EDP Number			Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 412 (2 Flute)	List 414 (4 Flute)					
Bright	Bright	TiAlN	D	L	Lc	d
412-0394	414-0394	414-039411	1.0	39	2	3
412-0591	414-0591	-	1.5	39	3	3
412-0787	414-0787	-	2.0	39	4	3
412-0984	414-0984	-	2.5	39	5	3
412-1181	414-1181	-	3.0	39	6	3
412-1378	414-1378	-	3.5	51	7	4
412-1575	414-1575	-	4.0	51	8	4
412-1772	414-1772	-	4.5	51	9	5
412-1968	414-1968	414-196811	5.0	51	10	5
412-2362	414-2362	-	6.0	51	12	6
412-2756	414-2756	-	7.0	51	12	8
412-3150	414-3150	-	8.0	51	12	8
412-3543	414-3543	-	9.0	51	14	10
412-3937	414-3937	-	10.0	51	14	10
412-4331	414-4331	-	11.0	64	16	11
412-4724	414-4724	-	12.0	64	16	12

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
Chart applies to all list numbers above	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



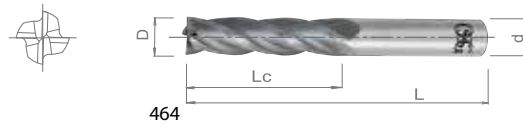
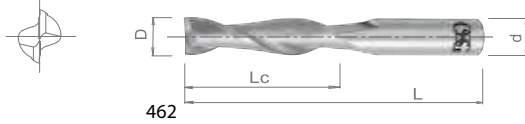


List 462, 464

2 or 4 Flute, Inch Sizes, Long Length

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR		30°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number						Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 462 (2 Flute)			List 464 (4 Flute)						
Bright	TiCN	TiAlN	Bright	TiCN	TiAlN	D	L	Lc	d
462-1250	-	462-125011	464-1250	-	464-125011	1/8	2-1/4	3/4	1/8
462-1875	-	-	464-1875	-	464-187511	3/16	2-1/4	3/4	3/16
462-2500	-	462-250011	464-2500	-	464-250011	1/4	3	1-1/8	1/4
462-3125	-	462-312511	464-3125	-	464-312511	5/16	3	1-1/8	5/16
462-3750	462-375008	462-375011	464-3750	-	464-375011	3/8	3	1-1/8	3/8
462-4375	-	-	464-4375	464-437508	464-437511	7/16	4	2	7/16
462-5000	-	-	464-5000	-	464-500011	1/2	4	2	1/2
462-5001	462-500108	-	464-5001	464-500108	-	1/2	4	1	1/2
462-6250	462-625008	-	464-6250	-	464-625011	5/8	5	2-1/4	5/8
462-7500	-	-	464-7500	-	464-750011	3/4	5	2-1/4	3/4
462-1000	-	-	464-1000	464-100008	-	1	5	2-1/4	1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
462	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
464	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

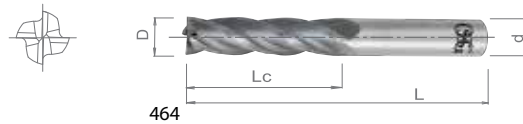
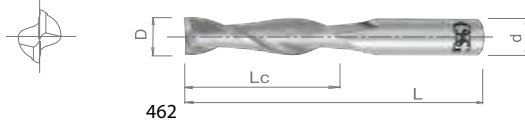


List 462, 464

2 or 4 Flute, Metric Sizes, Long Length

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR		30°
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.05mm



EDP Number			Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 462 (2 Flute)	List 464 (4 Flute)					
Bright	Bright	TiAlN	D	L	Lc	d
462-1181	464-1181	-	3	57	19	3
462-1575	464-1575	-	4	57	19	4
462-1968	464-1968	464-196811	5	64	25	5
462-2362	464-2362	464-236211	6	76	28	6
462-3150	464-3150	464-315011	8	76	29	8
462-3937	464-3937	464-393711	10	76	32	10
462-4724	464-4724	464-472411	12	102	51	12
462-5512	464-5512	-	14	127	57	14
462-6299	464-6299	-	16	127	57	16
462-7087	464-7087	-	18	127	57	18
462-7874	464-7874	464-787411	20	127	57	20
462-9843	464-9843	-	25	127	57	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3723 (p. 760) or EXOCARB® WXL® - List 3742 (p. 747)

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
462	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
464	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



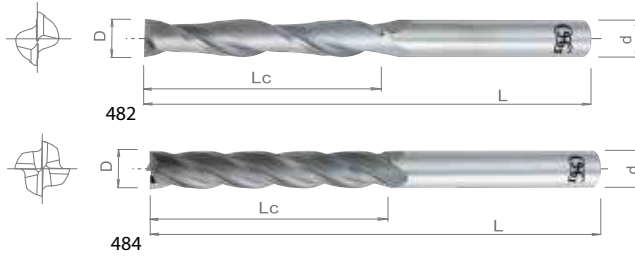


List 482, 484

2 or 4 Flute, Inch Sizes, Extra Long Length

SPEED FEED P1105-1108	CARBIDE	TiAlN	TiCN	BR		30°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number						Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 482 (2 Flute)			List 484 (4 Flute)						
Bright	TiCN	TiAlN	Bright	TiCN	TiAlN	D	L	Lc	d
482-1250	-	482-125011	484-1250	-	484-125011	1/8	3	1	1/8
482-1875	482-187508	-	484-1875	-	484-187511	3/16	3	1-1/8	3/16
482-1876	-	-	484-1876	484-187608	-	3/16	4	1	3/16
482-2500	-	482-250011	484-2500	-	484-250011	1/4	4	1-1/2	1/4
482-2501	482-250108	-	484-2501	484-250108	-	1/4	4	1	1/4
482-2502	482-250208	-	484-2502	484-250208	-	1/4	6	1-1/2	1/4
482-3125	-	-	484-3125	-	484-312511	5/16	4	1-5/8	5/16
-	-	-	484-3126	484-312608	-	5/16	4	1	5/16
-	-	-	484-3127	484-312708	-	5/16	6	1-1/2	5/16
482-3750	-	-	484-3750	-	484-375011	3/8	4	1-3/4	3/8
-	-	-	484-3751	484-375108	-	3/8	4	1	3/8
-	-	-	484-3752	484-375208	-	3/8	6	1-1/2	3/8
-	-	-	484-3753	-	-	3/8	6	3	3/8
482-4375	-	-	484-4375	-	-	7/16	6	3	7/16
482-5000	482-500008	482-500011	484-5000	484-500108	484-500011	1/2	6	3	1/2
-	-	-	484-5001	-	-	1/2	6	1-1/2	1/2
482-6250	-	-	484-6250	-	484-625011	5/8	6	3	5/8
-	-	-	484-6251	484-625108	-	5/8	6	2	5/8
482-7500	-	-	484-7500	-	484-750011	3/4	6	3	3/4
-	-	-	484-7501	-	-	3/4	6	2	3/4
482-1000	-	-	484-1000	484-100008	484-100011	1	6	3	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
482	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
484	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

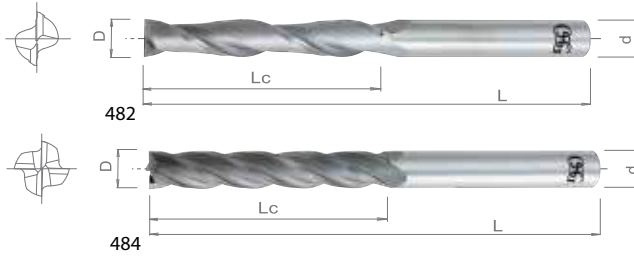


List 482, 484

2 or 4 Flute, Metric Sizes, Extra Long Length

SPEED FEED P1105-1108	CARBIDE	BR		30°
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.05mm



EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 482 (2 Flute)	List 484 (4 Flute)				
Bright	Bright	D	L	Lc	d
482-1181	484-1181	3	76	25	3
482-1575	484-1575	4	76	28	4
482-1968	484-1968	5	76	32	5
482-2362	484-2362	6	102	38	6
482-3150	484-3150	8	102	42	8
482-3937	484-3937	10	102	45	10
482-4724	484-4724	12	153	76	12
482-5512	484-5512	14	153	76	14
482-6299	484-6299	16	153	76	16
482-7087	484-7087	18	153	76	18
482-7874	484-7874	20	153	76	20
482-9843	484-9843	25	153	76	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
482	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
484	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



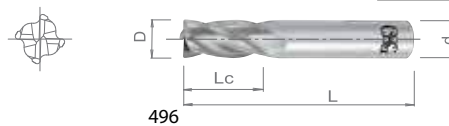
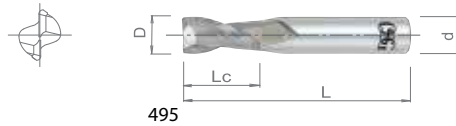


List 495, 496

2 or 4 Flute, Corner Radius

SPEED FEED P1105-1108	CARBIDE	TiAIN	BR		30°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number			Mill Diameter	Corner Radius	Overall Length	Length of Cut	Shank Diameter
List 495 (2 Flute)	List 496 (4 Flute)						
Bright	Bright	TiAIN	D	R	L	Lc	d
495-1251	496-1251	496-125111	1/8	0.015	1-1/2	1/2	1/8
495-1872	496-1872	496-187211	3/16	0.020	2	5/8	3/16
495-1873	496-1873	496-187311	3/16	0.030	2	5/8	3/16
495-2502	496-2502	496-250211	1/4	0.020	2-1/2	3/4	1/4
495-2503	496-2503	496-250311	1/4	0.030	2-1/2	3/4	1/4
495-2504	496-2504	-	1/4	0.045	2-1/2	3/4	1/4
495-3122	496-3122	496-312211	5/16	0.020	2-1/2	13/16	5/16
495-3123	496-3123	496-312311	5/16	0.030	2-1/2	13/16	5/16
495-3124	496-3124	-	5/16	0.045	2-1/2	13/16	5/16
495-3752	496-3752	-	3/8	0.020	2-1/2	1	3/8
495-3753	496-3753	496-375311	3/8	0.030	2-1/2	1	3/8
495-3754	496-3754	496-375411	3/8	0.045	2-1/2	1	3/8
495-5002	496-5002	496-500211	1/2	0.020	3	1	1/2
495-5003	496-5003	496-500311	1/2	0.030	3	1	1/2
495-5004	496-5004	-	1/2	0.045	3	1	1/2
495-5006	496-5006	496-500611	1/2	0.060	3	1	1/2
495-6252	496-6252	-	5/8	0.020	3-1/2	1-1/4	5/8
495-6253	496-6253	-	5/8	0.030	3-1/2	1-1/4	5/8
495-6254	496-6254	-	5/8	0.045	3-1/2	1-1/4	5/8
495-6256	496-6256	-	5/8	0.060	3-1/2	1-1/4	5/8
495-6259	496-6259	-	5/8	0.090	3-1/2	1-1/4	5/8
495-7500	496-7500	-	3/4	0.125	4	1-1/2	3/4
495-7502	496-7502	-	3/4	0.020	4	1-1/2	3/4
495-7503	496-7503	496-750311	3/4	0.030	4	1-1/2	3/4
495-7504	496-7504	-	3/4	0.045	4	1-1/2	3/4
495-7506	496-7506	-	3/4	0.060	4	1-1/2	3/4
495-7509	496-7509	-	3/4	0.090	4	1-1/2	3/4
495-1000	496-1000	-	1	0.125	4	1-1/2	1
495-1002	496-1002	-	1	0.020	4	1-1/2	1
495-1003	496-1003	-	1	0.030	4	1-1/2	1
495-1004	496-1004	-	1	0.045	4	1-1/2	1
495-1006	496-1006	-	1	0.060	4	1-1/2	1
495-1009	496-1009	-	1	0.090	4	1-1/2	1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

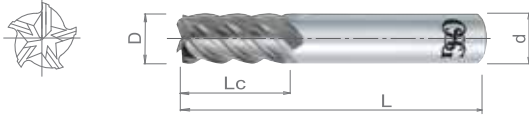


List 455C

5 Flute, Corner Protection

SPEED FEED P1107-1108	CARBIDE	TiAlN	TiCN	BR	45°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number			Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiCN	TiAlN	D	L	Lc	d
455-1250	455-125008	-	1/8	1-1/2	1/2	1/8
455-1251	455-125108	455-125111	1/8	1-1/2	1/4	1/8
455-1562	455-156208	455-156211	5/32	2	9/16	3/16
455-1875	455-187508	-	3/16	2	5/8	3/16
455-1876	455-187608	455-187611	3/16	2	5/16	3/16
455-2188	-	-	7/32	2-1/2	5/8	1/4
455-2500	455-250008	-	1/4	2-1/2	3/4	1/4
455-2501	455-250108	455-250111	1/4	2	1/2	1/4
455-2502	455-250208	455-250211	1/4	4	1-1/4	1/4
455-2812	-	-	9/32	2-1/2	3/4	5/16
455-3125	-	-	5/16	2-1/2	13/16	5/16
455-3126	455-312608	455-312611	5/16	2	1/2	5/16
455-3127	455-312708	455-312711	5/16	4	1-1/4	5/16
455-3750	-	-	3/8	2-1/2	1	3/8
455-3751	455-375108	455-375111	3/8	2	5/8	3/8
455-3752	455-375208	455-375211	3/8	2-1/2	7/8	3/8
455-3753	455-375308	455-375311	3/8	4	1-1/2	3/8
455-4375	455-437508	-	7/16	2-3/4	1	7/16
455-4376	455-437608	-	7/16	2-1/2	5/8	7/16
455-4377	-	-	7/16	4	2	7/16
455-5000	-	-	1/2	3	1	1/2
455-5001	455-500108	455-500111	1/2	2-1/2	5/8	1/2
455-5002	455-500208	455-500211	1/2	3	1-1/4	1/2
455-5003	455-500308	455-500311	1/2	4-1/2	2	1/2
455-5625	-	-	9/16	3-1/2	1-1/8	9/16
455-6250	455-625008	-	5/8	3-1/2	1-1/4	5/8
455-6251	455-625108	455-625111	5/8	3	3/4	5/8
455-7500	455-750008	-	3/4	4	1-1/2	3/4
455-7501	455-750108	455-750111	3/4	3	1	3/4
455-7502	455-750208	455-750211	3/4	5	2-1/4	3/4
455-1000	-	-	1	4	1-1/2	1

Packed: 1 pc.
 Corner Protection 0.005"~0.010"
 EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
455C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 460C

3 Flute, Inch Sizes, High Helix

SPEED FEED P1105-1106	CARBIDE	BR		60°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
460-1250	1/8	1-1/2	1/2	1/8
460-1875	3/16	2	5/8	3/16
460-2500	1/4	2-1/2	3/4	1/4
460-3125	5/16	2-1/2	13/16	5/16
460-3750	3/8	2-1/2	1	3/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
460-4375	7/16	2-3/4	1	7/16
460-5000	1/2	3	1	1/2
460-6250	5/8	3-1/2	1-1/4	5/8
460-7500	3/4	4	1-1/2	3/4
460-1000	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 460C

3 Flute, Metric Sizes, High Helix

SPEED FEED P1105-1106	CARBIDE	BR		60°
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Milling Diameter Tolerance	
6 ≤ D ≤ 25	+0 / -0.05mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
460-2362	6	64	19	6
460-3150	8	64	21	8
460-3937	10	70	25	10
460-4724	12	76	25	12
460-5512	14	89	29	14

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
460-6299	16	89	32	16
460-7087	18	102	38	18
460-7874	20	102	38	20
460-9843	25	102	38	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH			6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
460C	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

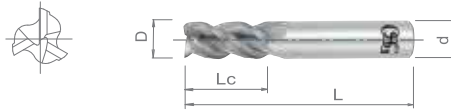


List 445

3 Flute, Inch Sizes, RHS/RHC

SPEED FEED P1105-1106	CARBIDE	BR		45°
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
445-0625	1/16	1-1/2	3/16	1/8
445-0938	3/32	1-1/2	5/16	1/8
445-1250	1/8	1-1/2	1/2	1/8
445-1562	5/32	2	9/16	3/16
445-1875	3/16	2	5/8	3/16
445-2188	7/32	2-1/2	5/8	1/4
445-2500	1/4	2-1/2	3/4	1/4
445-2812	9/32	2-1/2	3/4	5/16
445-3125	5/16	2-1/2	13/16	5/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
445-3750	3/8	2-1/2	1	3/8
445-4375	7/16	2-3/4	1	7/16
445-5000	1/2	3	1	1/2
445-5625	9/16	3-1/2	1-1/8	9/16
445-6250	5/8	3-1/2	1-1/4	5/8
445-6875	11/16	4	1-3/8	3/4
445-7500	3/4	4	1-1/2	3/4
445-8750	7/8	4	1-1/2	7/8
445-1000	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

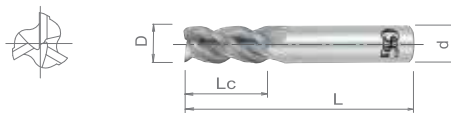


List 445

3 Flute, Metric Sizes, RHS/RHC

SPEED FEED P1105-1106	CARBIDE	BR		45°
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Milling Diameter Tolerance	
1 ≤ D ≤ 20	+0 / -0.05mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
445-0394	1.0	39	3	3
445-0591	1.5	39	5	3
445-0787	2.0	39	7	3
445-0984	2.5	39	8	3
445-1181	3.0	39	10	3
445-1378	3.5	51	12	4
445-1575	4.0	51	14	4
445-1772	4.5	51	14	5
445-1968	5.0	51	16	5
445-2362	6.0	64	19	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
445-2756	7.0	64	19	8
445-3150	8.0	64	21	8
445-3543	9.0	70	22	10
445-3937	10.0	70	25	10
445-4331	11.0	70	25	11
445-4724	12.0	76	25	12
445-5512	14.0	89	30	14
445-6299	16.0	89	32	16
445-7087	18.0	102	35	18
445-7874	20.0	102	38	20

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					Die Steels	M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels	Stainless Steels			Aluminum			Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels					
	Low 1010 1018	Med. 1035 1045	High 1065		300		400	17-4 PH	6061 7075				Casting	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
445	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

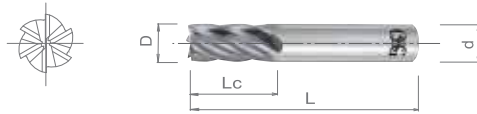




List 461

6 Flute, Inch Sizes, RHS/RHC

SPEED FEED P1107-1108	CARBIDE	TiAlN	BR		30°
	Milling Diameter Tolerance				
1/8 ≤ D ≤ 1		+0 / -0.002"			



EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiAlN	D	L	Lc	d
461-1250	-	1/8	1-1/2	1/2	1/8
461-1562	-	5/32	2	9/16	3/16
461-1875	461-187511	3/16	2	5/8	3/16
461-2500	461-250011	1/4	2-1/2	3/4	1/4
461-2812	-	9/32	2-1/2	3/4	5/16
461-3125	-	5/16	2-1/2	13/16	5/16
461-3750	461-375011	3/8	2-1/2	1	3/8

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiAlN	D	L	Lc	d
461-4375	-	7/16	2-3/4	1	7/16
461-5000	-	1/2	3	1	1/2
461-5625	-	9/16	3-1/2	1-1/8	9/16
461-6250	-	5/8	3-1/2	1-1/4	5/8
461-6875	-	11/16	4	1-3/8	3/4
461-7500	-	3/4	4	1-1/2	3/4
461-1000	-	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 461

6 Flute, Metric Sizes, RHS/RHC

SPEED FEED P1107-1108	CARBIDE	BR		30°
	Milling Diameter Tolerance			
3 ≤ D ≤ 25		+0 / -0.05mm		



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
461-1181	3	39	10	3
461-1575	4	51	14	4
461-1968	5	51	16	5
461-2362	6	64	19	6
461-2756	7	64	19	7
461-3150	8	64	21	8
461-3543	9	70	22	10
461-3937	10	70	25	10

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
461-4331	11	70	25	11
461-4724	12	76	25	12
461-5512	14	89	30	14
461-6299	16	89	32	16
461-7087	18	102	35	18
461-7874	20	102	38	20
461-8661	22	102	38	22
461-9843	25	102	38	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High	300		400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC			
461	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

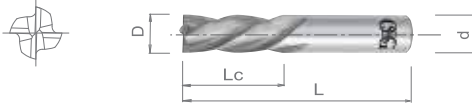


List 447

4 Flute, LHS/RHC

SPEED FEED P1107-1108	CARBIDE	TiAlN	BR		LH	30°
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1	+0 / -0.002"



EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiAlN	D	L	Lc	d
447-0625	-	1/16	1-1/2	3/16	1/8
447-1250	447-125011	1/8	1-1/2	1/2	1/8
447-1875	447-187511	3/16	2	5/8	3/16
447-2500	447-250011	1/4	2-1/2	3/4	1/4
447-3125	-	5/16	2-1/2	13/16	5/16

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiAlN	D	L	Lc	d
447-3750	-	3/8	2-1/2	1	3/8
447-5000	-	1/2	3	1	1/2
447-6250	-	5/8	3-1/2	1-1/4	5/8
447-7500	-	3/4	4	1-1/2	3/4
447-1000	-	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
447	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best



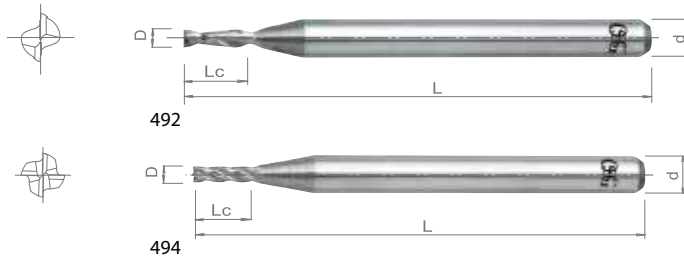


List 492, 494

2 or 4 Flute, Miniature

SPEED FEED P1114	CARBIDE	TiAlN	BR		30°
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Milling Diameter Tolerance	
0.015 ≤ D ≤ 0.060	+0 / -0.002"



EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 492 (2 Flute)	List 494 (4 Flute)				
Bright	Bright	D	L	Lc	d
492-0150	—	0.015	1-1/2	0.047	1/8
492-0200	—	0.020	1-1/2	0.063	1/8
492-0250	—	0.025	1-1/2	0.078	1/8
492-0300	—	0.030	1-1/2	0.094	1/8
492-0350	494-0350	0.035	1-1/2	0.109	1/8
492-0400	494-0400	0.040	1-1/2	0.125	1/8
492-0450	494-0450	0.045	1-1/2	0.140	1/8
492-0500	494-0500	0.050	1-1/2	0.156	1/8
492-0550	494-0550	0.055	1-1/2	0.171	1/8
492-0600	494-0600	0.060	1-1/2	0.188	1/8

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

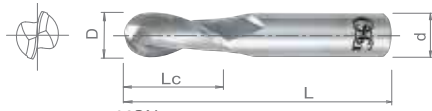


List 402BN, 403BN, 404BN

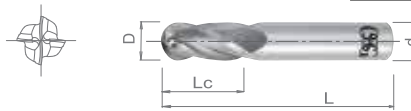
2, 3, or 4 Flute, Ball End, Inch Sizes

SPEED FEED P1110-1111	CARBIDE	TiAIN	BR		30°
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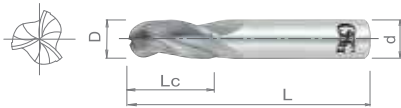
Milling Diameter Tolerance	
1/32 ≤ D ≤ 1	+0 / -0.002*



402BN



404BN



403BN

EDP Number						Mill Dia.	Overall Length	Length of Cut	Shank Dia.
List 402BN (2 Flute)		List 403BN (3 Flute)		List 404BN (4 Flute)					
Bright	TiAIN	Bright	TiAIN	Bright	TiAIN	D	L	Lc	d
402-0312-BN	402-0312-BN11	—	—	404-0312-BN	404-0312-BN11	1/32	1-1/2	1/8	1/8
402-0469-BN	402-0469-BN11	—	—	404-0469-BN	404-0469-BN11	3/64	1-1/2	9/64	1/8
402-0625-BN	402-0625-BN11	403-0625-BN	403-0625-BN11	404-0625-BN	404-0625-BN11	1/16	1-1/2	3/16	1/8
402-0781-BN	402-0781-BN11	403-0781-BN	403-0781-BN11	404-0781-BN	404-0781-BN11	5/64	1-1/2	1/4	1/8
402-0938-BN	402-0938-BN11	403-0938-BN	403-0938-BN11	404-0938-BN	404-0938-BN11	3/32	1-1/2	5/16	1/8
402-1094-BN	402-1094-BN11	403-1094-BN	403-1094-BN11	404-1094-BN	404-1094-BN11	7/64	1-1/2	3/8	1/8
402-1250-BN	402-1250-BN11	403-1250-BN	403-1250-BN11	404-1250-BN	404-1250-BN11	1/8	1-1/2	1/2	1/8
402-1406-BN	402-1406-BN11	403-1406-BN	403-1406-BN11	404-1406-BN	404-1406-BN11	9/64	2	1/2	3/16
402-1562-BN	402-1562-BN11	403-1562-BN	403-1562-BN11	404-1562-BN	404-1562-BN11	5/32	2	9/16	3/16
402-1719-BN	402-1719-BN11	403-1719-BN	403-1719-BN11	404-1719-BN	404-1719-BN11	11/64	2	9/16	3/16
402-1875-BN	402-1875-BN11	403-1875-BN	403-1875-BN11	404-1875-BN	404-1875-BN11	3/16	2	5/8	3/16
402-2031-BN	402-2031-BN11	403-2031-BN	403-2031-BN11	404-2031-BN	404-2031-BN11	13/64	2-1/2	5/8	1/4
402-2188-BN	402-2188-BN11	403-2188-BN	403-2188-BN11	404-2188-BN	404-2188-BN11	7/32	2-1/2	5/8	1/4
402-2344-BN	402-2344-BN11	403-2344-BN	403-2344-BN11	404-2344-BN	404-2344-BN11	15/64	2-1/2	3/4	1/4
402-2500-BN	402-2500-BN11	403-2500-BN	403-2500-BN11	404-2500-BN	404-2500-BN11	1/4	2-1/2	3/4	1/4
402-2656-BN	402-2656-BN11	403-2656-BN	403-2656-BN11	404-2656-BN	404-2656-BN11	17/64	2-1/2	3/4	5/16
402-2812-BN	402-2812-BN11	403-2812-BN	—	404-2812-BN	404-2812-BN11	9/32	2-1/2	3/4	5/16
402-2969-BN	402-2969-BN11	403-2969-BN	403-2969-BN11	404-2969-BN	404-2969-BN11	19/64	2-1/2	13/16	5/16
402-3125-BN	402-3125-BN11	403-3125-BN	403-3125-BN11	404-3125-BN	404-3125-BN11	5/16	2-1/2	13/16	5/16
402-3281-BN	402-3281-BN11	—	—	404-3281-BN	404-3281-BN11	21/64	2-1/2	7/8	3/8
402-3438-BN	402-3438-BN11	—	—	404-3438-BN	404-3438-BN11	11/32	2-1/2	7/8	3/8
402-3594-BN	402-3594-BN11	—	—	404-3594-BN	404-3594-BN11	23/64	2-1/2	7/8	3/8
402-3750-BN	402-3750-BN11	403-3750-BN	403-3750-BN11	404-3750-BN	404-3750-BN11	3/8	2-1/2	1	3/8
402-3906-BN	402-3906-BN11	—	—	404-3906-BN	404-3906-BN11	25/64	2-3/4	1	7/16
402-4062-BN	402-4062-BN11	—	—	404-4062-BN	404-4062-BN11	13/32	2-3/4	1	7/16
402-4219-BN	402-4219-BN11	—	—	404-4219-BN	404-4219-BN11	27/64	2-3/4	1	7/16
402-4375-BN	402-4375-BN11	403-4375-BN	403-4375-BN11	404-4375-BN	404-4375-BN11	7/16	2-3/4	1	7/16
402-4531-BN	402-4531-BN11	—	—	404-4531-BN	404-4531-BN11	29/64	3	1	1/2
402-4688-BN	402-4688-BN11	—	—	404-4688-BN	404-4688-BN11	15/32	3	1	1/2
402-4844-BN	402-4844-BN11	—	—	404-4844-BN	404-4844-BN11	31/64	3	1	1/2
402-5000-BN	402-5000-BN11	403-5000-BN	403-5000-BN11	404-5000-BN	404-5000-BN11	1/2	3	1	1/2
402-5625-BN	402-5625-BN11	403-5625-BN	403-5625-BN11	404-5625-BN	404-5625-BN11	9/16	3-1/2	1-1/8	9/16

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

➔ continued on next page ➔

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
1010	1035	1045	1065	4140	4340													
402BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
403BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
404BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



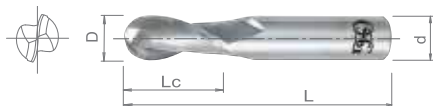


List 402BN, 403BN, 404BN (Cont.)

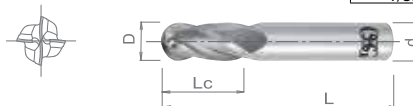
2, 3, or 4 Flute, Ball End, Inch Sizes

SPEED FEED P1110-1111	CARBIDE	TiAlN	BR		30°
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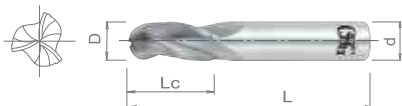
Milling Diameter Tolerance	
1/32 ≤ D ≤ 1	+0 / -0.002"



402BN



404BN



403BN

EDP Number						Mill Dia.	Overall Length	Length of Cut	Shank Dia.
List 402BN (2 Flute)		List 403BN (3 Flute)		List 404BN (4 Flute)					
Bright	TiAlN	Bright	TiAlN	Bright	TiAlN	D	L	Lc	d
402-6250-BN	402-6250-BN11	403-6250-BN	403-6250-BN11	404-6250-BN	404-6250-BN11	5/8	3-1/2	1-1/4	5/8
402-6875-BN	402-6875-BN11	403-6875-BN	403-6875-BN11	404-6875-BN	404-6875-BN11	11/16	4	1-3/8	3/4
402-7500-BN	402-7500-BN11	403-7500-BN	403-7500-BN11	404-7500-BN	404-7500-BN11	3/4	4	1-1/2	3/4
402-8750-BN	402-8750-BN11	403-8750-BN	403-8750-BN11	404-8750-BN	404-8750-BN11	7/8	4	1-1/2	7/8
402-1000-BN	402-1000-BN11	403-1000-BN	403-1000-BN11	404-1000-BN	404-1000-BN11	1	4	1-1/2	1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
402BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
403BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
404BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

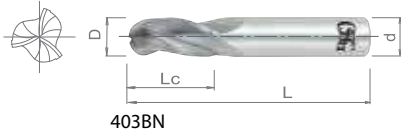
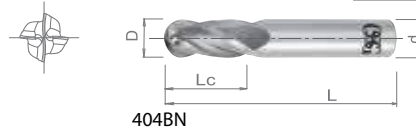
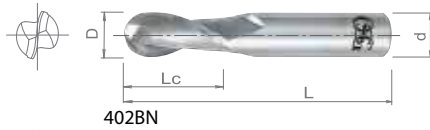


List 402BN, 403BN, 404BN

2, 3, or 4 Flute, Ball End, Metric Sizes

SPEED FEED P1110-1111	CARBIDE	TiAIN	BR		30°
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Milling Diameter Tolerance	
0.5 ≤ D ≤ 25	+0 / -0.05mm



EDP Number						Mill Dia.	Overall Length	Length of Cut	Shank Dia.
List 402BN (2 Flute)		List 403BN (3 Flute)		List 404BN (4 Flute)					
Bright	TiAIN	Bright	TiAIN	Bright	TiAIN	D	L	Lc	d
402-0197-BN	402-0197-BN11	—	—	—	—	0.5	39	1.5	3
402-0394-BN	402-0394-BN11	403-0394-BN	403-0394-BN11	404-0394-BN	404-0394-BN11	1.0	39	3	3
402-0591-BN	402-0591-BN11	403-0591-BN	403-0591-BN11	404-0591-BN	404-0591-BN11	1.5	39	5	3
402-0787-BN	402-0787-BN11	403-0787-BN	403-0787-BN11	404-0787-BN	404-0787-BN11	2.0	39	7	3
402-0984-BN	402-0984-BN11	403-0984-BN	403-0984-BN11	404-0984-BN	404-0984-BN11	2.5	39	8	3
402-1181-BN	402-1181-BN11	403-1181-BN	403-1181-BN11	404-1181-BN	404-1181-BN11	3.0	39	10	3
402-1378-BN	402-1378-BN11	403-1378-BN	403-1378-BN11	404-1378-BN	404-1378-BN11	3.5	51	12	4
402-1575-BN	402-1575-BN11	403-1575-BN	403-1575-BN11	404-1575-BN	404-1575-BN11	4.0	51	14	4
402-1772-BN	402-1772-BN11	403-1772-BN	403-1772-BN11	404-1772-BN	404-1772-BN11	4.5	51	14	5
402-1968-BN	402-1968-BN11	403-1968-BN	403-1968-BN11	404-1968-BN	404-1968-BN11	5.0	51	16	5
402-2362-BN	402-2362-BN11	403-2362-BN	403-2362-BN11	404-2362-BN	404-2362-BN11	6.0	64	19	6
402-2756-BN	402-2756-BN11	403-2756-BN	403-2756-BN11	404-2756-BN	404-2756-BN11	7.0	64	19	8
402-3150-BN	402-3150-BN11	403-3150-BN	403-3150-BN11	404-3150-BN	404-3150-BN11	8.0	64	21	8
402-3543-BN	402-3543-BN11	403-3543-BN	403-3543-BN11	404-3543-BN	404-3543-BN11	9.0	70	22	10
402-3937-BN	402-3937-BN11	403-3937-BN	403-3937-BN11	404-3937-BN	404-3937-BN11	10.0	70	25	10
402-4331-BN	402-4331-BN11	403-4331-BN	403-4331-BN11	404-4331-BN	404-4331-BN11	11.0	70	25	11
402-4724-BN	402-4724-BN11	403-4724-BN	403-4724-BN11	404-4724-BN	404-4724-BN11	12.0	76	25	12
402-5512-BN	402-5512-BN11	403-5512-BN	403-5512-BN11	404-5512-BN	404-5512-BN11	14.0	89	30	14
402-6299-BN	402-6299-BN11	403-6299-BN	403-6299-BN11	404-6299-BN	404-6299-BN11	16.0	89	32	16
402-7087-BN	402-7087-BN11	403-7087-BN	403-7087-BN11	404-7087-BN	404-7087-BN11	18.0	102	35	18
402-7874-BN	402-7874-BN11	403-7874-BN	403-7874-BN11	404-7874-BN	404-7874-BN11	20.0	102	38	20
402-8661-BN	402-8661-BN11	403-8661-BN	403-8661-BN11	404-8661-BN	404-8661-BN11	22.0	102	38	22
402-9843-BN	402-9843-BN11	403-9843-BN	403-9843-BN11	404-9843-BN	404-9843-BN11	25.0	102	38	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
402BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
403BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
404BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



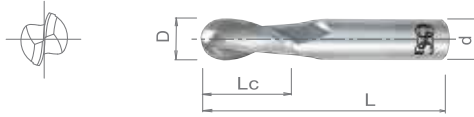


List 452BN

2 Flute, Ball End, Plus Tolerance

SPEED FEED P1110	CARBIDE	BR		30°
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Milling Diameter Tolerance	
1/16 ≤ D ≤ 1	+0.001" / -0



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
452-0625-BN	1/16	1-1/2	3/16	1/8
452-0938-BN	3/32	1-1/2	5/16	1/8
452-1250-BN	1/8	1-1/2	1/2	1/8
452-1562-BN	5/32	2	9/16	3/16
452-1875-BN	3/16	2	5/8	3/16
452-2188-BN	7/32	2-1/2	5/8	1/4
452-2500-BN	1/4	2-1/2	3/4	1/4
452-2812-BN	9/32	2-1/2	3/4	5/16
452-3125-BN	5/16	2-1/2	13/16	5/16
452-3750-BN	3/8	2-1/2	1	3/8
452-5000-BN	1/2	3	1	1/2
452-5625-BN	9/16	3-1/2	1-1/8	9/16
452-6250-BN	5/8	3-1/2	1-1/4	5/8
452-6875-BN	11/16	4	1-3/8	3/4
452-7500-BN	3/4	4	1-1/2	3/4
452-1000-BN	1	4	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
452BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

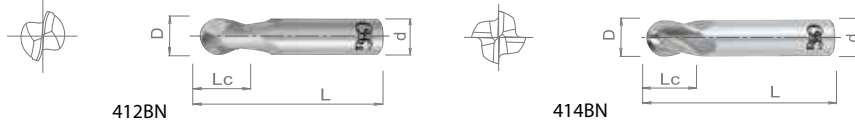


List 412BN, 414BN

2 or 4 Flute, Inch Sizes, Stub Length, Ball End

SPEED FEED P1110-1111	CARBIDE	TiAlN	TiCN	BR	STUB		30°
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 3/4	+0 / -0.002"



EDP Number					Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 412BN (2 Flute)		List 414BN (4 Flute)						
Bright	TiAlN	Bright	TiCN	TiAlN	D	L	Lc	d
412-0312-BN	412-0312-BN11	414-0312-BN	-	414-0312-BN11	1/32	1-1/2	5/64	1/8
412-0469-BN	-	414-0469-BN	-	414-0469-BN11	3/64	1-1/2	3/32	1/8
412-0625-BN	412-0625-BN11	414-0625-BN	-	414-0625-BN11	1/16	1-1/2	1/8	1/8
412-0781-BN	-	414-0781-BN	-	414-0781-BN11	5/64	1-1/2	5/32	1/8
412-0938-BN	-	414-0938-BN	414-0938-BN08	414-0938-BN11	3/32	1-1/2	3/16	1/8
412-1094-BN	-	414-1094-BN	-	-	7/64	1-1/2	7/32	1/8
412-1250-BN	412-1250-BN11	414-1250-BN	414-1250-BN08	414-1250-BN11	1/8	1-1/2	1/4	1/8
412-1406-BN	-	414-1406-BN	-	-	9/64	2	9/32	3/16
412-1562-BN	412-1562-BN11	414-1562-BN	414-1562-BN08	-	5/32	2	5/16	3/16
412-1875-BN	412-1875-BN11	414-1875-BN	-	414-1875-BN11	3/16	2	3/8	3/16
412-2188-BN	-	414-2188-BN	-	-	7/32	2	7/16	1/4
412-2500-BN	412-2500-BN11	414-2500-BN	-	414-2500-BN11	1/4	2	1/2	1/4
412-3125-BN	-	414-3125-BN	414-3125-BN08	414-3125-BN11	5/16	2	1/2	5/16
412-3750-BN	412-3750-BN11	414-3750-BN	414-3750-BN08	414-3750-BN11	3/8	2	5/8	3/8
412-4375-BN	-	414-4375-BN	-	-	7/16	2-1/2	5/8	7/16
412-5000-BN	412-5000-BN11	414-5000-BN	414-5000-BN08	-	1/2	2-1/2	5/8	1/2
412-6250-BN	-	414-6250-BN	-	-	5/8	3	3/4	5/8
412-7500-BN	-	414-7500-BN	-	-	3/4	3	1	3/4

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
Chart applies to all list numbers above	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
1010	1035	1065	4140	4340													
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best



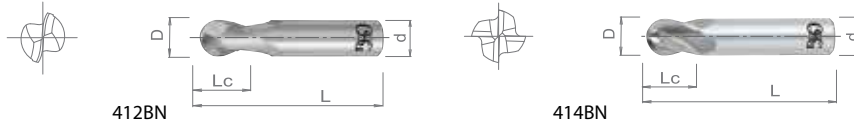


List 412BN, 414BN

2 or 4 Flute, Metric Sizes, Stub Length, Ball End

SPEED FEED P1110-1111	CARBIDE	TiAlN	TiCN	BR	STUB		30°
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Milling Diameter Tolerance	
1 ≤ D ≤ 12	+0 / -0.05mm



EDP Number				Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 412BN (2 Flute)		List 414BN (4 Flute)					
Bright	TiAlN	Bright	TiAlN	D	L	Lc	d
412-0394-BN	412-0394-BN11	414-0394-BN	414-0394-BN11	1.0	39	2	3
412-0591-BN	-	414-0591-BN	-	1.5	39	3	3
412-0787-BN	-	414-0787-BN	-	2.0	39	4	3
412-0984-BN	-	414-0984-BN	-	2.5	39	5	3
412-1181-BN	-	414-1181-BN	-	3.0	39	6	3
412-1378-BN	-	414-1378-BN	-	3.5	51	7	4
412-1575-BN	412-1575-BN11	414-1575-BN	-	4.0	51	8	4
412-1772-BN	-	414-1772-BN	-	4.5	51	9	5
412-1968-BN	-	414-1968-BN	-	5.0	51	10	5
412-2362-BN	-	414-2362-BN	-	6.0	51	12	6
412-2756-BN	-	414-2756-BN	-	7.0	51	12	8
412-3150-BN	-	414-3150-BN	-	8.0	51	12	8
412-3543-BN	-	414-3543-BN	-	9.0	51	14	10
412-3937-BN	-	414-3937-BN	-	10.0	51	14	10
412-4331-BN	-	414-4331-BN	-	11.0	64	16	11
412-4724-BN	-	414-4724-BN	-	12.0	64	16	12

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																		
Chart applies to all list numbers above	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

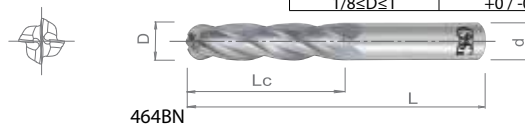
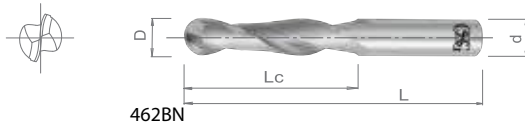


List 462BN, 464BN

2 or 4 Flute, Inch Sizes, Long Length, Ball End

SPEED FEED P1110-1111	CARBIDE	TiAlN	TiCN	BR	LONG		30°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number					Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 462BN (2 Flute)		List 464BN (4 Flute)						
Bright	TiCN	Bright	TiCN	TiAlN	D	L	Lc	d
462-1250-BN	-	464-1250-BN	-	464-1250-BN11	1/8	2-1/4	3/4	1/8
462-1875-BN	-	464-1875-BN	-	464-1875-BN11	3/16	2-1/4	3/4	3/16
462-2500-BN	462-2500-BN08	464-2500-BN	-	464-2500-BN11	1/4	3	1-1/8	1/4
462-3125-BN	-	464-3125-BN	-	-	5/16	3	1-1/8	5/16
462-3750-BN	-	464-3750-BN	-	464-3750-BN11	3/8	3	1-1/8	3/8
462-4375-BN	-	464-4375-BN	-	-	7/16	4	2	7/16
462-5000-BN	-	464-5000-BN	464-5000-BN08	464-5000-BN11	1/2	4	2	1/2
462-6250-BN	-	464-6250-BN	-	-	5/8	5	2-1/4	5/8
462-7500-BN	-	464-7500-BN	-	-	3/4	5	2-1/4	3/4
462-1000-BN	-	464-1000-BN	-	-	1	5	2-1/4	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

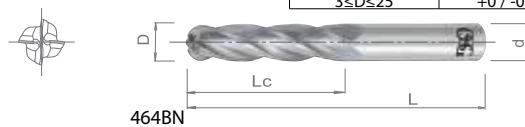
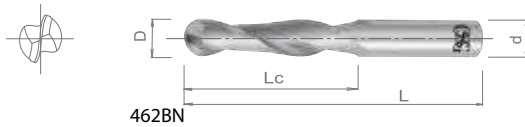


List 462BN, 464BN

2 or 4 Flute, Metric Sizes, Long Length, Ball End

SPEED FEED P1110-1111	CARBIDE	BR	LONG		30°
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.05mm



EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 462BN (2 Flute)	List 464BN (4 Flute)				
Bright	Bright	D	L	Lc	d
462-1181-BN	464-1181-BN	3	57	19	3
462-1575-BN	464-1575-BN	4	57	19	4
462-1968-BN	464-1968-BN	5	64	25	5
462-2362-BN	464-2362-BN	6	76	28	6
462-3150-BN	464-3150-BN	8	76	29	8
462-3937-BN	464-3937-BN	10	76	32	10
462-4724-BN	464-4724-BN	12	102	51	12
462-5512-BN	464-5512-BN	14	127	57	14
462-6299-BN	464-6299-BN	16	127	57	16
462-7087-BN	464-7087-BN	18	127	57	18
462-7874-BN	464-7874-BN	20	127	57	20
462-9843-BN	464-9843-BN	25	127	57	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High	300		400	17-4 PH	6061 7075		Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
462BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
464BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



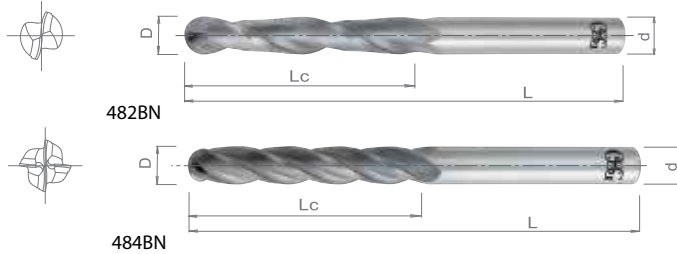


List 482BN, 484BN

2 or 4 Flute, Inch Sizes, Extra Long Length, Ball End

SPEED FEED P1110-1111	CARBIDE	TiAlN	BR	EXTRA LONG		30°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number				Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 482BN (2 Flute)		List 484BN (4 Flute)					
Bright	TiAlN	Bright	TiAlN	D	L	Lc	d
482-1250-BN	482-1250-BN11	484-1250-BN	484-1250-BN11	1/8	3	1	1/8
482-1875-BN	482-1875-BN11	484-1875-BN	484-1875-BN11	3/16	3	1-1/8	3/16
482-2500-BN	482-2500-BN11	484-2500-BN	484-2500-BN11	1/4	4	1-1/2	1/4
482-3125-BN	-	484-3125-BN	484-3125-BN11	5/16	4	1-5/8	5/16
482-3750-BN	-	484-3750-BN	484-3750-BN11	3/8	4	1-3/4	3/8
482-4375-BN	-	484-4375-BN	-	7/16	6	3	7/16
482-5000-BN	-	484-5000-BN	484-5000-BN11	1/2	6	3	1/2
482-6250-BN	-	484-6250-BN	-	5/8	6	3	5/8
482-7500-BN	-	484-7500-BN	-	3/4	6	3	3/4
482-1000-BN	-	484-1000-BN	-	1	6	3	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																
	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
482BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
484BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

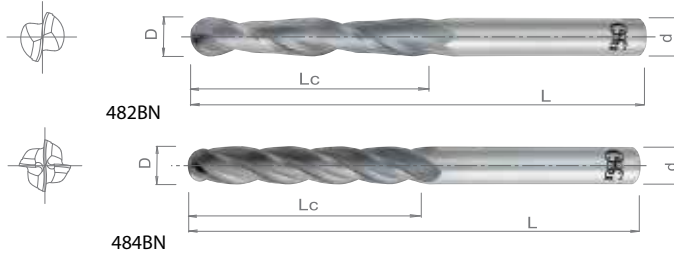


List 482BN, 484BN

2 or 4 Flute, Metric Sizes, Extra Long Length, Ball End

SPEED FEED P1110-1111	CARBIDE	BR	EXTRA LONG		30°
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Milling Diameter Tolerance	
3 ≤ D ≤ 25	+0 / -0.05mm



EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 482BN (2 Flute)	List 484BN (4 Flute)				
Bright	Bright	D	L	Lc	d
482-1181-BN	484-1181-BN	3	76	25	3
482-1575-BN	484-1575-BN	4	76	28	4
482-1968-BN	484-1968-BN	5	76	32	5
482-2362-BN	484-2362-BN	6	102	38	6
482-3150-BN	484-3150-BN	8	102	42	8
482-3937-BN	484-3937-BN	10	102	45	10
482-4724-BN	484-4724-BN	12	153	76	12
482-5512-BN	484-5512-BN	14	153	76	14
482-6299-BN	484-6299-BN	16	153	76	16
482-7087-BN	484-7087-BN	18	153	76	18
482-7874-BN	484-7874-BN	20	153	76	20
482-9843-BN	484-9843-BN	25	153	76	25

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																			
List No.	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low 1010 1018	Med. 1035 1045	High 1065			4140 4340	300	400		17-4 PH	6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
482BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
484BN	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 497

2 Flute, Inch Sizes, Long Shank, Ball End

SPEED FEED P1109	CARBIDE	BR		15°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1	+0 / -0.002"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
497-1250	1/8	2-1/2	3/16	1/8
497-1875	3/16	4	9/32	3/16
497-2500	1/4	4	3/8	1/4
497-3125	5/16	4	15/32	5/16
497-3750	3/8	4	9/16	3/8
497-4375	7/16	5	21/32	7/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
497-5000	1/2	5	3/4	1/2
497-5625	9/16	5	27/32	9/16
497-6250	5/8	6	15/16	5/8
497-7500	3/4	6	1-1/8	3/4
497-1000	1	6	1-1/2	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 497

2 Flute, Metric Sizes, Long Shank, Ball End

SPEED FEED P1109	CARBIDE	BR		15°
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Milling Diameter Tolerance	
3 ≤ D ≤ 20	+0 / -0.05mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
497-1181	3	63	4.5	3
497-1575	4	63	6.0	4
497-1968	5	63	7.5	5
497-2362	6	100	9.0	6
497-3150	8	100	12.0	8
497-3937	10	100	15.0	10

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
497-4331	11	127	16.5	11
497-4724	12	127	18.0	12
497-5512	14	127	21.0	14
497-6299	16	152	24.0	16
497-7087	18	152	27.0	18
497-7874	20	152	30.0	20

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P						M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
497	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



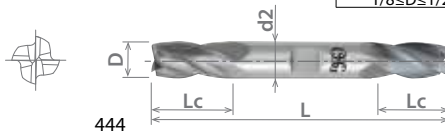
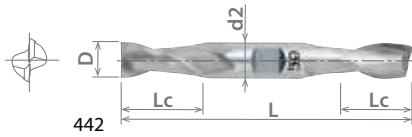


List 442, 444

2 or 4 Flute

SPEED FEED P1105-1108	CARBIDE	TiAlN	BR		30°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number			Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 442 (2 Flute)	List 444 (4 Flute)					
Bright	Bright	TiAlN	D	L	Lc	d
442-1250	444-1250	444-125011	1/8	3-1/16	3/8	3/8
442-1562	444-1562	-	5/32	3-1/8	7/16	3/8
442-1875	444-1875	444-187511	3/16	3-1/4	1/2	3/8
442-2188	444-2188	-	7/32	3-3/8	9/16	3/8
442-2500	444-2500	444-250011	1/4	3-3/8	5/8	3/8
442-2812	444-2812	-	9/32	3-3/8	11/16	3/8
442-3125	444-3125	-	5/16	3-1/2	3/4	3/8
442-3438	444-3438	-	11/32	3-1/2	3/4	3/8
442-3750	444-3750	444-375011	3/8	3-1/2	3/4	3/8
442-4375	444-4375	-	7/16	4	7/8	1/2
442-5000	444-5000	-	1/2	4	1	1/2

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010	1035	1065	4140	4340												
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best



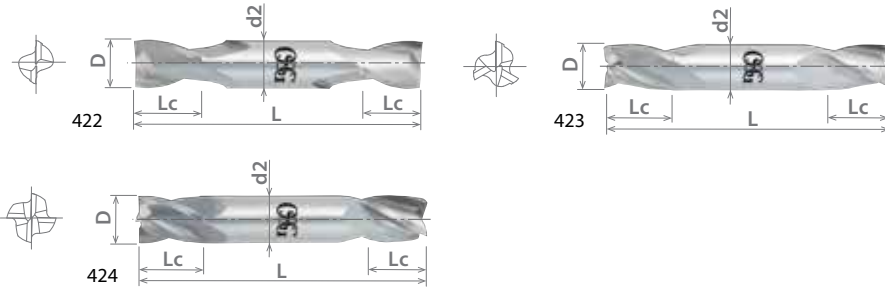


List 422, 423, 424

2, 3, or 4 Flute, Stub Length

SPEED FEED P1105-1108	CARBIDE	TiAlN	BR	STUB		30°
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number						Mill Dia.	Overall Length	Length of Cut	Shank Dia.
List 422 (2 Flute)		List 423 (3 Flute)		List 424 (4 Flute)					
Bright	TiAlN	Bright	TiAlN	Bright	TiAlN	D	L	Lc	d
422-0312	-	423-0312	-	424-0312	424-031211	1/32	1-1/2	5/64	1/8
422-0469	-	423-0469	-	424-0469	424-046911	3/64	1-1/2	3/32	1/8
422-0625	422-062511	423-0625	-	424-0625	424-062511	1/16	1-1/2	1/8	1/8
422-0781	-	-	-	424-0781	424-078111	5/64	1-1/2	5/32	1/8
422-0938	422-093811	423-0938	-	424-0938	424-093811	3/32	1-1/2	3/16	1/8
422-1094	-	-	-	424-1094	424-109411	7/64	1-1/2	7/32	1/8
422-1250	422-125011	423-1250	-	424-1250	424-125011	1/8	1-1/2	1/4	1/8
422-1406	-	-	-	424-1406	-	9/64	2	9/32	3/16
422-1562	-	423-1562	-	424-1562	424-156211	5/32	2	5/16	3/16
422-1875	422-187511	423-1875	-	424-1875	424-187511	3/16	2	3/8	3/16
422-2188	422-218811	423-2188	-	424-2188	-	7/32	2-1/2	1/2	1/4
422-2500	422-250011	423-2500	423-250011	424-2500	424-250011	1/4	2-1/2	1/2	1/4
422-3125	422-312511	423-3125	-	424-3125	424-312511	5/16	2-1/2	1/2	5/16
422-3750	422-375011	423-3750	423-375011	424-3750	424-375011	3/8	2-1/2	1/2	3/8
422-4375	-	423-4375	-	424-4375	-	7/16	2-3/4	9/16	7/16
422-5000	422-500011	423-5000	423-500011	424-5000	424-500011	1/2	3	5/8	1/2

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																			
Chart applies to all list numbers above	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



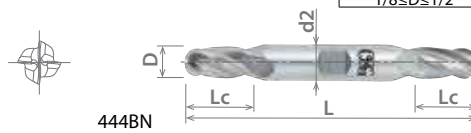
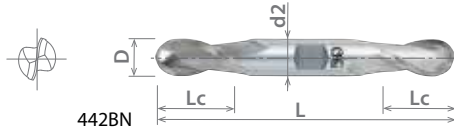


List 442BN, 444BN

2 or 4 Flute, Ball End

SPEED FEED P1110-1111	CARBIDE	TiAlN	BR		30°
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Milling Diameter Tolerance	
1/8 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number			Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 442BN (2 Flute)	List 444BN (4 Flute)					
Bright	Bright	TiAlN	D	L	Lc	d
442-1250-BN	444-1250-BN	444-1250-BN11	1/8	3-1/16	3/8	3/8
442-1562-BN	444-1562-BN	-	5/32	3-1/8	7/16	3/8
442-1875-BN	444-1875-BN	-	3/16	3-1/4	1/2	3/8
442-2188-BN	444-2188-BN	-	7/32	3-3/8	9/16	3/8
442-2500-BN	444-2500-BN	-	1/4	3-3/8	5/8	3/8
442-2812-BN	444-2812-BN	-	9/32	3-3/8	11/16	3/8
442-3125-BN	444-3125-BN	-	5/16	3-1/2	3/4	3/8
442-3438-BN	444-3438-BN	-	11/32	3-1/2	3/4	3/8
442-3750-BN	444-3750-BN	-	3/8	3-1/2	3/4	3/8
442-4375-BN	444-4375-BN	-	7/16	4	7/8	1/2
442-5000-BN	444-5000-BN	-	1/2	4	1	1/2

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010 1018	1035 1045	1065	4140 4340													
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



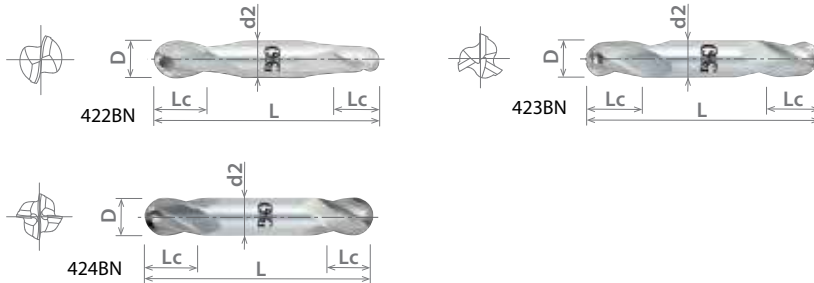


List 422BN, 423BN, 424BN

2, 3, or 4 Flute, Stub Length, Ball End

SPEED FEED P1110-1111	CARBIDE	TiAlN	BR	STUB		30°
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Milling Diameter Tolerance	
1/32 ≤ D ≤ 1/2	+0 / -0.002"



EDP Number					Mill Dia.	Overall Length	Length of Cut	Shank Dia.
List 422BN (2 Flute)		List 423BN (3 Flute)	List 424BN (4 Flute)					
Bright	TiAlN	Bright	Bright	TiAlN	D	L	Lc	d
422-0312-BN	422-0312-BN11	423-0312-BN	424-0312-BN	424-0312-BN11	1/32	1-1/2	5/64	1/8
422-0469-BN	422-0469-BN11	423-0469-BN	424-0469-BN	424-0469-BN11	3/64	1-1/2	3/32	1/8
422-0625-BN	422-0625-BN11	423-0625-BN	424-0625-BN	424-0625-BN11	1/16	1-1/2	1/8	1/8
422-0781-BN	—	—	424-0781-BN	—	5/64	1-1/2	5/32	1/8
422-0938-BN	—	423-0938-BN	424-0938-BN	424-0938-BN11	3/32	1-1/2	3/16	1/8
422-1094-BN	—	—	424-1094-BN	—	7/64	1-1/2	7/32	1/8
422-1250-BN	422-1250-BN11	423-1250-BN	424-1250-BN	424-1250-BN11	1/8	1-1/2	1/4	1/8
422-1406-BN	—	—	424-1406-BN	—	9/64	2	9/32	3/16
422-1562-BN	—	423-1562-BN	424-1562-BN	—	5/32	2	5/16	3/16
422-1875-BN	—	423-1875-BN	424-1875-BN	424-1875-BN11	3/16	2	3/8	3/16
422-2188-BN	—	423-2188-BN	424-2188-BN	—	7/32	2-1/2	1/2	1/4
422-2500-BN	—	423-2500-BN	424-2500-BN	424-2500-BN11	1/4	2-1/2	1/2	1/4
422-3125-BN	—	423-3125-BN	424-3125-BN	—	5/16	2-1/2	1/2	5/16
422-3750-BN	—	423-3750-BN	424-3750-BN	424-3750-BN11	3/8	2-1/2	1/2	3/8
422-4375-BN	—	423-4375-BN	424-4375-BN	—	7/16	2-3/4	9/16	7/16
422-5000-BN	—	423-5000-BN	424-5000-BN	424-5000-BN11	1/2	3	5/8	1/2

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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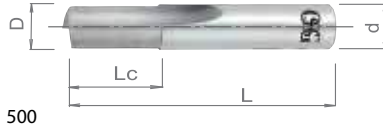


List 500, 502

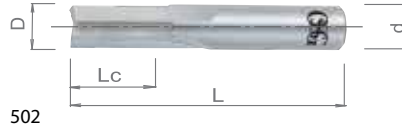
2 or 3 Flute, Straight



Milling Diameter Tolerance	
$3/32 \leq D \leq 1/2$	$+0 / -0.003$ "



500



502

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List 500 (2 Flute)	List 502 (3 Flute)				
Bright	Bright	D	L	Lc	d
500-0938	502-0938	3/32	1-1/2	3/8	1/8
500-1250	502-1250	1/8	1-1/2	1/2	1/8
500-1875	502-1875	3/16	2	5/8	3/16
500-2500	502-2500	1/4	2-1/2	3/4	1/4
500-3125	502-3125	5/16	2-1/2	13/16	5/16
500-3750	502-3750	3/8	2-1/2	7/8	3/8
500-4375	502-4375	7/16	2-1/2	1	7/16
500-5000	502-5000	1/2	3	1	1/2

Packed: 1 pc.
Available Bright finish only.



List 640

CARBIDE	BR
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Fiberglass Routers, Diamond Cut

Milling Diameter Tolerance	
$1/16 \leq D \leq 1/2$	$+0 / -0.003''$



Type 1 - No End Cut



Type 2 - Bur End

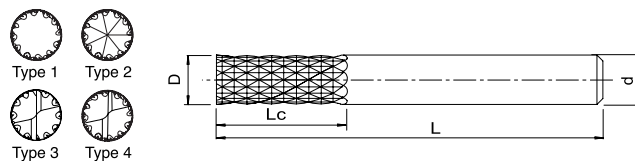


Type 3 - End Mill Cut



Type 4 - Drill Point

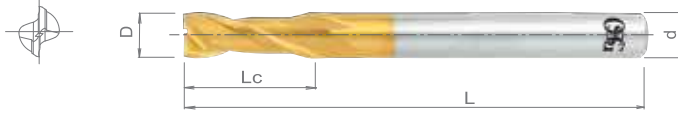
EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Tool Type
Bright	D	L	Lc	d	
640-0621	1/16	1-1/2	3/16	1/8	1
640-0622	1/16	1-1/2	3/16	1/8	2
640-0623	1/16	1-1/2	3/16	1/8	3
640-0624	1/16	1-1/2	3/16	1/8	4
640-0931	3/32	1-1/2	5/16	1/8	1
640-0932	3/32	1-1/2	5/16	1/8	2
640-0933	3/32	1-1/2	5/16	1/8	3
640-0934	3/32	1-1/2	5/16	1/8	4
640-1251	1/8	1-1/2	7/16	1/8	1
640-1252	1/8	1-1/2	7/16	1/8	2
640-1253	1/8	1-1/2	7/16	1/8	3
640-1254	1/8	1-1/2	7/16	1/8	4
640-1871	3/16	2	5/8	3/16	1
640-1872	3/16	2	5/8	3/16	2
640-1873	3/16	2	5/8	3/16	3
640-1874	3/16	2	5/8	3/16	4
640-1881	3/16	2	5/8	1/4	1
640-1882	3/16	2	5/8	1/4	2
640-1883	3/16	2	5/8	1/4	3
640-1884	3/16	2	5/8	1/4	4
640-2501	1/4	2	3/4	1/4	1
640-2502	1/4	2	3/4	1/4	2
640-2503	1/4	2	3/4	1/4	3
640-2504	1/4	2	3/4	1/4	4
640-2511	1/4	2-1/2	3/4	1/4	1
640-2512	1/4	2-1/2	3/4	1/4	2
640-2513	1/4	2-1/2	3/4	1/4	3
640-2514	1/4	2-1/2	3/4	1/4	4
640-3121	5/16	2-1/2	1	5/16	1
640-3122	5/16	2-1/2	1	5/16	2
640-3123	5/16	2-1/2	1	5/16	3
640-3124	5/16	2-1/2	1	5/16	4
640-3751	3/8	2-1/2	1	3/8	1
640-3752	3/8	2-1/2	1	3/8	2
640-3753	3/8	2-1/2	1	3/8	3
640-3754	3/8	2-1/2	1	3/8	4
640-5001	1/2	3	1	1/2	1
640-5002	1/2	3	1	1/2	2
640-5003	1/2	3	1	1/2	3
640-5004	1/2	3	1	1/2	4

 Packed: 1 pc.
 Available Bright finish only.


List 673

TIN-CPM-M-EDL, 2 Flute, Regular Length

SPEED FEED P1127-1128	VC10	TiN	REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6737005	1/32	1-7/8	3/32	3/16
6737105	3/64	1-7/8	9/64	3/16
6737205	1/16	1-7/8	3/16	3/16
6737305	5/64	1-7/8	15/64	3/16
6737405	3/32	1-7/8	9/32	3/16
6737505	7/64	1-7/8	21/64	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6737605	1/8	1-7/8	3/8	3/16
6737705	9/64	1-7/8	13/32	3/16
6737805	5/32	1-7/8	7/16	3/16
6737905	11/64	1-7/8	1/2	3/16
6738005	3/16	1-7/8	1/2	3/16

Packed: 1 pc.
Available TiN coating only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
673	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





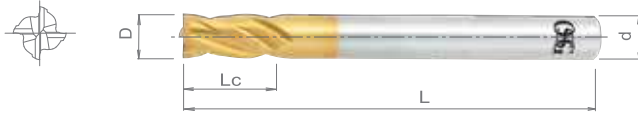
EXOMINI VC-10

Powdered Metal High Speed Steel

List 676

TIN-CPM-M-EMS, 4 Flute, Stub Length, Center Hole (Smaller than 1/8)

SPEED FEED P1129-1130	VC10	TiN			STUB	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6767205	1/16	1-3/4	3/32	3/16
6767405	3/32	1-3/4	9/64	3/16
6767605	1/8	1-3/4	3/16	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6767805	5/32	1-3/4	15/64	3/16
6768005	3/16	1-3/4	9/32	3/16

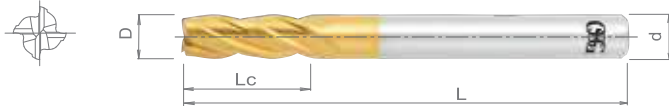
Packed: 1 pc.
Available TiN coating only.



List 677

TIN-CPM-M-EML, 4 Flute, Regular Length, Center Hole (Smaller than 1/8)

SPEED FEED P1129-1130	VC10	TiN			STUB	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6777205	1/16	1-7/8	3/16	3/16
6777405	3/32	1-7/8	9/32	3/16
6777605	1/8	1-7/8	3/8	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6777805	5/32	1-7/8	7/16	3/16
6778005	3/16	1-7/8	1/2	3/16

Packed: 1 pc.
Available TiN coating only.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

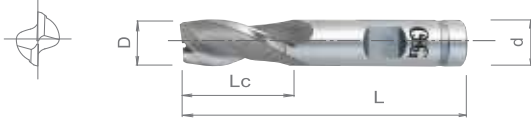
good best



List 620

CPM-EDS, 2 Flute, Regular Length

SPEED FEED P1127-1128	VC10	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6200100	1/8	2-5/16	3/8	3/8
6200200	3/16	2-5/16	7/16	3/8
6200300	1/4	2-5/16	1/2	3/8
6200400	5/16	2-5/16	9/16	3/8
6200500	3/8	2-5/16	9/16	3/8
6201100	1/2	3	1	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6202100	5/8	3-7/16	1-5/16	5/8
6203100	3/4	3-9/16	1-5/16	3/4
6205100	1	4-1/8	1-5/8	1
6206100	1-1/4	4-1/8	1-5/8	1-1/4
6206200	1-1/2	4-1/8	1-5/8	1-1/4

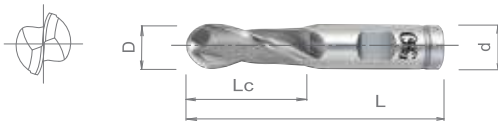
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 621

CPM-EBD, 2 Flute, Regular Length, Ball End

SPEED FEED P1131	VC10	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6210100	1/8	2-5/16	3/8	3/8
6210200	3/16	2-3/8	1/2	3/8
6210300	1/4	2-7/16	5/8	3/8
6210400	5/16	2-1/2	3/4	3/8
6210500	3/8	2-1/2	3/4	3/8
6211100	1/2	3	1	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
6212100	5/8	3-1/2	1-3/8	5/8
6213100	3/4	3-7/8	1-5/8	3/4
6215100	1	4-3/4	2-1/4	1
6216100	1-1/4	5	2-1/2	1-1/4
6216200	1-1/2	5	2-1/2	1-1/4

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010	1035	1065	4140	4340												
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





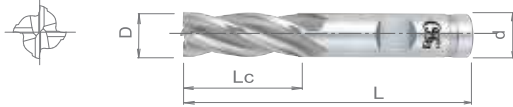
EXOMILL VC-10

Powdered Metal High Speed Steel

List 641

CPM-CC-EMS, Multiple Flute, Regular Length

SPEED FEED P1129-1130	VC10	BR	REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6410100	1/8	2-5/16	3/8	3/8	4
6410200	3/16	2-3/8	1/2	3/8	4
6410300	1/4	2-7/16	5/8	3/8	4
6410400	5/16	2-1/2	3/4	3/8	4
6410500	3/8	2-1/2	3/4	3/8	4
6410600	7/16	2-11/16	1	3/8	4
6411100	1/2	3-1/4	1-1/4	1/2	4
6411500	1/2	3-1/4	1-1/4	1/2	6
6412100	5/8	3-3/4	1-5/8	5/8	4
6412500	5/8	3-3/4	1-5/8	5/8	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6413100	3/4	3-7/8	1-5/8	3/4	4
6413500	3/4	3-7/8	1-5/8	3/4	6
6414100	7/8	4-1/8	1-7/8	7/8	4
6414500	7/8	4-1/8	1-7/8	7/8	6
6415100	1	4-1/2	2	1	4
6415500	1	4-1/2	2	1	6
6416100	1-1/4	4-1/2	2	1-1/4	6
6416200	1-1/2	4-1/2	2	1-1/4	6
6416400	2	5-3/4	2	2	6

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
641	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

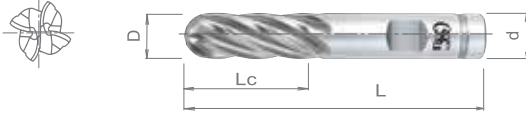
good best



List 644

CPM-EBM, Multiple Flute, Regular Length, Ball End

SPEED FEED P1131	VC10	BR	REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6440500	3/8	2-1/2	3/4	3/8	4
6441100	1/2	3-1/4	1-1/4	1/2	4
6441500	1/2	3-1/4	1-1/4	1/2	6
6442100	5/8	3-3/4	1-5/8	5/8	4
6442500	5/8	3-3/4	1-5/8	5/8	6
6443100	3/4	3-7/8	1-5/8	3/4	4
6443500	3/4	3-7/8	1-5/8	3/4	6
6444100	7/8	4-1/8	1-7/8	7/8	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6444500	7/8	4-1/8	1-7/8	7/8	6
6445100	1	4-1/2	2	1	4
6445500	1	4-1/2	2	1	6
6446100	1-1/4	4-1/2	2	1-1/4	4
6446500	1-1/4	4-1/2	2	1-1/4	6
6446200	1-1/2	4-1/2	2	1-1/4	4
6446600	1-1/2	4-1/2	2	1-1/4	6

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
644	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





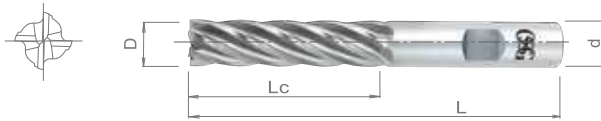
EXOMILL VC-10

Powdered Metal High Speed Steel

List 646

CPM-CC-EML, Multiple Flute, Long Length

SPEED FEED P1129-1130	VC10	BR		LONG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6460300	1/4	3-1/16	1-1/4	3/8	4
6460500	3/8	3-1/4	1-1/2	3/8	4
6461100	1/2	4	2	1/2	4
6461500	1/2	4	2	1/2	6
6462100	5/8	4-5/8	2-1/2	5/8	4
6462500	5/8	4-5/8	2-1/2	5/8	6
6463100	3/4	5-1/4	3	3/4	4
6463500	3/4	5-1/4	3	3/4	6

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6464100	7/8	5-3/4	3-1/2	7/8	4
6464500	7/8	5-3/4	3-1/2	7/8	6
6465100	1	6-1/2	4	1	4
6465500	1	6-1/2	4	1	6
6466100	1-1/4	6-1/2	4	1-1/4	6
6466200	1-1/2	6-1/2	4	1-1/4	6
6466400	2	7-3/4	4	2	6

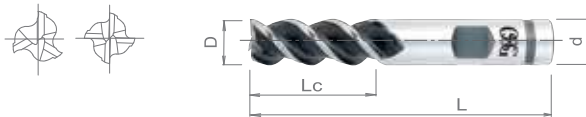
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 660

CPM-EHS, Multiple Flute, Regular Length, High Helix

SPEED FEED P1124	VC10	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6600300	1/4	2-7/16	5/8	3/8	3
6600400	5/16	2-1/2	3/4	3/8	3
6600500	3/8	2-1/2	3/4	3/8	3
6600600	7/16	2-11/16	1	3/8	3
6601100	1/2	3-1/4	1-1/4	1/2	3

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	No. of Flutes
	D	L	Lc	d	
6602100	5/8	3-3/4	1-5/8	5/8	3
6603100	3/4	3-7/8	1-5/8	3/4	3
6604100	7/8	4-1/8	1-7/8	7/8	4
6605100	1	4-1/2	2	1	4

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
646	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
660	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

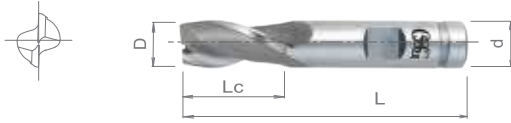
good best



List 573

EDS, 2 Flute, Regular Length

SPEED FEED P1125	HSSE	TiCN	BR	REG	30°
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiCN	D	L	Lc	d
5730100	5730108	1/8	2-5/16	3/8	3/8
5730200	-	5/32	2-5/16	7/16	3/8
5730300	5730308	3/16	2-5/16	7/16	3/8
5730400	5730408	7/32	2-5/16	1/2	3/8
5730500	5730508	1/4	2-5/16	1/2	3/8
5730600	5730608	9/32	2-5/16	9/16	3/8
5730700	5730708	5/16	2-5/16	9/16	3/8
5730800	5730808	11/32	2-5/16	9/16	3/8
5730900	5730908	3/8	2-5/16	9/16	3/8
5731000	5731008	13/32	2-1/2	13/16	3/8
5731100	5731108	7/16	2-1/2	13/16	3/8
5731200	5731208	15/32	2-1/2	13/16	3/8
5731400	5731408	1/2	3	1	1/2
5731500	5731508	17/32	3-1/8	1-1/8	1/2
5731600	5731608	9/16	3-1/8	1-1/8	1/2

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiCN	D	L	Lc	d
5731700	5731708	19/32	3-1/8	1-1/8	1/2
5732300	5732308	5/8	3-7/16	1-5/16	5/8
5731900	5731908	21/32	3-5/16	1-5/16	1/2
5732000	5732008	11/16	3-5/16	1-5/16	1/2
5732400	5732408	11/16	3-7/16	1-5/16	5/8
5732100	5732108	23/32	3-5/16	1-5/16	1/2
5733200	5733208	3/4	3-9/16	1-5/16	3/4
5732600	5732608	25/32	3-5/8	1-1/2	5/8
5732700	5732708	13/16	3-5/8	1-1/2	5/8
5732800	5732808	27/32	3-5/8	1-1/2	5/8
5733700	5733708	7/8	3-3/4	1-1/2	7/8
5733400	5733408	29/32	3-3/4	1-1/2	3/4
5733000	5733008	15/16	3-5/8	1-1/2	5/8
5733500	5733508	31/32	3-3/4	1-1/2	3/4
5733900	5733908	1	4-1/8	1-5/8	1

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



HY-PRO® V ADVANTAGE

HY-PRO® V End Mills are made from premium HSSE-V3 (3% Vanadium) high speed steel for increased toughness and tool life. Available with TiCN coating for increased wear resistance when machining abrasive materials. With no cobalt content, HY-PRO® V End Mills are environmentally safe when reground.

Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
573	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 574

CC-EMS, Multiple Flute, Regular Length

SPEED FEED P112S-1126	HSSE	TiCN	BR		REG	
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	TiCN	D	L	Lc	d	
5740100	5740108	1/8	2-5/16	3/8	3/8	4
5740200	5740208	5/32	2-3/8	7/16	3/8	4
5740300	5740308	3/16	2-3/8	1/2	3/8	4
5740400	5740408	7/32	2-7/16	9/16	3/8	4
5740500	5740508	1/4	2-7/16	5/8	3/8	4
5740600	5740608	9/32	2-1/2	11/16	3/8	4
5740700	5740708	5/16	2-1/2	3/4	3/8	4
5740800	5740808	11/32	2-1/2	3/4	3/8	4
5740900	5740908	3/8	2-1/2	3/4	3/8	4
5741000	5741008	13/32	2-11/16	1	3/8	4
5741100	5741108	7/16	2-11/16	1	3/8	4
5741200	5741208	15/32	3-1/4	1-1/4	1/2	4
5741400	5741408	1/2	3-1/4	1-1/4	1/2	4
5741500	5741508	17/32	3-3/8	1-3/8	1/2	4
5741600	5741608	9/16	3-3/8	1-3/8	1/2	4
5741700	5741708	19/32	3-3/8	1-3/8	1/2	4
5742300	5742308	5/8	3-3/4	1-5/8	5/8	4
5741900	5741908	21/32	3-5/8	1-5/8	1/2	4
5742000	5742008	11/16	3-5/8	1-5/8	1/2	4
5742400	5742408	11/16	3-3/4	1-5/8	5/8	4
5742100	5742108	23/32	3-5/8	1-5/8	1/2	4
5743200	5743208	3/4	3-7/8	1-5/8	3/4	4
5742600	5742608	25/32	4	1-7/8	5/8	6
5742700	5742708	13/16	4	1-7/8	5/8	6
5742800	5742808	27/32	4	1-7/8	5/8	6
5743700	5743708	7/8	4-1/8	1-7/8	7/8	6
5743400	5743408	29/32	4-1/8	1-7/8	3/4	4
5743000	5743008	15/16	4	1-7/8	5/8	4
5743500	5743508	31/32	4-1/8	1-7/8	3/4	4
5743900	5743908	1	4-1/2	2	1	4

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



HY-PRO® V ADVANTAGE

HY-PRO® V End Mills are made from premium HSSE-V3 (3% Vanadium) high speed steel for increased toughness and tool life. Available with TiCN coating for increased wear resistance when machining abrasive materials. With no cobalt content, HY-PRO® V End Mills are environmentally safe when reground.

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
574	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

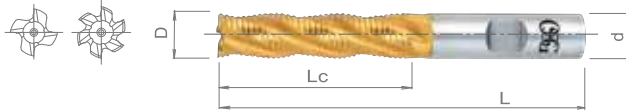




List 690

EXO-TIN-EX-REE, Multiple Flute, Regular Length, Center Hole

SPEED FEED P1123	HSSE	TiN	ROUGH	REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
6909105	1/4	2-1/2	3/4	3/8	4
6909405	5/16	2-1/2	3/4	3/8	4
6909705	3/8	2-5/8	7/8	3/8	4
6909805	3/8	3-1/4	1-1/2	3/8	4
6900105	1/2	3-1/4	1-1/4	1/2	4
6900305	1/2	4	2	1/2	4
6900505	5/8	3-3/4	1-5/8	5/8	4
6900705	5/8	4-5/8	2-1/2	5/8	4
6900905	3/4	3-7/8	1-5/8	5/8	4
6901305	3/4	3-7/8	1-5/8	3/4	4
6901505	3/4	5-1/4	3	3/4	4
6901705	7/8	4-1/8	1-7/8	3/4	5
6910105	1	4-1/4	2	3/4	5
6910505	1	4-1/2	2	1	5
6910905	1	6-1/2	4	1	5
6912105	1-1/4	4-1/2	2	1-1/4	6
6912305	1-1/4	5-1/2	3	1-1/4	6
6912505	1-1/4	6-1/2	4	1-1/4	6
6913305	1-1/2	4-1/2	2	1-1/4	6
6913505	1-1/2	5-1/2	3	1-1/4	6
6920105	2	4-1/2	2	1-1/4	8
6920505	2	6-1/2	4	1-1/4	8
6920705	2	6-3/4	3	2	8
6920905	2	7-3/4	4	2	8

Pack: 1pc.
Available TiN coating only.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
690	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





Roughing Cut

Cobalt High Speed Steel

List 450

EX-REEF, Multiple Flute, Fine Pitch, Center Hole

SPEED FEED P1115	HSS-Co	TiCN	BR	FINE ROUGH		STUB	REG	LONG	30°
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	TiCN	D	L	Lc	d	
4509000	-	3/16	2-3/8	1/2	3/8	4
4509100	-	1/4	2-1/2	3/4	3/8	3
4509200	-	1/4	3-1/16	1-1/4	3/8	3
4509400	-	5/16	2-1/2	3/4	3/8	3
4509500	-	5/16	3-1/8	1-3/8	3/8	3
4509700	-	3/8	2-5/8	7/8	3/8	4
4509800	-	3/8	3-1/4	1-1/2	3/8	4
4509900	-	7/16	2-11/16	1	3/8	4
4500000	-	7/16	3-1/4	1-1/4	1/2	4
4500100	-	1/2	3-1/4	1-1/4	1/2	4
4500300	-	1/2	4	2	1/2	4
4500500	4500508	5/8	3-3/4	1-5/8	5/8	4
4500700	4500708	5/8	4-5/8	2-1/2	5/8	4
4500800	4500808	5/8	5-1/8	3	5/8	4
4500900	-	3/4	3-7/8	1-5/8	5/8	4
4501000	4501008	3/4	4-1/2	2-1/4	3/4	4
4501300	-	3/4	3-7/8	1-5/8	3/4	4
4501100	-	3/4	5-1/4	3	5/8	4
4501500	-	3/4	5-1/4	3	3/4	4
4501600	-	3/4	6-1/4	4	3/4	4
4501700	-	7/8	4-1/8	1-7/8	3/4	5
4502100	-	7/8	4-1/8	1-7/8	7/8	5
4501900	-	7/8	5-3/4	3-1/2	3/4	5
4502300	-	7/8	5-3/4	3-1/2	7/8	5
4510100	-	1	4-1/4	2	3/4	5
4510500	4510508	1	4-1/2	2	1	5
4510700	-	1	5-1/2	3	1	5
4510900	4510908	1	6-1/2	4	1	5
4511500	-	1-1/8	4-1/2	2	1	5
4512100	-	1-1/4	4-1/2	2	1-1/4	6
4512300	-	1-1/4	5-1/2	3	1-1/4	6
4511900	-	1-1/4	6-1/4	4	3/4	6
4512500	-	1-1/4	6-1/2	4	1-1/4	6
4513300	4513308	1-1/2	4-1/2	2	1-1/4	6
4513500	-	1-1/2	5-1/2	3	1-1/4	6
4513100	-	1-1/2	6-1/4	4	3/4	6
4513700	-	1-1/2	6-1/2	4	1-1/4	6
4513900	-	1-1/2	7-1/2	5	1-1/4	6
4514500	-	1-3/4	6-1/2	4	1-1/4	6
4520100	-	2	4-1/2	2	1-1/4	8
4520700	-	2	6-3/4	3	2	8
4520500	-	2	6-1/2	4	1-1/4	8
4520900	-	2	7-3/4	4	2	8
4521100	-	2	9-3/4	6	2	8
4521300	-	2	11-3/4	8	2	8

Pack: 1pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

Note: 2" diameter shanks have combination drive.



List No.	Work Material																
	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010	1035	1065	4140		300	400	17-4 PH		6061	Casting	Inconel	6Al4V	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1018	1045		4340						7075			(30 HRC)				
450	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

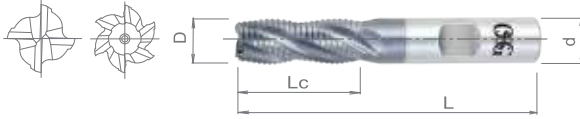




List 455

Multiple Flute, Roughing Cut, Fine Pitch

SPEED FEED P1116	HSS-Co	TiAlN	TiCN	FINE ROUGH		STUB	REG	LONG	30°
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
TiCN	TiAlN	D	L	Lc	d	
4558908	-	1/4	2-1/16	1/4	3/8	4
4559008	4559011	1/4	2-1/16	1/4	3/8	4
4569108	-	1/4	2-7/16	5/8	3/8	3
4559108	4559111	1/4	2-1/2	3/4	3/8	4
4559208	4559211	1/4	3-1/16	1-1/4	3/8	4
4559308	4559311	5/16	2-1/16	5/16	3/8	3
4559408	4559411	5/16	2-1/2	3/4	3/8	4
4559508	4559511	5/16	3-1/8	1-3/8	3/8	4
4559608	4559611	3/8	2-5/32	3/8	3/8	3
4559708	4559711	3/8	2-5/8	7/8	3/8	4
4559808	4559811	3/8	3-1/4	1-1/2	3/8	4
4569808	-	7/16	2-1/2	1/2	1/2	4
4559908	-	7/16	3-1/4	1-1/4	1/2	4
4550008	4550011	1/2	2-1/2	1/2	1/2	3
4560008	-	1/2	2-1/2	1/2	1/2	4
4550108	4550111	1/2	3-1/4	1-1/4	1/2	4
4550308	4550311	1/2	4	2	1/2	4
4560308	-	1/2	5	3	1/2	4
4550408	4550411	5/8	2-3/4	5/8	5/8	3
4560408	-	5/8	2-3/4	5/8	5/8	4
4550508	4550511	5/8	3-3/4	1-5/8	5/8	4
4550608	-	5/8	4-1/8	2	5/8	4
4550708	4550711	5/8	4-5/8	2-1/2	5/8	4
4551208	4551211	3/4	2-7/8	3/4	3/4	3
4561208	-	3/4	2-7/8	3/4	3/4	4
4551308	4551311	3/4	3-7/8	1-5/8	3/4	4
4551408	-	3/4	4-1/2	2-1/2	3/4	4
4551508	4551511	3/4	5-1/4	3	3/4	4
4551608	-	3/4	6-1/4	4	3/4	4
4552108	-	3/4	4-1/2	2-1/4	3/4	4
4561008	-	1	3-1/2	1	1	5
4560108	4560111	1	4-1/2	2	3/4	5
4560508	4560511	1	4-1/2	2	1	5
4560708	4560711	1	5-1/2	3	1	5
4560908	4560911	1	6-1/2	4	1	5
4562108	4562111	1-1/4	4-1/2	2	1-1/4	6
4562308	4562311	1-1/4	5-1/2	3	1-1/4	6
4562508	4562511	1-1/4	6-1/2	4	1-1/4	6
4563308	4563311	1-1/2	4-1/2	2	1-1/4	6
4563508	4563511	1-1/2	5-1/2	3	1-1/4	6
4563708	4563711	1-1/2	6-1/2	4	1-1/4	6
4570708	-	2	6-3/4	3	2	8
4570908	-	2	7-3/4	4	2	8
4571108	4571111	2	9-3/4	6	2	8
4571308	-	2	11-3/4	8	2	8

Pack: 1pc.
Available in TiCN or TiAlN only.
Center cutting available in stub length only.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
455	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





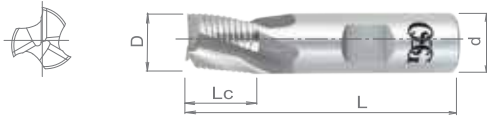
Roughing Cut

Cobalt High Speed Steel

List 420

Stub Length, Center Cutting, Fine Pitch

SPEED FEED P1115	HSS-Co	BR	FINE ROUGH		STUB	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4205000	1/4	2-1/16	1/4	3/8	3
4205100	3/8	2-5/32	3/8	3/8	3
4205200	1/2	2-1/2	1/2	1/2	3
4205300	5/8	2-3/4	5/8	5/8	3
4205400	3/4	2-7/8	3/4	3/4	3

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4205500	7/8	3-1/8	7/8	3/4	3
4205600	1	3-1/2	1	3/4	3
4205700	1	3-3/4	1	1	3
4205800	1-1/4	3-3/4	1-1/4	1-1/4	4
4205900	1-1/2	3-3/4	1-1/4	1-1/4	6

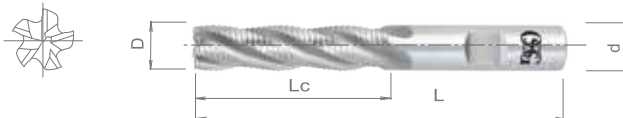
Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 460

Center Cutting, Fine Pitch

SPEED FEED P1121-1122	HSS-Co	BR	FINE ROUGH		REG	LONG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4600100	1/2	3-1/4	1-1/4	1/2	4
4600300	1/2	4	2	1/2	4
4600500	5/8	3-3/4	1-5/8	5/8	4
4600600	7/16	2-1/2	1/2	1/2	4
4600700	5/8	4-5/8	2-1/2	5/8	4
4601200	3/4	2-7/8	3/4	3/4	4
4601300	3/4	3-7/8	1-5/8	3/4	4
4601500	3/4	5-1/4	3	3/4	4
4610400	1	3-1/2	1	1	5

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4610500	1	4-1/2	2	1	5
4610700	1	5-1/4	3	1	5
4610900	1	6-1/2	4	1	5
4612100	1-1/4	4-1/2	2	1-1/4	6
4612300	1-1/4	5-1/2	3	1-1/4	6
4612500	1-1/4	6-1/2	4	1-1/4	6
4613300	1-1/2	4-1/2	2	1-1/4	6
4613700	1-1/2	6-1/2	4	1-1/4	6

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P						M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
	1010	1035	1065	4140	4340													
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

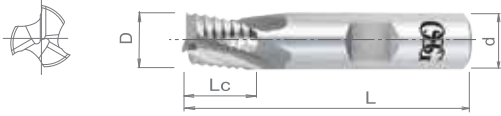




List 410

3 Flute, Stub Length, Regular Pitch

SPEED FEED P1119	HSS-Co	BR	ROUGH	STUB	25°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
4105200	1/2	2-1/2	1/2	1/2
4105300	5/8	2-3/4	5/8	5/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
4105400	3/4	2-7/8	3/4	3/4
4105700	1	3-1/2	1	1

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 430E

3 Flute, for Aluminum

SPEED FEED P1118	HSS-Co	BR	ROUGH	REG	MED	LONG	35°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
4309700	3/8	2-5/8	7/8	3/8
4300100	1/2	3-1/4	1-1/4	1/2
4300300	1/2	4	2	1/2
4300500	5/8	3-3/4	1-5/8	5/8
4300700	5/8	4-5/8	2-1/2	5/8
4301200	3/4	3	3/4	3/4
4301300	3/4	3-7/8	1-5/8	3/4
4301500	3/4	5-1/4	3	3/4
4301700	7/8	4-1/8	1-7/8	3/4
4302100	7/8	4-1/8	1-7/8	7/8
4310300	1	3-1/2	1	1

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
4310100	1	4-1/4	2	3/4
4310500	1	4-1/2	2	1
4310700	1	5-1/2	3	1
4310900	1	6-1/2	4	1
4312100	1-1/4	4-1/2	2	1-1/4
4312300	1-1/4	5-1/2	3	1-1/4
4312500	1-1/4	6-1/2	4	1-1/4
4313300	1-1/2	4-1/2	2	1-1/4
4313500	1-1/2	5-1/2	3	1-1/4
4313700	1-1/2	6-1/2	4	1-1/4

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
410	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
430E	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





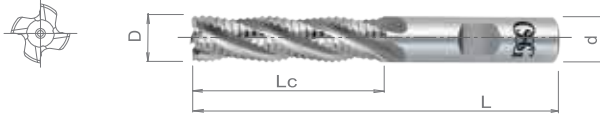
Roughing Cut

Cobalt High Speed Steel

List 490

SPEED FEED P1119	HSS-Co	BR	ROUGH		STUB	REG	MED	LONG	30°
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Multiple Flute, Regular Pitch, General Purpose, Center Hole



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4909000	1/4	2-7/16	5/8	5/8	4
4909100	1/4	2-1/2	3/4	3/8	4
4909200	1/4	3-1/16	1-1/4	3/8	4
4909400	5/16	2-1/2	3/4	3/8	4
4909500	5/16	3-1/8	1-3/8	3/8	4
4909700	3/8	2-5/8	7/8	3/8	4
4909800	3/8	3-1/4	1-1/2	3/8	4
4909900	7/16	2-11/16	1	3/8	4
4900100	1/2	3-1/4	1-1/4	1/2	4
4900300	1/2	4	2	1/2	4
4900500	5/8	3-3/4	1-5/8	5/8	4
4900600	5/8	4-1/8	2	5/8	4
4900700	5/8	4-5/8	2-1/2	5/8	4
4900800	5/8	5-1/8	3	5/8	4
4900900	3/4	3-7/8	1-5/8	5/8	4
4901300	3/4	3-7/8	1-5/8	3/4	4
4901100	3/4	5-1/4	3	5/8	4
4901400	3/4	4-1/2	2-1/4	3/4	4
4901500	3/4	5-1/4	3	3/4	4
4901700	7/8	4-1/8	1-7/8	3/4	5
4902100	7/8	4-1/8	1-7/8	7/8	5
4901900	7/8	5-3/4	3-1/2	3/4	5
4902300	7/8	5-3/4	3-1/2	7/8	5
4910100	1	4-1/4	2	3/4	5
4910500	1	4-1/2	2	1	5

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4910700	1	5-1/2	3	1	5
4910900	1	6-1/2	4	1	5
4911500	1-1/8	4-1/2	2	1	5
4912100	1-1/4	4-1/2	2	1-1/4	6
4912300	1-1/4	5-1/2	3	1-1/4	6
4911900	1-1/4	6-1/4	4	3/4	6
4912500	1-1/4	6-1/2	4	1-1/4	6
4913300	1-1/2	4-1/2	2	1-1/4	6
4913500	1-1/2	5-1/2	3	1-1/4	6
4913100	1-1/2	6-1/4	4	3/4	6
4913700	1-1/2	6-1/2	4	1-1/4	6
4913900	1-1/2	7-1/2	5	1-1/4	6
4914500	1-3/4	6-1/2	4	1-1/4	6
4926100	2	4-1/2	2	1-1/4	6
4920100	2	4-1/2	2	1-1/4	8
4926700	2	6-3/4	3	2	6
4920700	2	6-3/4	3	2	8
4926500	2	6-1/2	4	1-1/4	6
4920500	2	6-1/2	4	1-1/4	8
4926900	2	7-3/4	4	2	6
4920900	2	7-3/4	4	2	8
4927100	2	9-3/4	6	2	6
4921100	2	9-3/4	6	2	8
4927300	2	11-3/4	8	2	6
4921300	2	11-3/4	8	2	8

Pack: 1pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order. 2" diameter shanks have combination drive.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
490	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

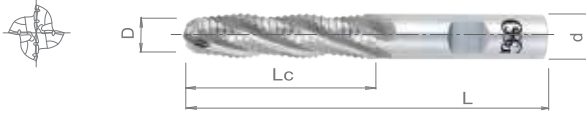
good best



List 440

EX-REB, Multiple Flute, Regular Pitch, Ball End, General Purpose

SPEED FEED P1117	HSS-Co	BR	ROUGH	REG	LONG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4400100	1/2	3-1/4	1-1/4	1/2	4
4400300	1/2	4	2	1/2	4
4400500	5/8	3-3/4	1-5/8	5/8	4
4400700	5/8	4-5/8	2-1/2	5/8	4
4401300	3/4	3-7/8	1-5/8	3/4	4
4401500	3/4	5-1/4	3	3/4	4
4410500	1	4-1/2	2	1	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
	D	L	Lc	d	
4410900	1	6-1/2	4	1	4
4412100	1-1/4	4-1/2	2	1-1/4	6
4412500	1-1/4	6-1/2	4	1-1/4	6
4413300	1-1/2	4-1/2	2	1-1/4	6
4413700	1-1/2	6-1/2	4	1-1/4	6
4420900	2	7-3/4	4	2	8
4421100	2	9-3/4	6	2	8

Pack: 1pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
2" diameter shanks have combination drive.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
440	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

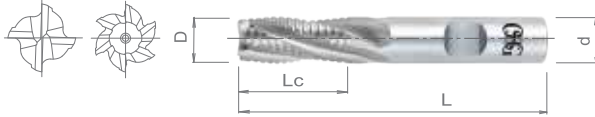
good best



List 470

CC-RFE, Multiple Flute, Rough & Finish

SPEED FEED P1120	HSS-Co	BR	ROUGH FINISH		STUB	REG	LONG	25°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	D	L	Lc	d	
4709100	1/4	2-1/2	3/4	3/8	4
4709400	5/16	2-1/2	3/4	3/8	4
4709500	3/8	2-5/32	3/8	3/8	4
4709600	3/8	2-1/2	3/4	3/8	4
4709700	3/8	2-5/8	7/8	3/8	4
4700200	3/8	3-1/4	1-1/2	3/8	4
4700000	1/2	2-1/2	1/2	1/2	4
4700100	1/2	3-1/4	1-1/4	1/2	4
4700300	1/2	4	2	1/2	4
4700500	5/8	3-3/4	1-5/8	5/8	4
4700600	5/8	4-1/8	2	5/8	4
4700700	5/8	4-5/8	2-1/2	5/8	4
4700900	3/4	3-7/8	1-5/8	5/8	4
4701300	3/4	3-7/8	1-5/8	3/4	4
4701400	3/4	4-1/2	2-1/4	3/4	4
4701500	3/4	5-1/4	3	3/4	4
4701700	7/8	4-1/8	1-7/8	3/4	4
4701900	7/8	5-3/4	3-1/2	3/4	5
4702100	7/8	4-1/8	1-7/8	7/8	4
4710000	1	3-1/2	1	1	5
4710100	1	4-1/4	2	3/4	4
4716100	1	4-1/4	2	3/4	6
4710500	1	4-1/2	2	1	4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	D	L	Lc	d	
4710600	1	4-1/2	2	1	5
4716500	1	4-1/2	2	1	6
4710900	1	6-1/2	4	1	4
4716900	1	6-1/2	4	1	6
4711500	1-1/8	4-1/2	2	1	5
4712100	1-1/4	4-1/2	2	1-1/4	6
4712300	1-1/4	5-1/2	3	1-1/4	6
4712500	1-1/4	6-1/2	4	1-1/4	6
4713300	1-1/2	4-1/2	2	1-1/4	6
4713500	1-1/2	5-1/2	3	1-1/4	6
4713700	1-1/2	6-1/2	4	1-1/4	6
4713900	1-1/2	7-1/2	5	1-1/4	6
4720100	2	4-1/2	2	1-1/4	8
4726700	2	6-3/4	3	2	6
4726500	2	6-1/2	4	1-1/4	6
4720500	2	6-1/2	4	1-1/4	8
4726900	2	7-3/4	4	2	6
4720900	2	7-3/4	4	2	8
4727100	2	9-3/4	6	2	6
4721100	2	9-3/4	6	2	8
4727300	2	11-3/4	8	2	6
4721300	2	11-3/4	8	2	8

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
2" diameter shanks have combination drive.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
470	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

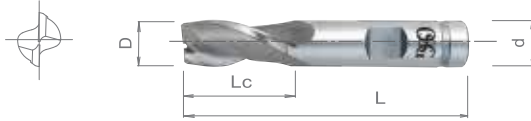




List 520

2 Flute, Regular Length

SPEED FEED P1127-1128	HSS-Co	TiN	BR	REG	30°
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiN	D	L	Lc	d
5200100	5200105	1/8	2-5/16	3/8	3/8
5209100	-	5/32	2-5/16	7/16	3/8
5200200	5200205	3/16	2-5/16	7/16	3/8
5209200	-	7/32	2-5/16	1/2	3/8
5200300	5200305	1/4	2-5/16	1/2	3/8
5209300	-	9/32	2-5/16	9/16	3/8
5200400	5200405	5/16	2-5/16	9/16	3/8
5209400	-	11/32	2-5/16	9/16	3/8
5200500	5200505	3/8	2-5/16	9/16	3/8
5209500	-	13/32	2-1/2	13/16	3/8
5200600	5200605	7/16	2-1/2	13/16	3/8
5209700	-	15/32	2-1/2	13/16	3/8
5200700	5201105	1/2	2-1/2	13/16	3/8
5201100	-	1/2	3	1	1/2
5201600	-	17/32	3-1/8	1-1/8	1/2
5201200	-	9/16	3-1/8	1-1/8	1/2
5201700	-	19/32	3-1/8	1-1/8	1/2
5201300	5201305	5/8	3-1/8	1-1/8	1/2
5202100	5202105	5/8	3-7/16	1-5/16	5/8
5201800	-	21/32	3-5/16	1-5/16	1/2
5201400	-	11/16	3-5/16	1-5/16	1/2
5202200	-	11/16	3-7/16	1-5/16	5/8
5201900	-	23/32	3-5/16	1-5/16	1/2
5201500	5201505	3/4	3-5/16	1-5/16	1/2
5202300	-	3/4	3-7/16	1-5/16	5/8

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiN	D	L	Lc	d
5203100	5203105	3/4	3-9/16	1-5/16	3/4
5202800	-	25/32	3-5/8	1-1/2	5/8
5202400	-	13/16	3-5/8	1-1/2	5/8
5202900	-	27/32	3-5/8	1-1/2	5/8
5202500	-	7/8	3-5/8	1-1/2	5/8
5203200	5203205	7/8	3-3/4	1-1/2	3/4
5204100	5204105	7/8	3-3/4	1-1/2	7/8
5203400	-	29/32	3-3/4	1-1/2	3/4
5202600	-	15/16	3-5/8	1-1/2	5/8
5203500	-	31/32	3-3/4	1-1/2	3/4
5202700	-	1	3-5/8	1-1/2	5/8
5203300	5203305	1	3-3/4	1-1/2	3/4
5204200	-	1	3-3/4	1-1/2	7/8
5205100	5205105	1	4-1/8	1-5/8	1
5204300	-	1-1/8	3-7/8	1-5/8	7/8
5205200	-	1-1/8	4-1/8	1-5/8	1
5204400	-	1-1/4	3-7/8	1-5/8	7/8
5205300	-	1-1/4	4-1/8	1-5/8	1
5206100	-	1-1/4	4-1/8	1-5/8	1-1/4
5205400	-	1-3/8	4-1/8	1-5/8	1
5205500	-	1-1/2	4-1/8	1-5/8	1
5206200	-	1-1/2	4-1/8	1-5/8	1-1/4
5206300	-	1-3/4	4-1/8	1-5/8	1-1/4
5206400	-	2	4-1/8	1-5/8	1-1/4
5207400	-	2	5-3/4	2	2

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
2" diameter shanks have combination drive.



List No.	Work Material																		
	P					M			K	N		S	H						
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
520	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

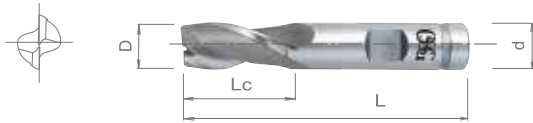




List 580

EDS, 2 Flute, Regular Length

SPEED FEED P1132	HSS-Co	BR	REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5800100	3.0	58.7	9.52	9.52
5808100	3.5	58.7	11.11	9.52
5800200	4.0	58.7	11.11	9.52
5808200	4.5	58.7	11.11	9.52
5800300	5.0	58.7	12.70	9.52
5808300	5.5	58.7	12.70	9.52
5800400	6.0	58.7	12.70	9.52
5808400	6.5	58.7	12.70	9.52
5800500	7.0	58.7	14.28	9.52
5808500	7.5	58.7	14.28	9.52
5800600	8.0	58.7	14.28	9.52
5808600	8.5	58.7	14.28	9.52
5800700	9.0	58.7	14.28	9.52
5808700	9.5	58.7	14.28	9.52
5800800	10.0	63.5	20.63	9.52
5808800	10.5	63.5	20.63	9.52
5800900	11.0	63.5	20.63	9.52
5808900	11.5	63.5	20.63	9.52
5801100	12.0	76.2	25.40	12.70
5809100	12.5	79.3	28.57	12.70
5801200	13.0	79.3	28.57	12.70

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5809200	13.5	79.3	28.57	12.70
5801300	14.0	79.3	28.57	12.70
5809300	14.5	79.3	28.57	12.70
5801400	15.0	79.3	28.57	12.70
5802100	16.0	87.3	33.33	15.87
5802200	17.0	87.3	33.33	15.87
5802300	18.0	87.3	33.33	15.87
5803100	19.0	90.4	33.33	19.05
5803200	20.0	95.2	38.10	19.05
5803300	21.0	95.2	38.10	19.05
5804100	22.0	95.2	38.10	22.22
5804200	23.0	95.2	38.10	22.22
5805100	24.0	104.7	41.27	25.40
5805200	25.0	104.7	41.27	25.40
5805300	28.0	104.7	41.27	25.40
5806100	32.0	104.7	41.27	31.75
5806200	36.0	104.7	41.27	31.75
5806300	40.0	104.7	41.27	31.75
5806400	45.0	104.7	41.27	31.75
5806500	50.0	104.7	41.27	31.75

Pack: 1pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
580	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

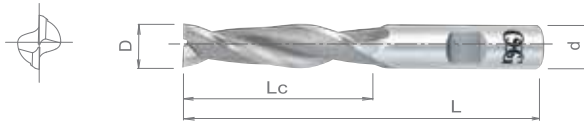




List 525

EDL, 2 Flute, Long Length

SPEED FEED P1127-1128	HSS-Co	BR		LONG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5250500	3/8	3-1/4	1-1/2	3/8
5251100	1/2	4	2	1/2
5252100	5/8	4-1/8	2	5/8
5253100	3/4	4-1/2	2-1/4	3/4
5254100	7/8	4-3/4	2-1/2	7/8
5255100	1	5-1/2	3	1
5255200	1-1/8	5-1/2	3	1

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5255300	1-1/4	5-1/2	3	1
5256100	1-1/4	5-1/2	3	1-1/4
5256200	1-1/2	5-1/2	3	1-1/4
5256300	1-3/4	5-1/2	3	1-1/4
5256400	2	5-1/2	3	1-1/4
5257400	2	6-3/4	3	2

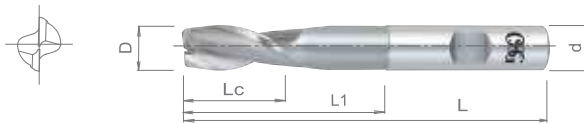
Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.



List 527

LS-EDS, 2 Flute, Regular Length, Reduced Neck

SPEED FEED P1127-1128	HSS-Co	BR		REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
Bright	D	L	Lc	L1	d
5270100	1/8	2-3/8	3/8	13/16	3/8
5270200	3/16	2-11/16	1/2	1-1/8	3/8
5270300	1/4	3-1/16	5/8	1-1/2	3/8
5270400	5/16	3-5/16	3/4	1-3/4	3/8
5270500	3/8	3-5/16	3/4	1-3/4	3/8
5271100	1/2	4	1	2-1/4	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
Bright	D	L	Lc	L1	d
5272100	5/8	4-5/8	1-3/8	2-3/4	5/8
5273100	3/4	5-3/8	1-5/8	3-3/8	3/4
5274100	7/8	6	2	4	7/8
5275100	1	7-1/4	2-1/2	5	1
5276100	1-1/4	7-1/4	3	5	1-1/4

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

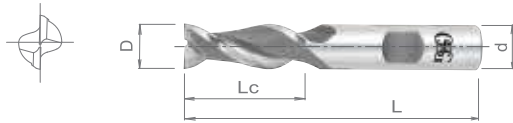




List 530

AL-EDS, 2 Flute, Regular Length, for Aluminum, High Helix

SPEED FEED P1127-1128	HSS-Co	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5300300	1/4	2-7/16	5/8	3/8
5300400	5/16	2-1/2	3/4	3/8
5300500	3/8	2-1/2	3/4	3/8
5300600	7/16	2-11/16	1	3/8
5301100	1/2	3-1/4	1-1/4	1/2
5302100	5/8	3-3/4	1-5/8	5/8
5303100	3/4	3-7/8	1-5/8	3/4
5303200	7/8	4-1/8	1-7/8	3/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5303300	1	4-1/8	1-7/8	3/4
5304100	7/8	4-1/8	1-7/8	7/8
5305100	1	4-1/2	2	1
5306100	1-1/4	4-1/2	2	1-1/4
5306200	1-1/2	4-1/2	2	1-1/4
5306300	1-3/4	4-1/2	2	1-1/4
5306400	2	4-1/2	2	1-1/4

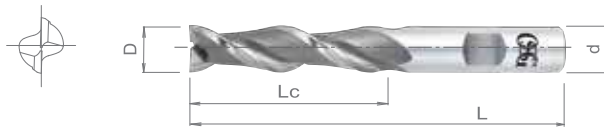
Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 535

AL-EDL, 2 Flute, Long Length, for Aluminum, High Helix

SPEED FEED P1127-1128	HSS-Co	BR		LONG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5350300	1/4	3-1/16	1-1/4	3/8
5350400	5/16	3-1/8	1-3/8	3/8
5350500	3/8	3-1/4	1-1/2	3/8
5351000	7/16	3-3/4	1-3/4	1/2
5351100	1/2	4	2	1/2
5352100	5/8	4-5/8	2-1/2	5/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5353100	3/4	5-1/4	3	3/4
5355100	1	6-1/2	4	1
5356100	1-1/4	6-1/2	4	1-1/4
5356200	1-1/2	6-1/2	4	1-1/4
5356400	2	6-1/2	4	1-1/4

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
	1010	1035	1065	4140	4340												
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best

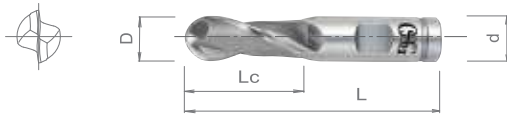




List 521

EBD, 2 Flute, Regular Length, Ball End

SPEED FEED P1131	HSS-Co	BR		REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5210100	1/8	2-5/16	3/8	3/8
5210200	3/16	2-3/8	1/2	3/8
5210300	1/4	2-7/16	5/8	3/8
5210400	5/16	2-1/2	3/4	3/8
5210500	3/8	2-1/2	3/4	3/8
5210600	3/8	3-1/4	1-1/2	3/8
5219600	7/16	3	1	1/2
5211100	1/2	3	1	1/2
5217100	1/2	4	2	1/2
5211200	9/16	3-1/8	1-1/8	1/2
5211300	5/8	3-1/8	1-1/8	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5212100	5/8	3-1/2	1-3/8	5/8
5211500	3/4	3-5/16	1-5/16	1/2
5213100	3/4	3-7/8	1-5/8	3/4
5214300	3/4	5-1/4	3	3/4
5213200	7/8	4-1/8	1-7/8	3/4
5214100	7/8	4-1/4	2	7/8
5213300	1	4-1/2	2-1/4	3/4
5215100	1	4-3/4	2-1/4	1
5215200	1-1/8	4-3/4	2-1/4	1
5216100	1-1/4	5	2-1/2	1-1/4
5216200	1-1/2	5	2-1/2	1-1/4

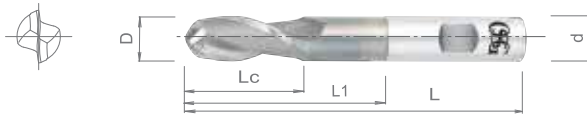
Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 526

LS-EBD, 2 Flute, Regular Length, Ball End, Reduced Neck

SPEED FEED P1131	HSS-Co	BR		REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
Bright	D	L	Lc	L1	d
5260100	1/8	2-3/8	3/8	13/16	3/8
5260200	3/16	2-11/16	1/2	1-1/8	3/8
5260300	1/4	3-1/16	5/8	1-1/2	3/8
5260400	5/16	3-5/16	3/4	1-3/4	3/8
5260500	3/8	3-5/16	3/4	1-3/4	3/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
Bright	D	L	Lc	L1	d
5269600	7/16	3-11/16	1	1-7/8	1/2
5261100	1/2	4	1	2-1/4	1/2
5262100	5/8	4-5/8	1-3/8	2-3/4	5/8
5263100	3/4	5-3/8	1-5/8	3-3/8	3/4
5265100	1	7-1/4	2-1/2	5	1

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

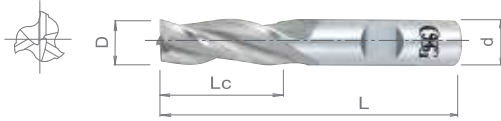




List 531

ETS, 3 Flute, Regular Length

SPEED FEED 1134	HSS-Co	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5310100	1/8	2-5/16	3/8	3/8
5310200	3/16	2-3/8	1/2	3/8
5310300	1/4	2-7/16	5/8	3/8
5310400	5/16	2-1/2	3/4	3/8
5310500	3/8	2-1/2	3/4	3/8
5310600	7/16	2-11/16	1	3/8
5310700	1/2	2-11/16	1	3/8
5311100	1/2	3-1/4	1-1/4	1/2
5311200	9/16	3-3/8	1-3/8	1/2
5311300	5/8	3-3/8	1-3/8	1/2
5312100	5/8	3-3/4	1-5/8	5/8
5311500	3/4	3-5/8	1-5/8	1/2
5312300	3/4	3-3/4	1-5/8	5/8
5313100	3/4	3-7/8	1-5/8	3/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5312500	7/8	4	1-7/8	5/8
5313200	7/8	4-1/8	1-7/8	3/4
5314100	7/8	4-1/8	1-7/8	7/8
5312700	1	4	1-7/8	5/8
5313300	1	4-1/8	1-7/8	3/4
5314200	1	4-1/8	1-7/8	7/8
5315100	1	4-1/2	2	1
5315200	1-1/8	4-1/2	2	1
5315300	1-1/4	4-1/2	2	1
5316100	1-1/4	4-1/2	2	1-1/4
5315500	1-1/2	4-1/2	2	1
5316200	1-1/2	4-1/2	2	1-1/4
5316300	1-3/4	4-1/2	2	1-1/4
5316400	2	4-1/2	2	1-1/4

Pack: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
531	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

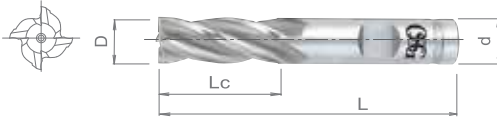
good best



List 581

CE-EMS, Multiple Flute, Regular Length, Center Hole

SPEED FEED P1133	HSS-Co	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	D	L	Lc	d	
5810100	3.0	58.7	9.52	9.52	4
5818100	3.5	60.3	11.11	9.52	4
5810200	4.0	60.3	11.11	9.52	4
5818200	4.5	60.3	12.70	9.52	4
5810300	5.0	61.9	14.28	9.52	4
5818300	5.5	61.9	14.28	9.52	4
5810400	6.0	61.9	15.87	9.52	4
5818400	6.5	61.9	15.87	9.52	4
5810500	7.0	63.5	17.46	9.52	4
5818500	7.5	63.5	19.05	9.52	4
5810600	8.0	63.5	19.05	9.52	4
5818600	8.5	63.5	19.05	9.52	4
5810700	9.0	63.5	19.05	9.52	4
5818700	9.5	63.5	19.05	9.52	4
5810800	10.0	63.5	19.05	9.52	4
5818800	10.5	68.2	25.40	9.52	4
5810900	11.0	68.2	25.40	9.52	4
5818900	11.5	68.2	25.40	9.52	4
5811100	12.0	82.5	31.75	12.70	4
5819100	12.5	82.5	31.75	12.70	4
5811200	13.0	82.5	31.75	12.70	4
5819200	13.5	85.7	34.92	12.70	4
5811300	14.0	85.7	34.92	12.70	4
5819300	14.5	85.7	34.92	12.70	4
5811400	15.0	85.7	34.92	12.70	4
5812100	16.0	95.2	41.27	15.87	4
5812200	17.0	95.2	41.27	15.87	4
5812300	18.0	95.2	41.27	15.87	4
5813100	19.0	98.4	41.27	19.05	4
5813200	20.0	104.7	47.62	19.05	4
5813300	21.0	104.7	47.62	19.05	4
5814100	22.0	104.7	47.62	22.22	4
5814200	23.0	104.7	47.62	22.22	4
5815100	24.0	114.3	50.80	25.40	4
5815200	25.0	114.3	50.80	25.40	4
5815300	28.0	114.3	50.80	25.40	6
5816100	32.0	114.3	50.80	31.75	6
5816200	36.0	114.3	50.80	31.75	6
5816300	40.0	114.3	50.80	31.75	6
5816400	45.0	114.3	50.80	31.75	6

Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
581	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

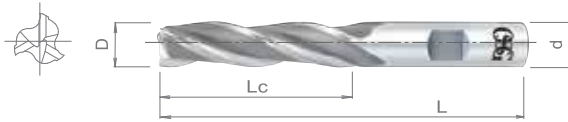




List 536

ETL, 3 Flute, Long Length

SPEED FEED P1134	HSS-Co	BR		LONG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
5360300	1/4	3-1/16	1-1/4	3/8
5360400	5/16	3-1/8	1-3/8	3/8
5360500	3/8	3-1/4	1-1/2	3/8
5361000	7/16	3-3/4	1-3/4	1/2
5361100	1/2	4	2	1/2
5362100	5/8	4-5/8	2-1/2	5/8
5363100	3/4	5-1/4	3	3/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
5364100	7/8	5-3/4	3-1/2	7/8
5365100	1	6-1/2	4	1
5366100	1-1/4	6-1/2	4	1-1/4
5366200	1-1/2	6-1/2	4	1-1/4
5366400	2	6-1/2	4	1-1/4



Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
536	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

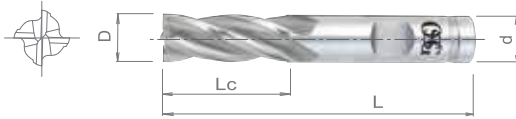
good best



List 541

Multiple Flute, Regular Length

SPEED FEED P1129-1130	HSS-Co	TiAlN	TiCN	TiN	BR	REG	30°
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EDP				Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	TiN	TiCN	TiAlN	D	L	Lc	d	
5410100	5410105	5410108	-	1/8	2-5/16	3/8	3/8	4
5410200	5410205	5410208	-	3/16	2-3/8	1/2	3/8	4
5417000	-	-	-	1/4	2-1/16	1/4	3/8	4
5410300	5410305	5410308	-	1/4	2-7/16	5/8	3/8	4
5410400	5410405	5410408	-	5/16	2-1/2	3/4	3/8	4
5417100	-	5417108	-	3/8	2-1/8	3/8	3/8	4
5410500	5410505	5410508	-	3/8	2-1/2	3/4	3/8	4
5410900	-	-	-	7/16	3-1/4	1-1/4	1/2	4
5411000	-	5411008	-	1/2	2-1/2	1/2	1/2	4
5411100	5411105	-	-	1/2	3-1/4	1-1/4	1/2	4
5411500	-	-	-	1/2	3-1/4	1-1/4	1/2	6
5411700	-	-	-	9/16	3-3/8	1-3/8	1/2	4
5412000	-	5412008	-	5/8	2-3/4	5/8	5/8	4
5412100	5412105	5412108	5412111	5/8	3-3/4	1-5/8	5/8	4
5412500	-	5412508	-	5/8	3-3/4	1-5/8	5/8	6
5412200	-	-	-	11/16	3-3/4	1-5/8	5/8	4
5412600	-	-	-	11/16	3-3/4	1-5/8	5/8	6
5413000	-	-	-	3/4	3	3/4	3/4	4
5413100	5413105	5413108	-	3/4	3-7/8	1-5/8	3/4	4
5413500	-	-	-	3/4	3-7/8	1-5/8	3/4	6
5414100	5414105	5414108	-	7/8	4-1/8	1-7/8	7/8	4
5414500	-	-	-	7/8	4-1/8	1-7/8	7/8	6
5414900	-	-	-	1	4-1/8	1-7/8	3/4	4
5415000	-	-	-	1	4-1/8	1-7/8	3/4	6
5415100	5415105	5415108	5415111	1	4-1/2	2	1	4
5415500	-	-	5415511	1	4-1/2	2	1	6
5415200	-	-	-	1-1/8	4-1/2	2	1	4
5415600	-	-	-	1-1/8	4-1/2	2	1	6
5416100	-	5416108	-	1-1/4	4-1/2	2	1-1/4	4
5416500	-	-	-	1-1/4	4-1/2	2	1-1/4	6
5416200	-	5416208	-	1-1/2	4-1/2	2	1-1/4	4
5416600	-	-	-	1-1/2	4-1/2	2	1-1/4	6
5416400	-	-	-	2	4-1/2	2	1-1/4	6
5418400	-	-	-	2	5-3/4	2	2	6

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
541	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

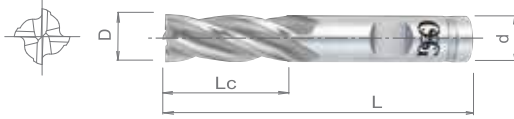




List 548

CC-EMN, 4 Flute, Medium Length

SPEED FEED P1129-1130	HSS-Co	TiCN	BR		MED	
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	TiCN	D	L	Lc	d	
5483100	-	5/8	4-1/8	2	5/8	4
5484100	5484108	3/4	4-1/2	2-1/4	3/4	4
5485100	5485108	1	5-1/2	3	1	4
-	5485208	1	5-1/2	3	1	4
5486100	5486108	1-1/4	5-1/2	3	1-1/4	4
5486200	5486208	1-1/2	5-1/2	3	1-1/4	4

Packed: 1 pc.

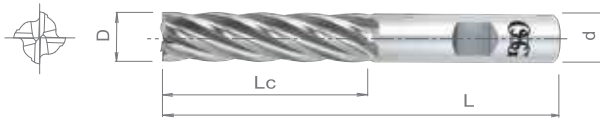
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 546

CC-EML, Multiple Flute, Long Length

SPEED FEED P1129-1130	HSS-Co	TiCN	BR		LONG	
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	TiCN	D	L	Lc	d	
5460300	5460308	1/4	3-1/16	1-1/4	3/8	4
5460400	5460408	5/16	3-1/8	1-3/8	3/8	4
5460500	5460508	3/8	3-1/4	1-1/2	3/8	4
5461100	5461108	1/2	4	2	1/2	4
5461500	-	1/2	4	2	1/2	6
5462100	5462108	5/8	4-5/8	2-1/2	5/8	4
5462500	-	5/8	4-5/8	2-1/2	5/8	6
5463100	5463108	3/4	5-1/4	3	3/4	4
5463500	-	3/4	5-1/4	3	3/4	6
5464100	5464108	7/8	5-3/4	3-1/2	7/8	4
5464500	-	7/8	5-3/4	3-1/2	7/8	6
5465100	5465108	1	6-1/2	4	1	4
5465500	-	1	6-1/2	4	1	6
5466100	-	1-1/4	6-1/2	4	1-1/4	4
5466500	-	1-1/4	6-1/2	4	1-1/4	6
5466600	-	1-1/2	6-1/2	4	1-1/4	6
5466400	-	2	6-1/2	4	1-1/4	6
5468400	-	2	7-3/4	4	2	6
5469400	-	2	9-3/4	6	2	6

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy Inconel	Titanium 6Al4V (30 HRC)	Hardened Steels			
	Low 1010 1018	Med. 1035 1045	High 1065			300	400	17-4 PH		6061 7075	Casting			~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

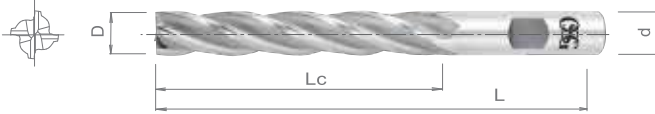
good best



List 558

CC-EXML, Multiple Flute, Extra Long Length

SPEED FEED P1129-1130	HSS-Co	TiCN	BR		EXTRA LONG	30°
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	TiCN	D	L	Lc	d	
5580300	-	1/4	3-9/16	1-3/4	3/8	4
5580400	-	5/16	3-3/4	2	3/8	4
5580500	-	3/8	4-1/4	2-1/2	3/8	4
5581100	5581108	1/2	5	3	1/2	4
5581500	-	1/2	5	3	1/2	6
5582100	5582108	5/8	6-1/8	4	5/8	4
5582500	-	5/8	6-1/8	4	5/8	6
5583100	5583108	3/4	6-1/4	4	3/4	4
5583500	-	3/4	6-1/4	4	3/4	6
5584100	5584108	7/8	7-1/4	5	7/8	4
5584500	-	7/8	7-1/4	5	7/8	6
5585100	5585108	1	8-1/2	6	1	4
5585500	5585508	1	8-1/2	6	1	6
5586100	-	1-1/4	8-1/2	6	1-1/4	4
5586500	-	1-1/4	8-1/2	6	1-1/4	6
5586600	-	1-1/2	10-1/2	8	1-1/4	6
5588400	-	2	11-3/4	8	2	6

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC		
558	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

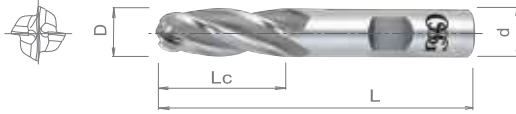




List 544

EBM, 4 Flute, Regular Length, Ball End

SPEED FEED P1131	HSS-Co	BR		REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5440500	3/8	2-1/2	3/4	3/8
5449700	7/16	3-1/4	1-1/4	1/2
5441100	1/2	3-1/4	1-1/4	1/2
5442100	5/8	3-3/4	1-5/8	5/8
5442200	5/8	4-5/8	2-1/2	5/8
5443100	3/4	3-7/8	1-5/8	3/4
5444100	7/8	4-1/8	1-7/8	7/8
5445100	1	4-1/2	2	1
5446100	1-1/4	4-1/2	2	1-1/4
5446200	1-1/2	4-1/2	2	1-1/4

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting	Inconel		6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
544	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

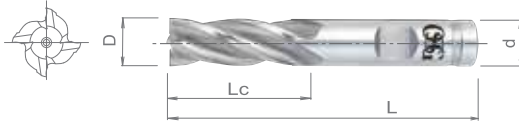
good best



List 540

Multiple Flute, Regular Length, Center Hole

SPEED FEED P1129-1130	HSS-Co	TiN	BR	REG	30°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.	No. of Flutes	Bright	
						TiN	D
5400100	5400105	1/8	2-5/16	3/8	3/8	4	
5409100	-	5/32	2-3/8	7/16	3/8	4	
5400200	5400205	3/16	2-3/8	1/2	3/8	4	
5409200	-	7/32	2-7/16	9/16	3/8	4	
5400300	5400305	1/4	2-7/16	5/8	3/8	4	
5409300	-	9/32	2-1/2	11/16	3/8	4	
5400400	5400405	5/16	2-1/2	3/4	3/8	4	
5409400	-	11/32	2-1/2	3/4	3/8	4	
5400500	5400505	3/8	2-1/2	3/4	3/8	4	
5409500	-	13/32	2-11/16	1	3/8	4	
5400600	5400605	7/16	2-11/16	1	3/8	4	
5409700	-	15/32	3-1/4	1-1/4	1/2	4	
5400700	-	1/2	2-11/16	1	3/8	4	
5401100	5401105	1/2	3-1/4	1-1/4	1/2	4	
5401600	-	17/32	3-3/8	1-3/8	1/2	4	
5401200	-	9/16	3-3/8	1-3/8	1/2	4	
5401700	-	19/32	3-3/8	1-3/8	1/2	4	
5401300	5401305	5/8	3-3/8	1-3/8	1/2	4	
5402100	-	5/8	3-3/4	1-5/8	5/8	4	
5401800	-	21/32	3-5/8	1-5/8	1/2	4	
5401400	-	11/16	3-5/8	1-5/8	1/2	4	
5402200	-	11/16	3-3/4	1-5/8	5/8	4	
5401900	-	23/32	3-5/8	1-5/8	1/2	4	
5401500	5401505	3/4	3-5/8	1-5/8	1/2	4	
5402300	-	3/4	3-3/4	1-5/8	5/8	4	
5403100	5403105	3/4	3-7/8	1-5/8	3/4	4	

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.	No. of Flutes	Bright	
						TiN	D
5402800	-	25/32	4	1-7/8	5/8	4	
5402400	-	13/16	4	1-7/8	5/8	6	
5402900	-	27/32	4	1-7/8	5/8	6	
5402500	-	7/8	4	1-7/8	5/8	6	
5403200	5403205	7/8	4-1/8	1-7/8	3/4	4	
5404100	-	7/8	4-1/8	1-7/8	7/8	4	
5403400	-	29/32	4-1/8	1-7/8	3/4	4	
5402600	-	15/16	4	1-7/8	5/8	6	
5403500	-	31/32	4-1/8	1-7/8	3/4	4	
5402700	-	1	4	1-7/8	5/8	6	
5403300	5403305	1	4-1/8	1-7/8	3/4	4	
5404200	-	1	4-1/8	1-7/8	7/8	4	
5405100	5405105	1	4-1/2	2	1	4	
5404300	-	1-1/8	4-1/4	2	7/8	6	
5405200	-	1-1/8	4-1/2	2	1	6	
5404400	-	1-1/4	4-1/4	2	7/8	6	
5405300	-	1-1/4	4-1/2	2	1	6	
5406100	-	1-1/4	4-1/2	2	1-1/4	6	
5405400	-	1-3/8	4-1/2	2	1	6	
5405500	-	1-1/2	4-1/2	2	1	6	
5406200	-	1-1/2	4-1/2	2	1-1/4	6	
5406300	-	1-3/4	4-1/2	2	1-1/4	6	
5406400	-	2	4-1/2	2	1-1/4	8	
5407400	-	2	5-3/4	2	2	4	
5408400	-	2	5-3/4	2	2	6	



Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.

List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
540	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





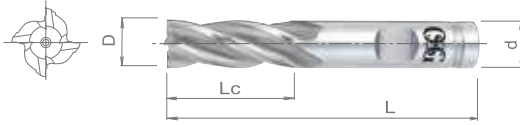
Single End

Cobalt High Speed Steel

List 547

CE-EMS, Multiple Flute, Medium Length, Center Hole

SPEED FEED P1129-1130	HSS-Co	BR		MED	30°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.	No. of Flutes
Bright	D	L	Lc	d	
5475100	1	5-1/2	3	1	4
5476100	1-1/4	5-1/2	3	1-1/4	6
5476200	1-1/2	5-1/2	3	1-1/4	6

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.	No. of Flutes
Bright	D	L	Lc	d	
5476300	1-3/4	5-1/2	3	1-1/4	6
5476400	2	5-1/2	3	1-1/4	8

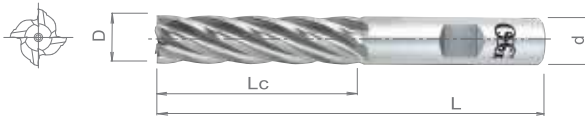
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.



List 545

EML, Multiple Flute, Long Length, Center Hole

SPEED FEED P1129-1130	HSS-Co	BR		LONG	30°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.	No. of Flutes
Bright	D	L	Lc	d	
5450300	1/4	3-1/16	1-1/4	3/8	4
5450400	5/16	3-1/8	1-3/8	3/8	4
5450500	3/8	3-1/4	1-1/2	3/8	4
5451000	7/16	3-3/4	1-3/4	1/2	4
5451100	1/2	4	2	1/2	4
5452100	5/8	4-5/8	2-1/2	5/8	4
5453100	3/4	5-1/4	3	3/4	4
5454100	7/8	5-3/4	3-1/2	7/8	4
5455100	1	6-1/2	4	1	4

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.	No. of Flutes
Bright	D	L	Lc	d	
5455200	1-1/8	6-1/2	4	1	6
5455300	1-1/4	6-1/2	4	1	6
5456100	1-1/4	6-1/2	4	1-1/4	6
5455500	1-1/2	6-1/2	4	1	6
5456200	1-1/2	6-1/2	4	1-1/4	6
5456300	1-3/4	6-1/2	4	1-1/4	6
5456400	2	6-1/2	4	1-1/4	8
5457400	2	7-3/4	4	2	4
5458400	2	7-3/4	4	2	6

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
Note: 2" diameter shanks have combination drive.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

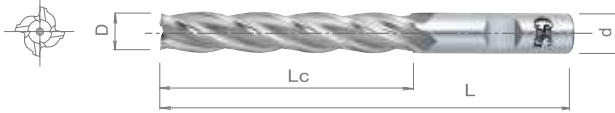
good best



List 557

SPEED FEED P1129-1130	HSS-Co	BR		EXTRA LONG	30°
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CE-EXML, Multiple Flute, Extra Long Length, Center Hole



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	D	L	Lc	d	
5570300	1/4	3-9/16	1-3/4	3/8	4
5570400	5/16	3-3/4	2	3/8	4
5570500	3/8	4-1/4	2-1/2	3/8	4
5571100	1/2	5	3	1/2	4
5572100	5/8	6-1/8	4	5/8	4
5573100	3/4	6-1/4	4	3/4	4
5574100	7/8	7-1/4	5	7/8	4
5575100	1	8-1/2	6	1	4
5576100	1-1/4	8-1/2	6	1-1/4	6
5576200	1-1/2	10-1/2	8	1-1/4	6
5578400	2	11-3/4	8	2	6

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
557	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





List 591

TPET, 3 Flute, 1° Taper per Side

SPEED FEED P1135	HSS-Co	BR	REG	LONG	EXTRA LONG	25°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5910100	1/16	1-3/4	1/2	3/16
5910200	1/16	2-1/4	1	3/16
5911100	5/64	1-3/4	1/2	3/16
5911200	5/64	2-1/4	1	3/16
5912100	3/32	2	3/4	3/16
5912400	3/32	2-11/16	1-1/2	3/16
5914100	1/8	1-5/8	3/8	3/16
5914200	1/8	2	3/4	3/16
5914300	1/8	2-1/4	1	3/16
5915100	3/16	2-5/8	3/4	3/8
5915200	3/16	3-1/8	1-1/4	3/8

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5916100	1/4	2-1/2	3/4	3/8
5916300	1/4	3	1-1/4	3/8
5916400	1/4	4	2-1/4	3/8
5916500	1/4	5	3-1/4	3/8
5917100	3/8	3-1/4	1-1/4	1/2
5917200	3/8	4-1/4	2-1/4	1/2
5917300	3/8	5-1/4	3-1/4	1/2
5918100	1/2	3-1/4	1-1/4	1/2
5918200	1/2	4-1/4	2-1/4	1/2
5918300	1/2	5-3/8	3-1/4	5/8
5919100	5/8	6-1/2	4-1/4	3/4

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 593

TPET, 3 Flute, 2° Taper per Side

SPEED FEED P1136	HSS-Co	BR	REG	LONG	EXTRA LONG	25°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5930100	1/16	1-3/4	1/2	3/16
5930200	1/16	2-1/4	1	3/16
5931100	5/64	1-3/4	1/2	3/16
5931200	5/64	2-1/4	1	3/16
5931300	5/64	2-11/16	1-1/2	3/16
5932100	3/32	2	3/4	3/16
5932300	3/32	2-1/2	1-1/4	3/16
5934200	1/8	2	3/4	3/16
5934300	1/8	2-7/8	1	3/8
5935100	3/16	2-5/8	3/4	3/8
5935200	3/16	3-1/8	1-1/4	3/8

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5936100	1/4	2-1/2	3/4	3/8
5936300	1/4	3	1-1/4	3/8
5936400	1/4	4-3/8	2-1/4	1/2
5936500	1/4	5-1/4	3-1/4	1/2
5937100	3/8	3-1/4	1-1/4	1/2
5937200	3/8	4-1/4	2-1/4	1/2
5937300	3/8	5-3/8	3-1/4	5/8
5938100	1/2	3-1/4	1-1/4	1/2
5938200	1/2	4-3/8	2-1/4	5/8
5938300	1/2	5-3/8	3-1/4	5/8
5939100	5/8	6-1/2	4-1/4	3/4

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

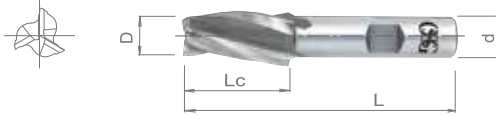
good best



List 594

TPET, 3 Flute, 3° Taper per Side

SPEED FEED P1136	HSS-Co	BR		REG	LONG	EXTRA LONG	25°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5942200	3/32	2-7/8	1	3/8
5942300	3/32	3-1/8	1-1/4	3/8
5942400	3/32	3-3/8	1-1/2	3/8
5942500	3/32	3-3/4	2	3/8
5942600	3/32	4-1/4	2-1/2	3/8
5943100	7/64	2-7/8	1	3/8
5943200	7/64	3-3/8	1-1/2	3/8
5943300	7/64	3-3/4	2	3/8
5944200	1/8	2-5/8	3/4	3/8
5944300	1/8	2-7/8	1	3/8
5944400	1/8	3	1-1/8	3/8
5944700	1/8	3-3/8	1-1/2	3/8
5944800	1/8	3-3/4	2	3/8
5944900	1/8	4-1/2	2-1/2	1/2
5945000	1/8	5	3	1/2
5945100	3/16	2-5/8	3/4	3/8

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5945200	3/16	3-1/8	1-1/4	3/8
5945400	3/16	4-1/2	2-1/2	1/2
5945500	3/16	5	3	1/2
5945600	3/16	5-3/8	3-1/4	5/8
5945700	3/16	6-1/8	4	5/8
5946100	1/4	2-1/2	3/4	3/8
5946200	1/4	2-3/4	1	3/8
5946300	1/4	3-1/4	1-1/4	1/2
5946400	1/4	4-1/4	2-1/4	1/2
5946500	1/4	5-1/4	3-1/4	1/2
5946600	1/4	6-1/4	4	3/4
5947100	3/8	3-1/4	1-1/4	1/2
5947200	3/8	4-3/8	2-1/4	5/8
5947300	3/8	5-3/8	3-1/4	5/8
5948100	1/2	3-1/4	1-1/4	1/2
5948200	1/2	4-3/8	2-1/4	5/8

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																		
	P					M			K	N		S		H					
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels					
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
594	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

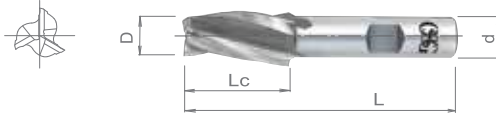




List 595

TPET, 3 Flute, 5° Taper per Side

SPEED FEED P1137	HSS-Co	BR	REG	LONG	EXTRA LONG	25°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5952100	3/32	2-5/8	3/4	3/8
5952200	3/32	2-7/8	1	3/8
5952300	3/32	3	1-1/4	3/8
5952400	3/32	3-5/16	1-1/2	3/8
5952500	3/32	4	2	1/2
5952600	3/32	4-5/8	2-1/2	5/8
5953100	7/64	2-7/8	1	3/8
5953200	7/64	3-5/16	1-1/2	3/8
5953300	7/64	4	2	1/2
5954200	1/8	2-5/8	3/4	3/8
5954300	1/8	2-7/8	1	3/8
5954400	1/8	2-7/8	1-1/8	3/8
5954700	1/8	3-1/4	1-1/2	3/8
5954800	1/8	3-3/4	2	3/8
5954900	1/8	4-1/2	2-1/2	1/2
5955000	1/8	5-1/4	3	3/4

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5955100	3/16	2-9/16	3/4	3/8
5955200	3/16	3-3/8	1-1/4	1/2
5955400	3/16	4-5/8	2-1/2	5/8
5955500	3/16	5-1/4	3	3/4
5955600	3/16	5-1/2	3-1/4	3/4
5955700	3/16	6-1/4	4	3/4
5956100	1/4	2-1/2	3/4	3/8
5956200	1/4	3	1	1/2
5956300	1/4	3-1/4	1-1/4	1/2
5956400	1/4	4-3/8	2-1/4	5/8
5956500	1/4	5-1/2	3-1/4	3/4
5956600	1/4	6-1/4	4	3/4
5957100	3/8	3-3/8	1-1/4	5/8
5957200	3/8	4-1/2	2-1/4	3/4
5957300	3/8	5-1/2	3-1/4	3/4
5958100	1/2	3-1/4	1-1/4	1/2

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
595	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best

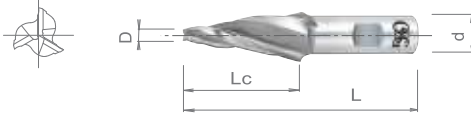




List 596

TPET, 3 Flute, 7° Taper per Side

SPEED FEED P1137	HSS-Co	BR	REG	LONG	25°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5961200	5/64	2-3/4	1	3/8
5962200	3/32	2-3/4	1	3/8
5962300	3/32	3	1-1/4	3/8
5962400	3/32	3-1/2	1-1/2	1/2
5964200	1/8	2-9/16	3/4	3/8
5964300	1/8	2-3/4	1	3/8
5964700	1/8	3-1/2	1-1/2	1/2

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5965200	3/16	3-1/4	1-1/4	1/2
5966100	1/4	2-1/2	3/4	3/8
5966300	1/4	3-1/4	1-1/4	1/2
5966400	1/4	4-1/2	2-1/4	3/4
5967200	3/8	4-1/2	2-1/4	3/4
5968100	1/2	3-3/8	1-1/4	5/8

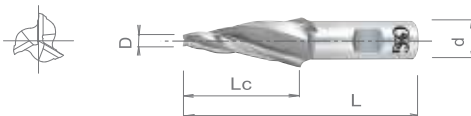


Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

List 597

TPET, 3 Flute, 10° Taper per Side

SPEED FEED P1138	HSS-Co	BR	REG	LONG	25°
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EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5972400	3/32	3-5/8	1-1/2	5/8
5974200	1/8	2-3/4	3/4	1/2
5974500	1/8	3-3/8	1-1/4	5/8

EDP Number	Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	D	L	Lc	d
5976100	1/4	2-3/4	3/4	1/2
5976300	1/4	3-3/8	1-1/4	5/8
5976400	1/4	4-1/2	2-1/4	3/4



Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

Work Material

Chart applies to all list numbers above	P						M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
	1010	1035	1065	4140	4340													
-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

good best





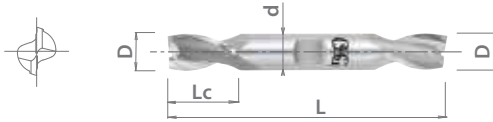
Double End

Cobalt High Speed Steel

List 522

2 Flute, Regular Length

SPEED FEED P1127-1128	HSS-Co	TiN	BR	REG	30°
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EDP Number		Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	TiN	D	L	Lc	d
5220100	5220105	1/8	3-1/16	3/8	3/8
5226000	-	9/64	3-1/8	7/16	3/8
5229100	-	5/32	3-1/8	7/16	3/8
5226100	-	11/64	3-1/8	7/16	3/8
5220200	5220205	3/16	3-1/8	7/16	3/8
5226200	-	13/64	3-1/8	1/2	3/8
5229200	-	7/32	3-1/8	1/2	3/8
5226300	-	15/64	3-1/8	1/2	3/8
5220300	5220305	1/4	3-1/8	1/2	3/8
5226400	-	17/64	3-1/8	9/16	3/8
5229300	-	9/32	3-1/8	9/16	3/8
5226500	-	19/64	3-1/8	9/16	3/8
5220400	5220405	5/16	3-1/8	9/16	3/8
5226600	-	21/64	3-1/8	9/16	3/8
5229400	-	11/32	3-1/8	9/16	3/8
5226700	-	23/64	3-1/8	9/16	3/8
5220500	5220505	3/8	3-1/8	9/16	3/8
5226800	-	25/64	3-3/4	13/16	1/2
5229500	-	13/32	3-3/4	13/16	1/2
5226900	-	27/64	3-3/4	13/16	1/2
5229600	5229605	7/16	3-3/4	13/16	1/2

EDP Number		Mill Dia.	Overall Length	Length of Cut	Shank Dia.
Bright	TiN	D	L	Lc	d
5227000	-	29/64	3-3/4	13/16	1/2
5229700	-	15/32	3-3/4	13/16	1/2
5227100	-	31/64	3-3/4	13/16	1/2
5221100	5221105	1/2	3-3/4	13/16	1/2
5227200	-	17/32	4-1/2	1-1/8	5/8
5229800	-	9/16	4-1/2	1-1/8	5/8
5227300	-	19/32	4-1/2	1-1/8	5/8
5222100	5222105	5/8	4-1/2	1-1/8	5/8
5227400	-	21/32	5	1-5/16	3/4
5229900	-	11/16	5	1-5/16	3/4
5227500	-	23/32	5	1-5/16	3/4
5223100	5223105	3/4	5	1-5/16	3/4
5227600	-	25/32	5-1/2	1-9/16	7/8
5227700	-	13/16	5-1/2	1-9/16	7/8
5227800	-	27/32	5-1/2	1-9/16	7/8
5224100	5224105	7/8	5-1/2	1-9/16	7/8
5228000	-	29/32	5-7/8	1-5/8	1
5228100	-	15/16	5-7/8	1-5/8	1
5228200	-	31/32	5-7/8	1-5/8	1
5225100	5225105	1	5-7/8	1-5/8	1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
522	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

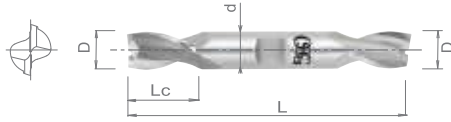
good best



List 582

DDE, 2 Flute, Regular Length

SPEED FEED P1132	HSS-Co	BR	REG	30°
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5827100	1.0	57.1	2.38	4.76
5827200	1.5	57.1	4.76	4.76
5827400	2.0	57.1	5.95	4.76
5827500	2.5	57.1	7.14	4.76
5820100	3.0	77.7	9.52	9.52
5828100	3.5	79.3	11.11	9.52
5820200	4.0	79.3	11.11	9.52
5828200	4.5	79.3	11.11	9.52
5820300	5.0	79.3	12.70	9.52
5828300	5.5	79.3	12.70	9.52
5820400	6.0	79.3	12.70	9.52
5828400	6.5	79.3	12.70	9.52
5820500	7.0	79.3	14.28	9.52
5828500	7.5	79.3	14.28	9.52
5820600	8.0	79.3	14.28	9.52
5828600	8.5	79.3	14.28	9.52
5820700	9.0	79.3	14.28	9.52
5828700	9.5	79.3	14.28	9.52
5820800	10.0	95.2	20.63	12.70
5828800	10.5	95.2	20.63	12.70

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5820900	11.0	95.2	20.63	12.70
5828900	11.5	95.2	20.63	12.70
5821100	12.0	95.2	20.63	12.70
5829100	12.5	95.2	20.63	12.70
5821200	13.0	114.3	28.57	15.87
5829200	13.5	114.3	28.57	15.87
5821300	14.0	114.3	28.57	15.87
5829300	14.5	114.3	28.57	15.87
5821400	15.0	114.3	28.57	15.87
5822100	16.0	127.0	33.33	19.05
5822200	17.0	127.0	33.33	19.05
5822300	18.0	127.0	33.33	19.05
5823100	19.0	127.0	33.33	19.05
5823200	20.0	139.7	39.68	22.22
5823300	21.0	139.7	39.68	22.22
5824100	22.0	139.7	39.68	22.22
5824200	23.0	149.2	41.27	25.40
5825100	24.0	149.2	41.27	25.40
5825200	25.0	149.2	41.27	25.40

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
3/16" diameter shanks have straight shanks.



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC	
582	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





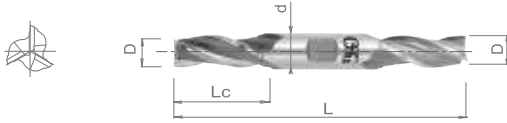
Double End

Cobalt High Speed Steel

List 532

TDE, 3 Flute, Regular Length

SPEED FEED P1134	HSS-Co	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5320100	1/8	3-1/16	3/8	3/8
5320200	3/16	3-1/4	1/2	3/8
5320300	1/4	3-3/8	5/8	3/8
5320400	5/16	3-1/2	3/4	3/8
5320500	3/8	3-1/2	3/4	3/8
5329600	7/16	4-1/8	1	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5321100	1/2	4-1/8	1	1/2
5329800	9/16	5	1-3/8	5/8
5322100	5/8	5	1-3/8	5/8
5323100	3/4	5-5/8	1-5/8	3/4
5324100	7/8	6-1/8	1-7/8	7/8
5325100	1	6-3/8	1-7/8	1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
532	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

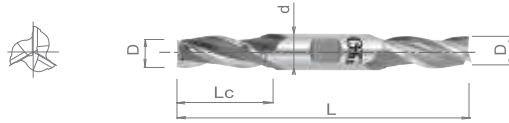
good best



List 542

4 Flute, Regular Length, Center Hole

SPEED FEED P1129-1130	HSS-Co	TiN	BR	REG	30°
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EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiN	D	L	Lc	d
5420100	5420105	1/8	3-1/16	3/8	3/8
5426000	-	9/64	3-1/8	7/16	3/8
5429100	-	5/32	3-1/8	7/16	3/8
5426100	-	11/64	3-1/4	1/2	3/8
5420200	5420205	3/16	3-1/4	1/2	3/8
5426200	-	13/64	3-1/4	9/16	3/8
5429200	-	7/32	3-1/4	9/16	3/8
5426300	-	15/64	3-3/8	5/8	3/8
5420300	5420305	1/4	3-3/8	5/8	3/8
5426400	-	17/64	3-3/8	11/16	3/8
5429300	-	9/32	3-3/8	11/16	3/8
5426500	-	19/64	3-1/2	3/4	3/8
5420400	5420405	5/16	3-1/2	3/4	3/8
5426600	-	21/64	3-1/2	3/4	3/8
5429400	-	11/32	3-1/2	3/4	3/8
5426700	-	23/64	3-1/2	3/4	3/8
5420500	5420505	3/8	3-1/2	3/4	3/8
5426800	-	25/64	4-1/8	1	1/2
5429500	-	13/32	4-1/8	1	1/2
5426900	-	27/64	4-1/8	1	1/2

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	TiN	D	L	Lc	d
5429600	5429605	7/16	4-1/8	1	1/2
5427000	-	29/64	4-1/8	1	1/2
5429700	-	15/32	4-1/8	1	1/2
5427100	-	31/64	4-1/8	1	1/2
5421100	5421105	1/2	4-1/8	1	1/2
5427200	-	17/32	5	1-3/8	5/8
5429800	-	9/16	5	1-3/8	5/8
5427300	-	19/32	5	1-3/8	5/8
5422100	5422105	5/8	5	1-3/8	5/8
5427400	-	21/32	5-5/8	1-5/8	3/4
5429900	-	11/16	5-5/8	1-5/8	3/4
5427500	-	23/32	5-5/8	1-5/8	3/4
5423100	5423105	3/4	5-5/8	1-5/8	3/4
5427600	-	25/32	6-1/8	1-7/8	7/8
5428100	-	13/16	6-1/8	1-7/8	7/8
5424100	5424105	7/8	6-1/8	1-7/8	7/8
5428000	-	29/32	6-3/8	1-7/8	1
5428200	-	15/16	6-3/8	1-7/8	1
5428300	-	31/32	6-3/8	1-7/8	1
5425100	5425105	1	6-3/8	1-7/8	1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List No.	Work Material																	
	P					M			K	N		S		H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC
542	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





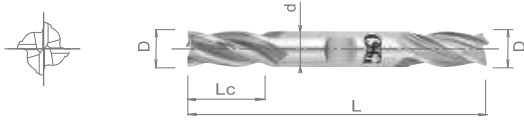
Double End

Cobalt High Speed Steel

List 543

4 Flute, Regular Length

SPEED FEED P1129-1130	HSS-Co	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5430100	1/8	3-1/16	3/8	3/8
5430200	3/16	3-1/4	1/2	3/8
5430300	1/4	3-3/8	5/8	3/8
5430400	5/16	3-1/2	3/4	3/8
5430500	3/8	3-1/2	3/4	3/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5431100	1/2	4-1/8	1	1/2
5432100	5/8	5	1-3/8	5/8
5433100	3/4	5-5/8	1-5/8	3/4
5434100	7/8	6-1/8	1-7/8	7/8
5435100	1	6-3/8	1-7/8	1

Packed: 1 pc.

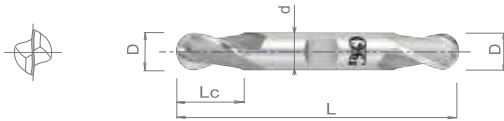
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 523

DDEB, 2 Flute, Regular Length, Ball End

SPEED FEED P1131	HSS-Co	BR		REG	
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EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5230100	1/8	3-1/16	3/8	3/8
5230200	3/16	3-1/8	7/16	3/8
5230300	1/4	3-1/8	1/2	3/8
5230400	5/16	3-1/8	9/16	3/8
5230500	3/8	3-1/8	9/16	3/8

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5239600	7/16	3-3/4	13/16	1/2
5231100	1/2	3-3/4	13/16	1/2
5232100	5/8	4-1/2	1-1/8	5/8
5233100	3/4	5	1-5/16	3/4
5235100	1	5-7/8	1-5/8	1

Packed: 1 pc.

EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

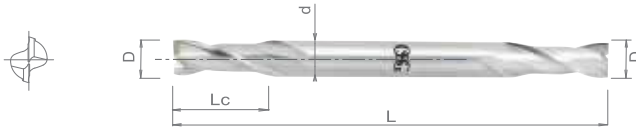
List No.	P																M			K	N		S		H			
	Carbon Steels					Alloy Steels 4140 4340	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels												
	Low	Med.	High	300	400			17-4 PH	6061 7075	Casting		Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC											
	1010 1018	1035 1045	1065																									
543	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									
523	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									

good best



List 562

M-DDE, 2 Flute, Stub Length, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5627000	1/32	2	3/64	3/16
5627100	3/64	2	1/16	3/16
5627200	1/16	2	3/32	3/16
5627300	5/64	2	1/8	3/16
5627400	3/32	2	9/64	3/16
5627500	7/64	2	5/32	3/16

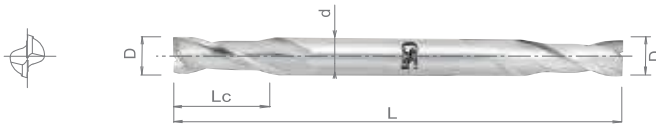
EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5627600	1/8	2	3/16	3/16
5627700	9/64	2	7/32	3/16
5627800	5/32	2	15/64	3/16
5627900	11/64	2	1/4	3/16
5628000	3/16	2	9/32	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 563

M-DDE, 2 Flute, Regular Length, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5637000	1/32	2-1/4	3/32	3/16
5637100	3/64	2-1/4	9/64	3/16
5637200	1/16	2-1/4	3/16	3/16
5637300	5/64	2-1/4	15/64	3/16
5637400	3/32	2-1/4	9/32	3/16
5637500	7/64	2-1/4	21/64	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5637600	1/8	2-1/4	3/8	3/16
5637700	9/64	2-1/4	13/32	3/16
5637800	5/32	2-1/4	7/16	3/16
5637900	11/64	2-1/4	1/2	3/16
5638000	3/16	2-1/4	1/2	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010	1035	1065	4140	4340												
-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



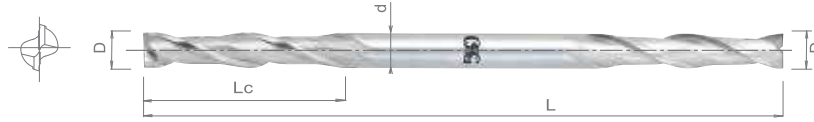


Double End

Cobalt High Speed Steel

List 564

M-DDEL, 2 Flute, Long Length, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5647200	1/16	2-1/2	7/32	3/16
5647400	3/32	2-5/8	9/32	3/16
5647600	1/8	3-1/8	3/4	3/16

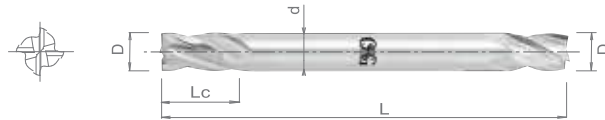
EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5647800	5/32	3-1/4	7/8	3/16
5648000	3/16	3-3/8	1	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 566

M-FDE, 4 Flute, Stub Length, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5667200	1/16	2	3/32	3/16
5667400	3/32	2	9/64	3/16
5667600	1/8	2	3/16	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5667800	5/32	2	15/64	3/16
5668000	3/16	2	9/32	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

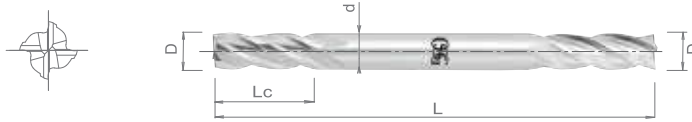
List No.	P					M			K Cast Iron	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels				Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
564	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
566	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



List 567

M-FDE, 4 Flute, Regular Length, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5677200	1/16	2-1/4	0.177	3/16
5677400	3/32	2-1/4	0.267	3/16
5677600	1/8	2-1/4	0.362	3/16

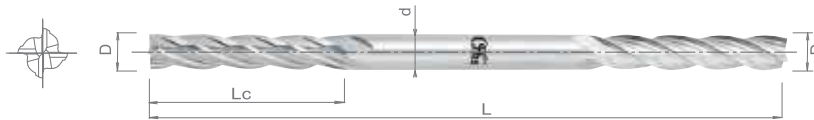
EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5677800	5/32	2-1/4	0.417	3/16
5678000	3/16	2-1/4	0.480	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



List 568

M-FDEL, 4 Flute, Long Length, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5687200	1/16	2-1/2	0.220	3/16
5687400	3/32	2-5/8	0.279	3/16
5687600	1/8	3-1/8	0.732	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5687800	5/32	3-1/4	0.854	3/16
5688000	3/16	3-3/8	0.980	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material																	
Chart applies to all list numbers above	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
	1010	1035	1065	4140	4340												
-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





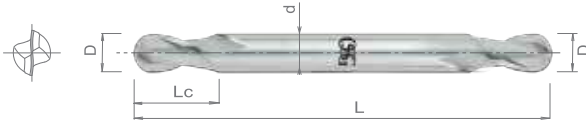
Double End

Cobalt High Speed Steel

List 570



M-DDEB, 2 Flute, Stub Length, Ball End, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5707200	1/16	2	3/32	3/16
5707400	3/32	2	9/64	3/16
5707600	1/8	2	3/16	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5707800	5/32	2	15/64	3/16
5708000	3/16	2	9/32	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

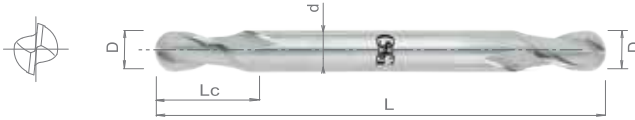
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
570	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best



List 571

M-DDEB, 2 Flute, Regular Length, Ball End, Miniature



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5717200	1/16	2-1/4	3/16	3/16
5717400	3/32	2-1/4	9/32	3/16
5717600	1/8	2-1/4	3/8	3/16

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5717800	5/32	2-1/4	7/16	3/16
5718000	3/16	2-1/4	1/2	3/16

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.



Work Material

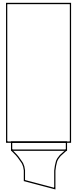
List No.	P					M			K	N		S	H				
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting			Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC
571	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

good best





Shapes & SCTI Identification



Series SA
Cylindrical



Series SC
Cylindrical Ball
Nose



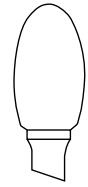
Series SF
Round Nose Tree



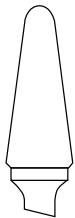
Series SG
Pointed Tree



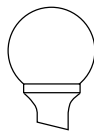
Series SM
Pointed Cone



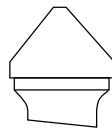
Series SE
Egg Shape



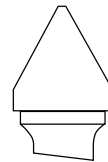
Series SL
14 Degree
Included Angle



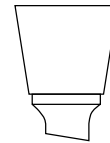
Series SD
Ball Shape



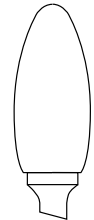
Series SK
90 Degree
Included Angle



Series SJ
60 Degree
Included Angle



Series SN
Inverted Taper

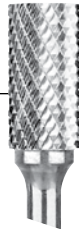


Series SH
Flame Shape

Styles of Cut

Medium Tough Cut

Engineered specifically for tough applications. Tough cut insures faster, splinter-free cutting in weld and alloy castings with increased tool life.



Medium Right Hand Spiral

General purpose - Recommended for stock removal and a smooth finish.



Aluminum Cut

Designed for use on aluminum, non-ferrous metals, soft steel, reinforced plastics, and other soft materials.



Recommended Cutting Speeds for Carbide Burs

Diameter	RPM	Maximum RPM
1/16"	55,000 - 85,000	90,000
3/32"	50,000 - 60,000	85,000
1/8"	35,000 - 65,000	80,000
3/16"	30,000 - 55,000	75,000
1/4"	25,000 - 50,000	70,000
5/16"	18,000 - 38,000	65,000
3/8"	17,000 - 38,000	63,000
7/16"	13,000 - 37,000	55,000
1/2"	14,000 - 36,000	50,000
5/8"	11,000 - 23,000	40,000
3/4"	8,000 - 19,000	30,000
1"	7,000 - 18,000	25,000

NOTE: Use lower speeds when cutting harder ferrous materials and higher speeds for softer non-ferrous materials.


Coarse and Fine Cuts are available on request.



1/4" Shank


List 801 — Cylindrical

Inch

Medium Tough Cut	EDP Number	End Cut Suffix	Style	Dia.	Flute Length
	801-1250	-EC	SA-11*	1/8	1/2
	801-1875	-EC	SA-14*	3/16	5/8
	801-2500	-EC	SA-1*	1/4	5/8
	801-3125	-EC	SA-2	5/16	3/4
	801-3750	-EC	SA-3	3/8	3/4
	801-4375	-EC	SA-4	7/16	1
	801-5001	-EC	SA-5F	1/2	1/2
	801-5000	-EC	SA-5	1/2	1
	801-6250	-EC	SA-6	5/8	1
	801-7500	-EC	SA-16	3/4	3/4
	801-7501	-EC	SA-7	3/4	1
	801-1000	-EC	SA-9	1	1


6mm Shank

Metric


Medium Tough Cut	EDP Number	End Cut Suffix	Style	Dia.	Flute Length
	801-1250-60	-EC	SA-11*	3	12
	801-1875-60	-EC	SA-14*	5	16
	801-2362	-EC	SA-1*	6	16
	801-3125-60	-EC	SA-2	8	19
	801-3750-60	-EC	SA-3	9	19
	801-4375-60	-EC	SA-4	11	25
	801-5001-60	-EC	SA-5F	12	12
	801-5000-60	-EC	SA-5	12	25
	801-6250-60	-EC	SA-6	16	25
	801-7500-60	-EC	SA-16	19	19
	801-7501-60	-EC	SA-7	19	25
	801-1000-60	-EC	SA-9	25	25

List 802 — Cylindrical Ball End

Inch


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	802-1250	SC-11*	1/8	1/2
	802-1875	SC-14*	3/16	5/8
	802-2500	SC-1*	1/4	5/8
	802-3125	SC-2	5/16	3/4
	802-3750	SC-3	3/8	3/4
	802-4375	SC-4	7/16	1
	802-5000	SC-5	1/2	1
	802-6250	SC-6	5/8	1
	802-7500	SC-7	3/4	1

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	802-1250-60	SC-11*	3	12
	802-1875-60	SC-14*	5	16
	802-2362	SC-1*	6	16
	802-3125-60	SC-2	8	19
	802-3750-60	SC-3	9	19
	802-4375-60	SC-4	11	25
	802-5000-60	SC-5	12	25
	802-6250-60	SC-6	16	25
	802-7500-60	SC-7	19	25

List 803 — Round Nose Tree

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	803-2500	SF-1*	1/4	5/8
	803-3750	SF-3	3/8	3/4
	803-5001	SF-13	1/2	3/4
	803-5000	SF-5	1/2	1
	803-6250	SF-6	5/8	1
	803-7500	SF-7	3/4	1
	803-7501	SF-14	3/4	1-1/4
	803-7502	SF-15	3/4	1-1/2

Metric

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	803-2362	SF-1*	6	16
	803-3750-60	SF-3	9	19
	803-5001-60	SF-13	12	19
	803-5000-60	SF-5	12	25
	803-6250-60	SF-6	16	25
	803-7500-60	SF-7	19	25
	803-7501-60	SF-14	19	31
	803-7502-60	SF-15	19	38

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).






1/4" Shank


List 901 — Cylindrical

Inch

Medium Right Hand Spiral	EDP Number	End Cut Suffix	Style	Dia.	Flute Length
	901-1250	-EC	SA-11*	1/8	1/2
	901-1875	-EC	SA-14*	3/16	5/8
	901-2500	-EC	SA-1*	1/4	5/8
	901-3125	-EC	SA-2	5/16	3/4
	901-3750	-EC	SA-3	3/8	3/4
	901-4375	-EC	SA-4	7/16	1
	901-5001	-	SA-5F	1/2	1/2
	901-5000	-EC	SA-5	1/2	1
	901-6250	-EC	SA-6	5/8	1
	901-7500	-EC	SA-16	3/4	3/4
	901-7501	-EC	SA-7	3/4	1
	901-1000	-EC	SA-9	1	1


6mm Shank

Metric


Medium Right Hand Spiral	EDP Number	End Cut Suffix	Style	Dia.	Flute Length
	901-1250-60	-EC	SA-11*	3	12
	901-1875-60	-EC	SA-14*	5	16
	901-2362	-EC	SA-1*	6	16
	901-3125-60	-EC	SA-2	8	19
	901-3750-60	-EC	SA-3	9	19
	901-4375-60	-EC	SA-4	11	25
	901-5001-60	-EC	SA-5F	12	12
	901-5000-60	-EC	SA-5	12	25
	901-6250-60	-EC	SA-6	16	25
	901-7500-60	-EC	SA-16	19	19
	901-7501-60	-EC	SA-7	19	25
	901-1000-60	-EC	SA-9	25	25

List 902 — Cylindrical Ball End

Inch


Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	902-1250	SC-11*	1/8	1/2
	902-1875	SC-14*	3/16	5/8
	902-2500	SC-1*	1/4	5/8
	902-3125	SC-2	5/16	3/4
	902-3750	SC-3	3/8	3/4
	902-4375	SC-4	7/16	1
	902-5000	SC-5	1/2	1
	902-6250	SC-6	5/8	1
	902-7500	SC-7	3/4	1

Metric


Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	902-1250-60	SC-11*	3	12
	902-1875-60	SC-14*	5	16
	902-2362	SC-1*	6	16
	902-3125-60	SC-2	8	19
	902-3750-60	SC-3	9	19
	902-4375-60	SC-4	11	25
	902-5000-60	SC-5	12	25
	902-6250-60	SC-6	16	25
	902-7500-60	SC-7	19	25

List 903 — Round Nose Tree

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	903-2500	SF-1*	1/4	5/8
	903-3750	SF-3	3/8	3/4
	903-5001	SF-13	1/2	3/4
	903-5000	SF-5	1/2	1
	903-6250	SF-6	5/8	1
	903-7500	SF-7	3/4	1
	903-7501	SF-14	3/4	1-1/4
	903-7502	SF-15	3/4	1-1/2

Metric

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	903-2362	SF-1*	6	16
	903-3750-60	SF-3	9	19
	903-5001-60	SF-13	12	19
	903-5000-60	SF-5	12	25
	903-6250-60	SF-6	16	25
	903-7500-60	SF-7	19	25
	903-7501-60	SF-14	19	32
	903-7502-60	SF-15	19	38

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).


*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).



1/4" Shank


List 804 — Pointed Tree

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	804-2500	SG-1*	1/4	5/8
	804-3125	SG-2	5/16	3/4
	804-3750	SG-3	3/8	3/4
	804-5001	SG-13	1/2	3/4
	804-5000	SG-5	1/2	1
	804-6250	SG-6	5/8	1
	804-7500	SG-7	3/4	1
	804-7501	SG-15	3/4	1-1/2


6mm Shank

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	804-2362	SG-1*	6	16
	804-3125-60	SG-2	8	19
	804-3750-60	SG-3	9	19
	804-5001-60	SG-13	12	19
	804-5000-60	SG-5	12	25
	804-6250-60	SG-6	16	25
	804-7500-60	SG-7	19	25
	804-7501-60	SG-15	19	38

List 805 — Pointed Cone

Inch


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	805-2500	SM-1*	1/4	1/2	22
	805-2501	SM-2*	1/4	3/4	14
	805-2502	SM-3*	1/4	1	10
	805-3750	SM-4	3/8	5/8	28
	805-5000	SM-5	1/2	7/8	28
	805-6250	SM-6	5/8	1	31

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	805-2362	SM-1*	6	12	22
	805-2363	SM-2*	6	19	14
	805-2364	SM-3*	6	25	10
	805-3750-60	SM-4*	9	16	28
	805-5000-60	SM-5	12	22	28
	805-6250-60	SM-6	16	25	31

List 806 — Egg Shape

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	806-2500	SE-1*	1/4	3/8
	806-3750	SE-3	3/8	5/8
	806-5000	SE-5	1/2	7/8
	806-6250	SE-6	5/8	1
	806-7500	SE-7	3/4	1

Metric

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	806-2362	SE-1*	6	9
	806-3750-60	SE-3	9	16
	806-5000-60	SE-5	12	22
	806-6250-60	SE-6	16	25
	806-7500-60	SE-7	19	25

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).





1/4" Shank

List 904 — Pointed Tree

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	904-2500	SG-1*	1/4	5/8
	904-3125	SG-2	5/16	3/4
	904-3750	SG-3	3/8	3/4
	904-5001	SG-13	1/2	3/4
	904-5000	SG-5	1/2	1
	904-6250	SG-6	5/8	1
	904-7500	SG-7	3/4	1
	904-7501	SG-15	3/4	1-1/2

6mm Shank

Metric

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	904-2362	SG-1*	6	16
	904-3125-60	SG-2	8	19
	904-3750-60	SG-3	9	19
	904-5001-60	SG-13	12	19
	904-5000-60	SG-5	12	25
	904-6250-60	SG-6	16	25
	904-7500-60	SG-7	19	25
	904-7501-60	SG-15	19	38

List 905 — Pointed Cone

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	905-2500	SM-1*	1/4	1/2	22
	905-2501	SM-2*	1/4	3/4	14
	905-2502	SM-3*	1/4	1	10
	905-3750	SM-4	3/8	5/8	28
	905-5000	SM-5	1/2	7/8	28
	905-6250	SM-6	5/8	1	31

Metric

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	905-2362	SM-1*	6	12	22
	905-2363	SM-2*	6	19	14
	905-2364	SM-3*	6	25	10
	905-3750-60	SM-4	9	16	28
	905-5000-60	SM-5	12	22	28
	905-6250-60	SM-6	16	25	31

List 906 — Egg Shape

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	906-2500	SE-1*	1/4	3/8
	906-3750	SE-3	3/8	5/8
	906-5000	SE-5	1/2	7/8
	906-6250	SE-6	5/8	1
	906-7500	SE-7	3/4	1

Metric

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	906-2362	SE-1*	6	9
	906-3750-60	SE-3	16	16
	906-5000-60	SE-5	22	22
	906-6250-60	SE-6	25	25
	906-7500-60	SE-7	25	25

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).


*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).



1/4" Shank


List 807 — 14° Included Angle

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	807-2500	SL-1*	1/4	5/8	14
	807-3125	SL-2	5/16	7/8	14
	807-3750	SL-3	3/8	1-1/16	14
	807-5000	SL-4	1/2	1-1/8	14
	807-6250	SL-5	5/8	1-5/16	14
	807-7500	SL-7	3/4	1-1/2	14


6mm Shank

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	807-2362	SL-1*	6	16	14
	807-3125-60	SL-2	8	22	14
	807-3750-60	SL-3	9	26	14
	807-5000-60	SL-4	12	28	14
	807-6250-60	SL-5	16	33	14
	807-7500-60	SL-7	19	38	14

List 808 — Ball Shape

Inch


Medium Tough Cut	EDP Number	Style	Diameter
	808-1250	SD-11*	1/8
	808-1875	SD-14*	3/16
	808-2500	SD-1*	1/4
	808-3125	SD-2	5/16
	808-3750	SD-3	3/8
	808-5000	SD-5	1/2
	808-6250	SD-6	5/8
	808-7500	SD-7	3/4
	808-1000	SD-9	1

Metric

Medium Tough Cut	EDP Number	Style	Diameter
	808-1250-60	SD-11*	3
	808-1875-60	SD-14*	5
	808-2362	SD-1*	6
	808-3125-60	SD-2	8
	808-3750-60	SD-3	9
	808-5000-60	SD-5	12
	808-6250-60	SD-6	16
	808-7500-60	SD-7	19
	808-1000-60	SD-9	25


List 849 — 90° Cone

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	849-2500	SK-1*	1/4	90	22
	849-3750	SK-3	3/8	90	14
	849-5000	SK-5	1/2	90	10
	849-6250	SK-6	5/8	90	28
	849-7500	SK-7	3/4	90	28
	849-1000	SK-9	1	90	31

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

Metric

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	849-2362	SK-1*	6	90	22
	849-3750-60	SK-3	9	90	14
	849-5000-60	SK-5	12	90	10
	849-6250-60	SK-6	16	90	28
	849-7500-60	SK-7	19	90	28
	849-1000-60	SK-9	25	90	31

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).






1/4" Shank


List 907 — 14° Included Angle

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	907-2500	SL-1*	1/4	5/8	14
	907-3125	SL-2	5/16	7/8	14
	907-3750	SL-3	3/8	1-1/16	14
	907-5000	SL-4	1/2	1-1/8	14
	907-6250	SL-5	5/8	1-5/16	14
	907-7500	SL-7	3/4	1-1/2	14


6mm Shank

Metric


Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	907-2362	SL-1*	6	16	14
	907-3125-60	SL-2	8	22	14
	907-3750-60	SL-3	9	26	14
	907-5000-60	SL-4	12	28	14
	907-6250-60	SL-5	16	33	14
	907-7500-60	SL-7	19	38	14

List 908 — Ball Shape

Inch


Medium Right Hand Spiral	EDP Number	Style	Diameter
	908-1250	SD-11*	1/8
	908-1875	SD-14*	3/16
	908-2500	SD-1*	1/4
	908-3125	SD-2	5/16
	908-3750	SD-3	3/8
	908-5000	SD-5	1/2
	908-6250	SD-6	5/8
	908-7500	SD-7	3/4
	908-1000	SD-9	1

Metric


Medium Right Hand Spiral	EDP Number	Style	Diameter
	908-1250-60	SD-11*	3
	908-1875-60	SD-14*	5
	908-2362	SD-1*	6
	908-3125-60	SD-2	8
	908-3750-60	SD-3	9
	908-5000-60	SD-5	12
	908-6250-60	SD-6	16
	908-7500-60	SD-7	19
	908-1000-60	SD-9	25

List 949 — 90° Cone

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Incl. Ang. Deg.
	949-2500	SK-1*	1/4	90
	949-3750	SK-3	3/8	90
	949-5000	SK-5	1/2	90
	949-6250	SK-6	5/8	90
	949-7500	SK-7	3/4	90
	949-1000	SK-9	1	90

Metric

Medium Right Hand Spiral	EDP Number	Style	Dia.	Incl. Ang. Deg.
	949-2362	SK-1*	6	90
	949-3750-60	SK-3	9	90
	949-5000-60	SK-5	12	90
	949-6250-60	SK-6	16	90
	949-7500-60	SK-7	19	90
	949-1000-60	SK-9	25	90

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).




1/4" Shank


6mm Shank

List 850 — 60° Cone

Inch


Medium Tough Cut	EDP Number	Style	Dia.	Incl. Ang. Deg.
	850-2500	SJ-1*	1/4	60
	850-3750	SJ-3	3/8	60
	850-5000	SJ-5	1/2	60
	850-6250	SJ-6	5/8	60
	850-7500	SJ-7	3/4	60
	850-1000	SJ-9	1	60

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Incl. Ang. Deg.
	850-2362	SJ-1*	6	60
	850-3750-60	SJ-3	9	60
	850-5000-60	SJ-5	12	60
	850-6250-60	SJ-6	16	60
	850-7500-60	SJ-7	19	60
	850-1000-60	SJ-9	25	60

List 851 — Flame Shape

Inch


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	851-3125	SH-2	5/16	3/4
	851-5000	SH-5	1/2	1-1/4
	851-6250	SH-6	5/8	1-7/16
	851-7500	SH-7	3/4	1-5/8

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	851-3125-60	SH-2	8	19
	851-5000-60	SH-5	12	31
	851-6250-60	SH-6	16	36
	851-7500-60	SH-7	19	41

List 852 — Inverted Taper

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	852-2500	SN-1*	1/4	5/16	10
	852-3750	SN-2	3/8	3/8	13
	852-5000	SN-4	1/2	1/2	28
	852-6250	SN-6	5/8	3/4	18
	852-7500	SN-7	3/4	5/8	30

Metric

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	852-2362	SN-1*	6	8	10
	852-3750-60	SN-2	9	9	13
	852-5000-60	SN-4	12	12	28
	852-6250-60	SN-6	16	19	18
	852-7500-60	SN-7	19	16	30

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).






1/4" Shank


List 950 — 60° Cone

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Incl. Ang. Deg.
	950-2500	SJ-1*	1/4	60
	950-3750	SJ-3	3/8	60
	950-5000	SJ-5	1/2	60
	950-6250	SJ-6	5/8	60
	950-7500	SJ-7	3/4	60
	950-1000	SJ-9	1	60


6mm Shank

Metric


Medium Right Hand Spiral	EDP Number	Style	Dia.	Incl. Ang. Deg.
	950-2362	SJ-1*	6	60
	950-3750-60	SJ-3	9	60
	950-5000-60	SJ-5	12	60
	950-6250-60	SJ-6	16	60
	950-7500-60	SJ-7	19	60
	950-1000-60	SJ-9	25	60

List 951 — Flame Shape

Inch


Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	951-3125	SH-2	5/16	3/4
	951-5000	SH-5	1/2	1-1/4
	951-6250	SH-6	5/8	1-7/16
	951-7500	SH-7	3/4	1-5/8

Metric


Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length
	951-3125-60	SH-2	8	19
	951-5000-60	SH-5	12	31
	951-6250-60	SH-6	16	36
	951-7500-60	SH-7	19	41

List 952 — Inverted Taper

Inch

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	952-2500	SN-1*	1/4	5/16	10
	952-3750	SN-2	3/8	3/8	13
	952-5000	SN-4	1/2	1/2	28
	952-6250	SN-6	5/8	3/4	18
	952-7500	SN-7	3/4	5/8	30

Metric

Medium Right Hand Spiral	EDP Number	Style	Dia.	Flute Length	Incl. Ang. Deg.
	952-2362	SN-1*	6	8	10
	952-3750-60	SN-2	9	9	13
	952-5000-60	SN-4	12	12	28
	952-6250-60	SN-6	16	19	18
	952-7500-60	SN-7	19	16	30

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).


*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).



1/4" Shank 6" Long Steel Shank


List 861 — Cylindrical

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	861-3750	SA-3L6	3/8	3/4
	861-5000	SA-5L6	1/2	1


6mm Shank 152mm Long Steel Shank

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	861-3750-60	SA-3L6	9	19
	861-5000-60	SA-5L6	12	25

List 862 — Cylindrical Ball End

Inch


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	862-3750	SC-3L6	3/8	3/4
	862-5000	SC-5L6	1/2	1

Metric


Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	862-3750-60	SC-3L6	9	19
	862-5000-60	SC-5L6	12	25

List 863 — Round Nose Tree

Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	863-3750	SF-3L6	3/8	3/4
	863-5000	SF-5L6	1/2	1

Metric

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	863-3750-60	SF-3L6	9	19
	863-5000-60	SF-5L6	12	25






1/4" Shank 6" Long Steel Shank


List 961 — Cylindrical

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	961-3750	SA-3L6	3/8	3/4
	961-5000	SA-5L6	1/2	1


6mm Shank 152mm Long Steel Shank

Metric


Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	961-3750-60	SA-3L6	9	19
	961-5000-60	SA-5L6	12	25

List 962 — Cylindrical Ball End

Inch


Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	962-3750	SC-3L6	3/8	3/4
	962-5000	SC-5L6	1/2	1

Metric


Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	962-3750-60	SC-3L6	9	19
	962-5000-60	SC-5L6	12	25

List 963 — Round Nose Tree

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	963-3750	SF-3L6	3/8	3/4
	963-5000	SF-5L6	1/2	1

Metric


Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	963-3750-60	SF-3L6	9	19
	963-5000-60	SF-5L6	12	25



1/4" Shank 6" Long Steel Shank


List 867 — 14° Included Angle

Inch

Medium Tough Cut	EDP Number	Style	Diameter	Flute Length
	867-3750	SL-3L6	3/8	1-1/16
	867-5000	SL-5L6	1/2	1-1/8


6mm Shank 152mm Long Steel Shank

Metric


Medium Tough Cut	EDP Number	Style	Diameter	Flute Length
	867-3750-60	SL-3L6	9	26
	867-5000-60	SL-5L6	12	28

List 868 — Ball Shape

Inch

Medium Tough Cut	EDP Number	Style	Diameter
	868-3750	SD-3L6	3/8
	868-5000	SD-5L6	1/2

Metric

Medium Tough Cut	EDP Number	Style	Diameter
	868-3750-60	SD-3L6	9
	868-5000-60	SD-5L6	12






1/4" Shank 6" Long Steel Shank


6mm Shank 152mm Long Steel Shank

List 967 — 14° Included Angle

Inch


Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	967-3750	SL-3L6	3/8	1-1/16
	967-5000	SL-5L6	1/2	1-1/8

Metric


Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	967-3750-60	SL-3L6	9	26
	967-5000-60	SL-5L6	12	28

List 968 — Ball Shape

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter
	968-3750	SD-3L6	3/8
	968-5000	SD-5L6	1/2

Metric


Medium Right Hand Spiral	EDP Number	Style	Diameter
	968-3750-60	SD-3L6	9
	968-5000-60	SD-5L6	12



1/4" Shank - for Aluminum


List 881 — Cylindrical

Inch

Aluminium Cut	EDP Number	Style	Diameter	Flute Length
	881-2500	SA-1A*	1/4	5/8
	881-3750	SA-3A	3/8	3/4
	881-5000	SA-5A	1/2	1
	881-6250	SA-6A	5/8	1
	881-7500	SA-7A	3/4	1


6mm Shank

Metric


Aluminium Cut	EDP Number	Style	Diameter	Flute Length
	881-2362	SA-1MA*	6	16
	881-3125-60	SA-2MA	8	19
	881-3750-60	SA-3MA	9	19
	881-5000-60	SA-5MA	12	25
	881-6250-60	SA-6MA	16	25
	881-7500-60	SA-7MA	19	25

List 882 — Cylindrical Ball End

Inch


Aluminium Cut	EDP Number	Style	Diameter	Flute Length
	882-2500	SC-1A*	1/4	5/8
	882-3750	SC-3A	3/8	3/4
	882-5000	SC-5A	1/2	1
	882-6250	SC-6A	5/8	1
	882-7500	SC-7A	3/4	1

Metric


Aluminium Cut	EDP Number	Style	Diameter	Flute Length
	882-2362	SC-1MA	6	19
	882-3750-60	SC-3MA	9	19
	882-5000-60	SC-5MA	12	25
	882-6250-60	SC-6MA	16	25
	882-7500-60	SC-7MA	19	25

List 883 — Round Nose Tree

Inch

Aluminium Cut	EDP Number	Style	Diameter	Flute Length
	883-2500	SF-1A*	1/4	5/8
	883-3750	SF-3A	3/8	3/4
	883-5000	SF-5A	1/2	1
	883-6250	SF-6A	5/8	1
	883-7500	SF-14A	3/4	1-1/4

Metric

Aluminium Cut	EDP Number	Style	Diameter	Flute Length
	883-2362	SF-1MA	6	16
	883-3750-60	SF-3MA	9	19
	883-5000-60	SF-5MA	12	25
	883-6250-60	SF-6MA	16	25
	883-7500-60	SF-14MA	19	32

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).



Aluminum Cut Burs are designed for use on:

- Aluminum
- Non-ferrous metals
- Soft Steel
- Reinforced plastics
- Other soft materials

Also provides excellent work finish with minimum loading when cutting soft, sticky materials.




1/4" Shank - for Aluminum


6mm Shank

List 885 — Flame Shape

Inch


Aluminium Cut	EDP Number	Style	Dia.	Flute Length
	885-5000	SH-5A	1/2	1-1/4
	885-6250	SH-6A	5/8	1-7/16
	885-7500	SH-7A	3/4	1-5/8

Metric


Aluminium Cut	EDP Number	Style	Dia.	Flute Length
	885-5000-60	SH-5MA	12	32
	885-6250-60	SH-6MA	16	37
	885-7500-60	SH-7MA	19	41

List 886 — Egg Shape

Inch


Aluminium Cut	EDP Number	Style	Dia.	Flute Length
	886-3750	SE-3A	3/8	5/8
	886-5000	SE-5A	1/2	7/8
	886-6250	SE-6A	5/8	1
	886-7500	SE-7A	3/4	1

Metric


Aluminium Cut	EDP Number	Style	Dia.	Flute Length
	886-3750-60	SE-3MA	9	16
	886-5000-60	SE-5MA	12	22
	886-6250-60	SE-6MA	16	25
	886-7500-60	SE-7MA	19	25

List 887 — 14° Included Angle

Inch


Aluminium Cut	EDP Number	Style	Dia.	Flute Length
	887-3750	SL-3A	3/8	1-1/16
	887-5000	SL-5A	1/2	1-1/8
	887-6250	SL-6A	5/8	1-5/16
	887-7500	SL-7A	3/4	1-1/2

Metric


Aluminium Cut	EDP Number	Style	Dia.	Flute Length
	887-3750-60	SL-3MA	9	27
	887-5000-60	SL-4MA	12	29
	887-6250-60	SL-5MA	16	33
	887-7500-60	SL-7MA	19	38

List 888 — Ball Shape

Inch

Aluminium Cut	EDP Number	Style	Dia.
	888-2500	SD-1A*	1/4
	888-3750	SD-3A	3/8
	888-5000	SD-5A	1/2
	888-6250	SD-6A	5/8

Metric

Aluminium Cut	EDP Number	Style	Dia.
	888-2362	SD-1MA*	6
	888-3125-60	SD-2MA	8
	888-3750-60	SD-3MA	9
	888-5000-60	SD-5MA	12
	888-6250-60	SD-6MA	16

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

*Indicates 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).





1/8" Shank Diameter — 1-1/2" Overall Length

List 800 — Inch Sizes, Tough Cut



Style: SA-42
Size: 3/32 x 7/16
EDP Number: 800-8001



Style: SA-43
Size: 1/8 x 9/16
800-8002



Style: SB-43
Size: 1/8 x 9/16
800-8003



Style: SC-42
Size: 1/8 x 9/16
800-8004



Style: SG-44
Size: 1/8 x 1/2
800-8005



Style: SF-42
Size: 1/8 x 1/2
EDP Number: 800-8006



Style: SC-41
Size: 3/32 x 7/16
800-8007



Style: SA-41
Size: 1/16 x 1/4
800-8008



Style: SE-41
Size: 1/8 x 7/32
800-8010



Style: SM-41
Size: 1/8 x 11/32
Inc. Taper Deg.: 12
EDP Number: 800-8011



Style: SM-42
Size: 1/8 x 7/16
14
800-8012



Style: SM-43
Size: 1/8 x 5/8
7
800-8013



Style: SN-42
Size: 1/8 x 3/16
10 INVERTED
900-9014



Style: SJ-42
Size: 1/8 x 3/32
60
800-8015



Style: SK-42
Size: 1/8 x 1/16
90
EDP Number: 800-8016



Style: SL-42
Size: 1/8 x 1/2
8
800-8017



Style: SD-41
Size: 3/32
800-8018



Style: SD-42
Size: 1/8
800-8019



Style: SH-41
Size: 1/8 x 1/4
800-8020



3mm Shank Diameter — 38mm Overall Length



List 800 — Metric Sizes, Tough Cut



Style: SA-42
Size: 2.38 x 11
EDP Number: 800-8001-30



Style: SA-43
Size: 3 x 14
EDP Number: 800-8002-30



Style: SB-43
Size: 3 x 14
EDP Number: 800-8003-30



Style: SC-42
Size: 3 x 14
EDP Number: 800-8004-30



Style: SG-44
Size: 3 x 12
EDP Number: 800-8005-30



Style: SF-42
Size: 3 x 12
EDP Number: 800-8006-30



Style: SC-41
Size: 2.38 x 14
EDP Number: 800-8007-30



Style: SA-41
Size: 1.59 x 6
EDP Number: 800-8008-30



Style: SB-ECO
Size: 3
EDP Number: 800-8009-30



Style: SE-41
Size: 3 x 5.5
EDP Number: 800-8010-30



Style: SM-41
Size: 3 x 8
Inc. Taper Deg.: 12
EDP Number: 800-8011-30



Style: SM-42
Size: 3 x 11
Inc. Taper Deg.: 14
EDP Number: 800-8012-30



Style: SM-43
Size: 3 x 16
Inc. Taper Deg.: 7
EDP Number: 800-8013-30



Style: SN-42
Size: 3 x 5
Inc. Taper Deg.: 10 INVERTED
EDP Number: 800-8014-30



Style: SJ-42
Size: 3 x 2.5
Inc. Taper Deg.: 60
EDP Number: 800-8015-30



Style: SK-42
Size: 3 x 1.5
Inc. Taper Deg.: 90
EDP Number: 800-8016-30



Style: SL-42
Size: 3 x 12
Inc. Taper Deg.: 8
EDP Number: 800-8017-30



Style: SD-41
Size: 2.38
EDP Number: 800-8018-30



Style: SD-42
Size: 3
EDP Number: 800-8019-30



Style: SH-41
Size: 3 x 6
EDP Number: 800-8020-30





1/8" Shank Diameter — 1-1/2" Overall Length

List 900 — Inch Sizes, Medium Right Hand Spiral



Style: SA-42
Size: 3/32 x 7/16
EDP Number: 900-9001



Style: SA-43
Size: 1/8 x 9/16
EDP Number: 900-9002



Style: SB-43
Size: 1/8 x 9/16
EDP Number: 900-9003



Style: SC-42
Size: 1/8 x 9/16
EDP Number: 900-9004



Style: SG-44
Size: 1/8 x 1/2
EDP Number: 900-9005



Style: SF-42
Size: 1/8 x 1/2
EDP Number: 900-9006



Style: SC-41
Size: 3/32 x 7/16
EDP Number: 900-9007



Style: SA-41
Size: 1/16 x 1/4
EDP Number: 900-9008



Style: SB-ECO
Size: 1/8
EDP Number: 900-9009



Style: SE-41
Size: 1/8 x 7/32
EDP Number: 900-9010



Style: SM-41
Size: 1/8 x 11/32
Inc. Taper Deg.: 12
EDP Number: 900-9011



Style: SM-42
Size: 1/8 x 7/16
Inc. Taper Deg.: 14
EDP Number: 900-9012



Style: SM-43
Size: 1/8 x 5/8
Inc. Taper Deg.: 7
EDP Number: 900-9013



Style: SN-42
Size: 1/8 x 3/16
Inc. Taper Deg.: 10 INVERTED
EDP Number: 900-9014



Style: SJ-42
Size: 1/8 x 3/32
Inc. Taper Deg.: 60
EDP Number: 900-9015



Style: SK-42
Size: 1/8 x 1/16
Inc. Taper Deg.: 90
EDP Number: 900-9016



Style: SL-42
Size: 1/8 x 1/2
Inc. Taper Deg.: 8
EDP Number: 900-9017



Style: SD-41
Size: 3/32
EDP Number: 900-9018



Style: SD-42
Size: 1/8
EDP Number: 900-9019



Style: SH-41
Size: 1/8 x 1/4
EDP Number: 900-9020





3mm Shank Diameter — 38mm Overall Length

List 900 — Metric Sizes, Medium Right Hand Spiral



Style: SA-42
Size: 2.38 x 11
EDP Number: 900-9001-30



Style: SA-43
Size: 3 x 14
EDP Number: 900-9002-30



Style: SB-43
Size: 3 x 14
EDP Number: 900-9003-30



Style: SC-42
Size: 3 x 14
EDP Number: 900-9004-30



Style: SG-44
Size: 3 x 12
EDP Number: 900-9005-30



Style: SF-42
Size: 3 x 12
EDP Number: 900-9006-30



Style: SC-41
Size: 2.38 x 14
EDP Number: 900-9007-30



Style: SA-41
Size: 1.59 x 6
EDP Number: 900-9008-30



Style: SB-ECO
Size: 3
EDP Number: 900-9009-30



Style: SE-41
Size: 3 x 5.5
EDP Number: 900-9010-30



Style: SM-41
Size: 3 x 8
Inc. Taper Deg.: 12
EDP Number: 900-9011-30



Style: SM-42
Size: 3 x 11
Inc. Taper Deg.: 14
EDP Number: 900-9012-30



Style: SM-43
Size: 3 x 16
Inc. Taper Deg.: 7
EDP Number: 900-9013-30



Style: SN-42
Size: 3 x 5
Inc. Taper Deg.: 10 INVERTED
EDP Number: 900-9014-30



Style: SJ-42
Size: 3 x 2.5
Inc. Taper Deg.: 60
EDP Number: 900-9015-30



Style: SK-42
Size: 3 x 1.5
Inc. Taper Deg.: 90
EDP Number: 900-9016-30



Style: SL-42
Size: 3 x 12
Inc. Taper Deg.: 8
EDP Number: 900-9017-30



Style: SD-41
Size: 2.38
EDP Number: 900-9018-30



Style: SD-42
Size: 3
EDP Number: 900-9019-30












Style: SH-41
Size: 3 x 6
EDP Number: 900-9020-30














1/4" Diameter Carbide Burs — 1/8" Hardened Steel Shank

List 815 — Inch Sizes, Tough Cut

	Cylindrical	Cylindrical Ball End	Round Nose Tree	Pointed Tree	Pointed Cone	End Cut	Ball Shape	Egg Shape	Inverted Taper
									
Style:	SA-51	SC-51	SF-51	SG-51	SM-51	SB-51	SD-51	SE-51	SN-51
Size:	1/4 x 1/2	1/4 x 1/2	1/4 x 1/2	1/4 x 1/2	1/4 x 1/2	1/4 x 3/16	1/4	1/4 x 3/8	1/4 x 1/4
Inc. Taper Deg.:					22				10 INVERTED
EDP Number:	815-0001	815-0002	815-0003	815-0004	815-0005	815-0006	815-0007	815-0008	815-0009

6mm Diameter Carbide Burs — 3mm Hardened Steel Shank

List 815 — Metric Sizes, Tough Cut

	Cylindrical	Cylindrical Ball End	Round Nose Tree	Pointed Tree	Pointed Cone	End Cut	Ball Shape	Egg Shape	Inverted Taper
									
Style:	SA-51	SC-51	SF-51	SG-51	SM-51	SB-51	SD-51	SE-51	SN-51
Size:	6.35 x 12	6.35 x 12	6.35 x 12	6.35 x 12	6.35 x 12	6.35 x 5	6.35	6.35 x 9	6.35 x 6.35
Inc. Taper Deg.:						22			10 INVERTED
EDP Number:	815-0001-30	815-0002-30	815-0003-30	815-0004-30	815-0005-30	815-0006-30	815-0007-30	815-0008-30	815-0009-30





1/4" Diameter Carbide Burs — 1/8" Hardened Steel Shank

List 915 — Inch Sizes, Medium Right Hand Spiral

Cylindrical	Cylindrical Ball End	Round Nose Tree	Pointed Tree	Pointed Cone	End Cut	Ball Shape	Egg Shape	Inverted Taper
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Style:	SA-51	SC-51	SF-51	SG-51	SM-51	SB-51	SD-51	SE-51	SN-51
Size:	1/4 x 1/2	1/4 x 1/2	1/4 x 1/2	1/4 x 1/2	1/4 x 1/2	1/4 x 3/16	1/4	1/4 x 3/8	1/4 x 1/4
Inc. Taper Deg.:						22			10 INVERTED
EDP Number:	915-0001	915-0002	915-0003	915-0004	915-0005	915-0006	915-0007	915-0008	915-0009

6mm Diameter Carbide Burs — 3mm Hardened Steel Shank

List 915 — Metric Sizes, Medium Right Hand Spiral

Cylindrical	Cylindrical Ball End	Round Nose Tree	Pointed Tree	Pointed Cone	End Cut	Ball Shape	Egg Shape	Inverted Taper
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Style:	SA-51	SC-51	SF-51	SG-51	SM-51	SB-51	SD-51	SE-51	SN-51
Size:	6.35 x 12	6.35 x 12	6.35 x 12	6.35 x 12	6.35 x 12	6.35 x 5	6.35	6.35 x 9	6.35 x 6.35
Inc. Taper Deg.:						22			10 INVERTED
EDP Number:	915-0001-30	915-0002-30	915-0003-30	915-0004-30	915-0005-30	915-0006-30	915-0007-30	915-0008-30	915-0009-30









1/8" Shank Diameter — 1-1/2" Overall Length — Brazed Carbide List 820 — Inch Sizes, Tough Cut















						
Style:	SA-52	SA-53	SC-52	SC-53	SF-53	SG-53
Size:	5/32 x 1/2	3/16 x 1/2	5/32 x 1/2	3/16 x 1/2	3/16 x 1/2	3/16 x 1/2
EDP Number:	820-0001	820-0011	820-0002	820-0012	820-0003	820-0004
						
Style:	SM-53	SE-53	SL-53	SD-53	SH-53	SN-53
Size:	3/16 x 1/2	3/16 x 9/32	3/16 x 1/2	3/16	3/16 x 3/8	3/16 x 1/4
Inc. Taper Deg.:	16		14			10 INVERTED
EDP Number:	820-0005	820-0006	820-0007	820-0008	820-0009	820-0010

3mm Shank Diameter — 38mm Overall Length — Brazed Carbide List 820 — Metric Sizes, Tough Cut













						
Style:	SA-52	SA-53	SC-52	SC-53	SF-53	SG-53
Size:	3.97 x 12	4.76 x 12	3.97 x 12	4.76 x 12	4.76 x 12	4.76 x 12
EDP Number:	820-0001-30	820-0011-30	820-0002-30	820-0012-30	820-0003-30	820-0004-30
						
Style:	SM-53	SE-53	SL-53	SD-53	SH-53	SN-53
Size:	3.97 x 12	4.76 x 12	3.97 x 12	4.76	4.76 x 9	4.76 x 6
Inc. Taper Deg.:	16		14			10 INVERTED
EDP Number:	820-0005-30	820-0006-30	820-0007-30	820-0008-30	820-0009-30	820-0010-30



1/8" Shank Diameter — 1-1/2" Overall Length — Brazed Carbide List 920 — Inch Sizes, Medium Right Hand Spiral

						
Style:	SA-52	SA-53	SC-52	SC-53	SF-53	SG-53
Size:	5/32 x 1/2	3/16x1/2	5/32 x 1/2	3/16 x 1/2	3/16 x 1/2	3/16 x 1/2
EDP Number:	920-0001	920-0011	920-0002	920-0012	920-0003	920-0004
						
Style:	SM-53	SE-53	SL-53	SD-53	SH-53	SN-53
Size:	3/16 x 1/2	3/16 x 9/32	3/16 x 1/2	3/16	3/16 x 3/8	3/16 x 1/4
Inc. Taper Deg.:	16		14			10 INVERTED
EDP Number:	920-0005	920-0006	920-0007	920-0008	920-0009	920-0010

3mm Shank Diameter — 38mm Overall Length — Brazed Carbide List 920 — Metric Sizes, Medium Right Hand Spiral

						
Style:	SA-52	SA-53	SC-52	SC-53	SF-53	SG-53
Size:	3.97 x 12	4.76 x 12	3.97 x 12	4.76 x 12	4.76 x 12	4.76 x 12
EDP Number:	920-0001-30	920-0011-30	920-0002-30	920-0012-30	920-0003-30	920-0004-30
						
Style:	SM-53	SE-53	SL-53	SD-53	SH-53	SN-53
Size:	3.97 x 12	4.76 x 12	3.97 x 12	4.76	4.76 x 9	4.76 x 6
Inc. Taper Deg.:	16		14			10 INVERTED
EDP Number:	920-0005-30	920-0006-30	920-0007-30	920-0008-30	920-0009-30	920-0010-30



MILLING

Technical






A Brand® AE-VMS

Advanced Performance Anti-Vibration Carbide End Mill

List 8200 - A Brand® AE-VMS : 4 Flute, Multiple Lengths

List 8205 - A Brand® AE-VMS : 4 Flute, Regular Length

Side Milling

Hardness	-		-		~30 HRC		30 ~ 45 HRC		
Work Material	Stainless Steel		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Prehardened Steels Hardened Steels		
Cutting Speed	160 ~ 260 SFM		260 ~ 395 SFM		230 ~ 360 SFM		195 ~ 330 SFM		
Depth of Cut	$a_a=1.5xD$ $a_r=0.2xD$ 								
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	
-	3	8,079	19.4	13,896	66.7	12,603	40.3	10,664	29.9
-	4	6,059	21.8	10,422	70.9	9,452	45.4	7,998	32.0
3/16	-	5,089	18.3	8,753	59.5	7,939	38.1	6,718	26.9
-	5	4,847	21.3	8,337	80.0	7,562	48.4	6,398	35.8
-	6	4,201	25.2	6,948	83.4	6,302	60.5	5,332	42.7
1/4	-	3,969	23.8	6,565	78.8	5,954	57.2	5,038	40.3
5/16	-	3,176	19.1	5,252	63.0	4,763	45.7	4,031	32.2
-	8	3,151	23.9	5,211	70.9	4,726	60.5	3,999	41.6
3/8	-	2,646	20.1	4,377	59.5	3,969	50.8	3,359	34.9
-	10	2,521	23.2	4,169	65.0	3,781	52.9	3,199	35.8
7/16	-	2,268	20.9	3,751	58.5	3,402	47.6	2,879	32.2
-	12	2,101	21.0	3,474	54.2	3,151	49.2	2,666	29.9
1/2	-	1,985	19.8	3,282	51.2	2,977	46.4	2,519	28.2
5/8	-	1,405	14.0	2,656	41.4	2,382	37.2	2,015	22.6
3/4	-	1,170	15.0	2,214	41.6	1,985	34.1	1,679	20.8
1	-	878	11.9	1,660	31.2	1,469	25.3	1,260	16.1

1. The above milling condition is a guideline for overhang length 3xD.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart p. 979).

continued on next page





Slotting

Hardness	-		-		~30 HRC		30 ~ 45 HRC								
Work Material	Stainless Steel		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Prehardened Steels Hardened Steels								
Cutting Speed	160 ~ 260 SFM		260 ~ 395 SFM		230 ~ 360 SFM		195 ~ 330 SFM								
Depth of Cut	<table border="1"> <tr> <th>Dia</th> <th>aa</th> </tr> <tr> <td>D≤6</td> <td>0.5D</td> </tr> <tr> <td>D>6</td> <td>1.0D</td> </tr> </table>		Dia	aa	D≤6	0.5D	D>6	1.0D			aa=1.0D				
	Dia	aa													
D≤6	0.5D														
D>6	1.0D														
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min							
-	3	7,594	18.2	10,664	38.4	8,564	24.0	7,433	17.8						
-	4	5,696	20.5	7,998	38.4	7,150	28.6	5,574	17.8						
3/16	-	4,784	17.2	6,718	32.2	6,005	24.0	4,682	15.0						
-	5	4,556	21.9	6,398	41.0	5,720	32.0	4,460	21.4						
-	6	3,797	15.2	5,332	42.7	4,767	34.3	3,716	23.8						
1/4	-	3,588	14.4	5,038	40.3	4,504	32.4	3,511	22.5						
5/16	-	2,870	14.9	4,031	32.2	3,603	25.9	2,809	18.0						
-	8	2,848	14.8	3,999	35.2	3,575	28.6	2,787	22.3						
3/8	-	2,392	13.4	3,359	29.6	3,003	24.0	2,341	18.7						
-	10	2,278	14.6	3,199	33.3	2,860	27.5	2,230	19.6						
7/16	-	2,050	13.9	2,879	29.9	2,574	24.7	2,007	17.7						
-	12	1,899	12.9	2,666	32.0	2,383	25.7	2,101	21.8						
1/2	-	1,794	12.2	2,519	30.2	2,252	24.3	1,985	20.6						
5/8	-	1,221	12.2	2,015	24.2	1,802	19.5	1,588	16.5						
3/4	-	1,018	11.0	1,679	20.2	1,476	15.9	1,349	14.0						
1	-	592	6.6	1,260	15.1	1,088	12.2	992	10.3						

1. The above milling condition is a guideline for overhang length 3xD.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart p. 979).





A Brand® AE-VMS

Advanced Performance Anti-Vibration Carbide End Mill

List 8210 - A Brand® AE-CR-VMS : 4 Flute, Multiple Lengths, Corner Radius

List 8215 - A Brand® AE-CR-VMS : 4 Flute, Regular Length, Corner Radius

Side Milling

Hardness	-		-		~30 HRC		30 ~ 45 HRC		
Work Material	Stainless Steel		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Prehardened Steels Hardened Steels		
Cutting Speed	200-330 SFM		330-490 SFM		330-490 SFM		260-395 SFM		
Depth of Cut	$a_a=1.5xD$ $a_r=0.2xD$								
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	
-	3	8,079	16.2	13,896	55.6	12,765	35.7	10,664	25.6
-	4	6,059	19.4	10,422	62.5	9,573	38.3	7,998	25.6
3/16	-	5,089	16.3	8,753	52.5	8,041	32.2	6,718	21.5
-	5	4,847	17.5	8,337	66.7	7,659	39.8	6,398	28.2
-	6	4,201	21.8	6,948	77.8	6,382	56.2	5,332	38.4
1/4	-	3,969	20.6	6,565	73.5	6,031	53.1	5,038	36.3
5/16	-	3,176	16.5	5,252	58.8	4,824	42.5	4,031	29.0
-	8	3,151	21.4	5,211	66.7	4,787	57.4	3,999	36.8
3/8	-	2,646	18.0	4,377	56.0	4,020	48.2	3,359	30.9
-	10	2,521	20.2	4,169	61.7	3,829	52.1	3,199	32.0
7/16	-	2,268	18.1	3,751	55.5	3,446	46.9	2,879	28.8
-	12	2,101	18.5	3,474	51.4	3,191	48.5	2,666	26.7
1/2	-	1,985	17.5	3,282	48.6	3,015	45.8	2,519	25.2
5/8	-	1,588	14.0	2,626	38.9	2,412	36.7	2,015	20.2
3/4	-	1,323	11.6	2,188	32.4	2,010	30.6	1,679	16.8
1	-	992	8.7	1,641	24.3	1,508	22.9	1,260	12.6

1. The above milling condition is a guideline for overhang length 3xD.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart p. 979).

continued on next page





Slotting

Hardness	-		-		~30 HRC		30 ~ 45 HRC								
Work Material	Stainless Steel		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Prehardened Steels Hardened Steels								
Cutting Speed	165-260 SFM		260-395 SFM		230-360 SFM		160-260 SFM								
Depth of Cut	<table border="1"> <tr> <th>Dia</th> <th>aa</th> </tr> <tr> <td>D≤6</td> <td>0.5D</td> </tr> <tr> <td>D>6</td> <td>1.0D</td> </tr> </table>		Dia	aa	D≤6	0.5D	D>6	1.0D			aa=1.0D				
	Dia	aa													
D≤6	0.5D														
D>6	1.0D														
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min							
-	3	7,433	14.9	10,664	29.9	9,695	23.3	8,402	16.8						
-	4	5,574	15.6	7,998	32.0	7,271	23.3	6,302	15.1						
3/16	-	4,682	13.1	6,718	26.9	6,107	19.5	5,293	12.7						
-	5	4,460	17.8	6,398	33.3	5,817	27.9	5,041	18.1						
-	6	3,716	1.5	5,332	40.5	4,847	27.1	4,201	23.5						
1/4	-	3,511	1.4	5,038	38.3	4,580	25.6	3,969	22.2						
5/16	-	2,809	1.1	4,031	30.6	3,664	20.5	3,176	17.8						
-	8	2,787	13.4	3,999	33.6	3,635	27.6	3,151	22.7						
3/8	-	2,341	11.2	3,359	28.2	3,053	23.2	2,646	19.1						
-	10	2,230	12.5	3,199	32.0	2,908	25.6	2,521	20.2						
7/16	-	2,007	11.2	2,879	28.8	2,617	23.0	2,268	18.1						
-	12	1,858	11.9	2,666	29.9	2,424	25.2	2,101	19.3						
1/2	-	1,756	11.2	2,519	28.2	2,290	23.8	1,985	18.3						
5/8	-	1,405	9.0	2,015	22.6	1,832	19.1	1,588	14.6						
3/4	-	1,170	7.5	1,679	18.8	1,527	15.9	1,323	12.2						
1	-	878	5.6	1,260	14.1	1,145	11.9	992	9.1						

1. The above milling condition is a guideline for overhang length 3xD.
2. Use a rigid and precise machine and holder.
3. The rotational speed is calculated by the median of the recommended cutting speed. Adjustments may be necessary depending on the rigidity of the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.
8. Adjust the speed and feed accordingly when the overhang length is longer than specified (refer to Parameter Reduction Chart below).

Parameter Reduction Chart by Length to Diameter Ratio


Hardness	-		-		~30 HRC		30 ~ 45 HRC	
Work Material	Stainless Steel		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Prehardened Steels Hardened Steels	
L/D	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
Slot Milling	4	60%	80%		70%		70%	
	5	50%	70%		60%		60%	
Side Milling	4	70%	90%		90%		80%	
	5	70%	80%		80%		70%	





List 8220 - A Brand® AE-LN-CR-VMS : 4 Flute, Long Neck, Corner Radius

Side Milling

Hardness	-		-		~30 HRC		30 ~ 45 HRC	
Work Material	Stainless Steel		Mild Steels Carbon Steels Cast Iron		Tool Steel Alloy Steel		Prehardened Steels Hardened Steels	
Cutting Speed	130-260 SFM		260-395 SFM		230-360 SFM		130-260 SFM	
Depth of Cut	$aa=1.5xD$ $ar=0.02xD$ 							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	2,748	16.5	5,191	62.3	4,809	46.2	3,511	28.1
5/16	2,198	13.2	4,153	49.8	3,847	36.9	2,809	22.5
3/8	1,832	13.9	3,461	47.1	3,206	41.0	2,341	24.3
7/16	1,570	14.4	2,966	46.3	2,748	39.6	2,007	22.5
1/2	1,374	13.7	2,595	40.5	2,405	37.5	1,756	19.7
5/8	1,099	11.0	2,076	32.4	1,924	30.0	1,405	15.7
3/4	916	9.2	1,730	27.0	1,603	25.0	1,170	13.1
1	687	6.9	1,298	20.2	1,202	18.8	878	10.5


1. Use a rigid and precise machine and holder.
2. The rotational speed is calculated by the median of the recommended cutting speed.
3. Adjustments may be necessary depending on the rigidity or the workpiece, fixture, and machine.
4. Please use a suitable fluid with high smoke retardant properties.
5. During dry (no fluid) milling, please use air blow to remove chips from the milling area and to eliminate chip packing.
6. Please use water-soluble coolant when machining stainless steel.
7. Reduce speed and feed as well as depth of cut when high precision is required.






List 2055 - EXOPRO® UVX-Ni : 5 Flute - Corner Radius

Side Milling

Hardness		
Work Material	High Temp. Alloys Inconel Hastelloy	
Cutting Speed	125-150 SFM	
Depth of Cut	$aa \leq 0.5D$ $ar \leq 0.3D$ 	
Mill Dia.	Speed RPM	Feed in/min
1/4	2,100	11.0
5/16	1,600	10.0
3/8	1,400	10.0
1/2	1,100	9.5
5/8	800	9.0
3/4	650	8.0
1	500	7.0

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

Slotting

Hardness		
Work Material	High Temp. Alloys Inconel Hastelloy	
Cutting Speed	75-100 SFM	
Depth of Cut	$aa \leq 0.5D$ 	
Mill Dia.	Speed RPM	Feed in/min
1/4	1,300	7.0
5/16	1,000	6.5
3/8	900	6.0
1/2	700	5.5
5/8	500	5.0
3/4	400	4.5
1	300	4.0

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.



List 9510 - EXOPRO[®] PHX : Deep Feed, Ball Nose

List 9590 - EXOPRO[®] PHX : 3 Flute, Long Neck, Ball Nose

List 9581 - EXOPRO[®] PHX : Pencil-Neck, Deep-Feed, Ball Nose

Side Milling

Hardness			Up to 38 HRC				38~53 HRC				Up to 53 HRC				Up to 55 HRC				
Work Material			Hardened and Pre-hardened Steels																
Cutting Speed			62 ~ 397 SFM				62 ~ 309 SFM				105 ~ 248 SFM				62 ~ 402 SFM				
R (mm)	L/D	Recom'd Cutting Angle	Speed (RPM)	Feed (in/min)	aa		Speed (RPM)	Feed (in/min)	aa		Speed (RPM)	Feed (in/min)	aa		Speed (RPM)	Feed (in/min)	aa		Clearance (in)
					Ar	Depth of Cut (in)			Ar	Depth of Cut (in)			Ar	Depth of Cut (in)			Ar	Depth of Cut (in)	
0.5	6	0.3°	18,000	39.4	0.002	0.006	18,000	35.4	0.002	0.006	18,000	11.0	0.0003	0.001	18,000	47.2	0.001	0.001	0.002
0.5	10	0.3°	16,000	31.5	0.002	0.006	16,000	31.5	0.002	0.006	16,000	4.7	0.0001	0.012	16,000	39.4	0.001	0.001	0.001
0.5	15	0.3°	8,000	16.5	0.001	0.006	8,000	16.5	0.001	0.006	-	-	-	-	8,000	19.7	0.001	0.001	0.001
0.5	20	0.3°	6,000	11.8	0.001	0.005	6,000	11.8	0.001	0.005	-	-	-	-	6,000	15.0	0.001	0.001	0.001
0.5	25	0.3°	6,000	5.1	0.001	0.003	6,000	5.1	0.001	0.003	-	-	-	-	6,000	13.8	0.001	0.001	0.001
0.5	30	0.3°	6,000	3.5	0.000	0.002	6,000	3.5	0.000	0.002	-	-	-	-	6,000	9.8	0.001	0.001	0.001
0.75	6	0.3°	18,000	59.1	0.004	0.012	16,000	51.2	0.004	0.012	16,000	25.6	0.0028	0.006	18,000	43.3	0.002	0.002	0.002
0.75	10	0.3°	15,000	43.3	0.002	0.010	15,000	37.4	0.002	0.010	15,000	12.6	0.0004	0.004	15,000	35.4	0.002	0.002	0.001
0.75	16	0.3°	7,500	9.1	0.001	0.008	7,500	7.9	0.001	0.008	7,500	11.8	0.0003	0.002	7,500	17.7	0.002	0.002	0.001
1.0	6	0.3°	18,000	63.0	0.008	0.024	15,000	55.1	0.008	0.016	12,000	23.6	0.006	0.006	15,000	708.7	0.002	0.002	0.004
1.0	10	0.3°	12,000	49.2	0.006	0.016	12,000	43.3	0.006	0.016	12,000	23.6	0.004	0.002	12,000	59.1	0.002	0.002	0.003
1.0	15	0.3°	7,800	32.3	0.006	0.016	7,800	30.7	0.006	0.016	7,800	17.7	0.003	0.002	7,800	38.6	0.002	0.002	0.003
1.0	20	0.3°	6,200	25.6	0.005	0.016	6,200	23.6	0.005	0.012	6,200	13.4	0.002	0.002	6,200	23.6	0.002	0.002	0.002
1.0	25	0.3°	4,700	19.7	0.005	0.012	4,700	19.7	0.005	0.012	-	-	-	-	4,700	17.7	0.002	0.002	0.002
1.0	30	0.3°	3,500	15.7	0.004	0.012	3,500	15.7	0.004	0.012	-	-	-	-	3,500	17.7	0.002	0.002	0.002
1.0	35	0.3°	3,500	15.7	0.003	0.012	3,500	15.7	0.003	0.012	-	-	-	-	3,500	17.7	0.002	0.002	0.001
1.0	40	0.3°	3,500	11.8	0.003	0.010	3,500	11.8	0.003	0.010	-	-	-	-	3,500	17.7	0.002	0.002	0.001
1.0	45	0.3°	3,500	7.9	0.003	0.008	3,500	7.9	0.003	0.008	-	-	-	-	3,500	17.7	0.002	0.002	0.001
1.0	50	0.3°	3,500	5.9	0.002	0.004	3,500	5.9	0.002	0.004	-	-	-	-	3,500	17.7	0.002	0.002	0.001
1.0	60	0.3°	3,500	5.9	0.002	0.004	3,500	5.9	0.002	0.004	-	-	-	-	3,500	17.7	0.002	0.002	0.001
1.5	10	0.3°	12,000	74.8	0.008	0.020	8,000	47.2	0.008	0.020	8,000	27.6	0.005	0.004	11,000	80.7	0.004	0.003	0.004
1.5	15	0.3°	10,000	61.0	0.008	0.020	8,000	47.2	0.008	0.020	8,000	21.7	0.004	0.004	10,000	74.8	0.004	0.003	0.003
1.5	20	0.3°	7,500	45.3	0.007	0.020	7,200	43.3	0.007	0.020	7,200	18.9	0.002	0.003	7,500	55.1	0.004	0.003	0.003
1.5	25	0.3°	4,800	29.5	0.007	0.020	4,600	27.6	0.007	0.020	4,600	12.6	0.002	0.002	4,800	35.4	0.004	0.003	0.002
1.5	30	0.3°	4,000	24.8	0.006	0.016	3,400	19.7	0.006	0.016	3,400	9.4	0.001	0.001	3,800	28.3	0.004	0.003	0.001
1.5	40	0.3°	2,800	17.3	0.005	0.016	2,600	15.7	0.005	0.016	-	-	-	-	2,600	19.7	0.004	0.003	0.001
1.5	50	0.3°	2,200	13.8	0.004	0.016	2,200	11.8	0.004	0.016	-	-	-	-	2,200	15.7	0.004	0.003	0.001
1.5	60	0.3°	2,200	13.8	0.003	0.016	2,200	11.8	0.003	0.016	-	-	-	-	2,200	15.7	0.004	0.003	0.001
2.0	10	0.5°	9,600	78.7	0.012	0.024	6,000	49.2	0.012	0.024	6,000	31.5	0.006	0.004	9,500	94.5	0.005	0.004	0.004
2.0	15	0.5°	9,300	74.8	0.011	0.024	6,000	47.2	0.011	0.024	6,000	31.5	0.005	0.004	9,000	88.6	0.005	0.004	0.004
2.0	20	0.5°	7,600	61.0	0.010	0.024	6,000	45.3	0.010	0.024	6,000	27.6	0.004	0.003	8,200	80.7	0.005	0.004	0.004
2.0	25	0.5°	6,100	49.2	0.009	0.024	5,500	43.3	0.009	0.024	5,500	17.7	0.002	0.003	5,500	53.1	0.005	0.004	0.003
2.0	30	0.5°	5,000	41.3	0.008	0.024	4,500	31.5	0.008	0.024	4,500	13.8	0.001	0.002	4,500	43.3	0.005	0.004	0.003
2.0	35	0.5°	3,600	29.5	0.006	0.020	3,600	25.6	0.006	0.020	3,600	11.0	0.000	0.001	3,600	35.4	0.005	0.004	0.002
2.0	40	0.5°	3,000	24.8	0.005	0.020	3,000	21.7	0.005	0.020	3,000	5.9	0.000	0.000	3,000	29.5	0.005	0.004	0.002
2.0	45	0.5°	2,700	21.7	0.004	0.016	2,700	19.7	0.004	0.016	-	-	-	-	2,700	26.8	0.005	0.004	0.001
2.0	50	0.5°	2,500	20.5	0.004	0.016	2,500	17.7	0.004	0.016	-	-	-	-	2,500	24.8	0.005	0.004	0.001
2.0	60	0.5°	2,100	16.9	0.003	0.016	2,100	15.7	0.003	0.016	-	-	-	-	2,100	20.9	0.005	0.004	0.001
2.5	10	0.5°	7,700	74.8	0.014	0.031	4,800	43.3	0.014	0.031	4,800	35.4	0.008	0.004	7,700	94.5	0.006	0.047	0.004
2.5	15	0.5°	7,700	74.8	0.012	0.031	4,800	39.4	0.012	0.031	4,800	33.5	0.006	0.004	6,100	74.8	0.006	0.047	0.004
2.5	20	0.5°	7,700	70.9	0.012	0.031	4,800	37.4	0.012	0.031	4,800	27.6	0.005	0.003	6,100	74.8	0.006	0.047	0.004
2.5	25	0.5°	5,100	51.2	0.010	0.031	4,800	35.4	0.010	0.031	4,800	25.6	0.002	0.002	5,100	63.0	0.006	0.047	0.003
2.5	30	0.5°	5,100	47.2	0.008	0.024	4,800	33.5	0.008	0.024	4,800	19.7	0.001	0.002	5,100	63.0	0.006	0.047	0.003
2.5	35	0.5°	4,400	43.3	0.006	0.024	4,400	29.5	0.006	0.024	4,400	15.7	0.001	0.001	4,400	53.1	0.006	0.047	0.002

- The above mentioned conditions according to projection lengths are intended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
- For 0.5R - 2.5R, the machining conditions are based on chucking the tool up to the base of the neck.
- Highly rigid machines and tool holders should be used.
- Tool vibrations should be kept at a minimum level for maximum accuracy.
- In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
- More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
- When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
- When cutting at greater than the recommended cutting angle, reduce the feed.

continued on next page



Side Milling

Hardness			Up to 38 HRC				38~53 HRC				Up to 53 HRC				Up to 55 HRC				
Work Material			Hardened and Pre-hardened Steels																
Cutting Speed			62 ~ 397 SFM				62 ~ 309 SFM				105 ~ 248 SFM				62 ~ 402 SFM				
R (mm)	L/D	Recom'd Cutting Angle	Speed (RPM)	Feed (in/min)	aa		Speed (RPM)	Feed (in/min)	aa		Speed (RPM)	Feed (in/min)	aa		Speed (RPM)	Feed (in/min)	aa		Clearance (in)
					Ar	Depth of Cut (in)			Ar	Depth of Cut (in)			Ar	Depth of Cut (in)			Ar	Depth of Cut (in)	
2.5	40	0.5°	3,100	29.5	0.004	0.024	3,100	25.6	0.004	0.024	3,100	10.2	0.000	0.001	3,100	37.4	0.006	0.047	0.002
3.0	24	0.5°	6,400	74.8	0.017	0.047	4,000	47.2	0.012	0.039	4,000	35.4	0.012	0.004	6,500	57.1	0.007	0.006	0.004
3.0	30	0.5°	5,100	59.1	0.013	0.047	4,000	45.3	0.012	0.039	4,000	35.4	0.010	0.004	5,100	76.8	0.007	0.006	0.004
3.0	36	0.5°	4,200	49.2	0.015	0.047	4,000	43.3	0.012	0.039	4,000	29.5	0.008	0.003	4,200	62.2	0.007	0.006	0.003
3.0	42	0.5°	3,700	41.3	0.008	0.035	3,700	39.4	0.008	0.039	3,700	19.7	0.006	0.002	3,700	55.1	0.007	0.006	0.003
3.0	48	0.5°	3,600	29.5	0.006	0.035	2,600	27.6	0.006	0.031	2,600	15.7	0.004	0.001	2,600	38.6	0.007	0.006	0.002
3.0	54	0.5°	2,100	24.8	0.004	0.031	2,100	23.6	0.004	0.031	2,100	9.4	0.002	0.001	2,100	31.5	0.007	0.006	0.002
3.0	66	0.5°	1,900	21.7	0.003	0.028	1,900	19.7	0.003	0.028	-	-	-	-	1,900	27.6	0.007	0.006	0.001
3.0	80	0.5°	1,700	17.7	0.003	0.024	1,700	15.7	0.003	0.024	-	-	-	-	1,700	25.6	0.007	0.006	0.001
4.0	30	0.5°	4,800	90.6	0.018	0.059	3,000	49.6	0.012	0.059	3,000	41.3	0.012	0.006	4,800	94.5	0.009	0.008	0.004
4.0	40	0.5°	3,800	70.9	0.015	0.051	3,000	47.2	0.012	0.051	3,000	41.3	0.012	0.004	3,800	74.8	0.009	0.008	0.004
4.0	48	0.5°	3,200	59.1	0.011	0.047	3,000	43.3	0.010	0.047	3,000	35.4	0.010	0.004	3,200	63.0	0.009	0.008	0.003
4.0	56	0.5°	2,700	51.2	0.008	0.043	2,700	39.4	0.008	0.043	2,700	31.5	0.008	0.003	2,700	53.1	0.009	0.008	0.003
4.0	64	0.5°	1,900	35.4	0.008	0.039	1,900	27.6	0.007	0.039	1,900	19.7	0.007	0.003	1,900	37.4	0.009	0.008	0.002
4.0	80	0.5°	1,500	27.6	0.006	0.031	1,500	21.7	0.006	0.031	-	-	-	-	1,500	29.5	0.009	0.008	0.001
4.0	100	0.5°	1,200	23.6	0.006	0.031	1,200	15.7	0.004	0.031	-	-	-	-	1,200	23.6	0.009	0.008	0.001
4.0	120	0.5°	1,000	19.7	0.004	0.028	1,000	13.8	0.003	0.028	-	-	-	-	1,000	19.7	0.009	0.008	0.001
5.0	35	0.5°	3,800	90.6	0.026	0.071	2,400	39.4	0.016	0.063	2,400	33.5	0.016	0.006	3,800	94.5	0.012	0.011	0.004
5.0	50	0.5°	3,100	74.8	0.022	0.071	2,400	39.4	0.012	0.063	2,400	33.5	0.012	0.006	3,100	76.8	0.012	0.011	0.004
5.0	60	0.5°	2,500	59.1	0.018	0.063	2,400	39.4	0.012	0.059	2,400	33.5	0.012	0.004	2,500	61.0	0.012	0.011	0.004
5.0	70	0.5°	2,200	51.2	0.013	0.063	2,200	35.4	0.012	0.059	2,200	31.5	0.012	0.004	2,200	53.1	0.012	0.011	0.003
5.0	80	0.5°	1,500	31.5	0.009	0.063	1,500	23.6	0.008	0.059	1,500	23.6	0.008	0.003	1,500	37.4	0.012	0.011	0.003
5.0	100	0.5°	1,200	23.6	0.006	0.059	1,200	19.7	0.005	0.059	1,200	19.7	0.005	0.003	1,200	29.5	0.012	0.011	0.002
5.0	120	0.5°	1,050	19.7	0.004	0.051	1,000	15.7	0.004	0.051	-	-	-	-	1,050	25.6	0.012	0.011	0.002
5.0	140	0.5°	850	15.7	0.003	0.051	800	13.8	0.003	0.051	-	-	-	-	850	19.7	0.012	0.011	0.001
5.0	160	0.5°	700	12.6	0.003	0.039	700	11.8	0.003	0.039	-	-	-	-	700	17.7	0.012	0.011	0.001
6.0	45	0.5°	3,200	66.9	0.031	0.079	2,000	31.5	0.031	0.071	2,000	31.5	0.024	0.006	3,200	94.5	0.014	0.013	0.006
6.0	60	0.5°	2,500	51.2	0.026	0.079	2,000	31.5	0.026	0.071	2,000	31.5	0.020	0.006	2,500	74.8	0.014	0.013	0.006
6.0	70	0.5°	2,100	43.3	0.022	0.079	2,000	31.5	0.022	0.071	2,000	31.5	0.020	0.004	2,100	63.0	0.014	0.013	0.004
6.0	85	0.5°	1,800	37.4	0.017	0.071	1,500	23.6	0.017	0.067	1,500	23.6	0.016	0.004	1,800	53.1	0.014	0.013	0.004
6.0	100	0.5°	1,300	27.2	0.012	0.071	1,200	19.7	0.012	0.067	1,200	19.7	0.012	0.004	1,300	38.6	0.014	0.013	0.004
6.0	120	0.5°	1,000	20.9	0.010	0.059	1,000	16.5	0.010	0.059	-	-	-	-	1,000	29.5	0.014	0.013	0.002
6.0	140	0.5°	900	18.5	0.008	0.059	900	15.0	0.008	0.059	-	-	-	-	900	26.8	0.014	0.013	0.002
6.0	160	0.5°	700	14.6	0.006	0.051	700	11.8	0.006	0.051	-	-	-	-	700	20.9	0.014	0.013	0.002
8.0	55	0.5°	2,400	63.0	0.039	0.087	1,500	23.6	0.039	0.071	1,500	23.6	0.031	0.006	2,400	94.5	0.019	0.016	0.008
8.0	80	0.5°	1,900	49.2	0.035	0.087	1,500	23.6	0.035	0.071	1,500	23.6	0.031	0.006	1,900	74.8	0.019	0.016	0.006
8.0	90	0.5°	1,600	41.3	0.030	0.087	1,500	23.6	0.030	0.071	1,500	23.6	0.028	0.004	1,600	63.0	0.019	0.016	0.004
8.0	105	0.5°	1,400	35.4	0.022	0.079	1,400	22.4	0.022	0.067	1,400	22.4	0.020	0.003	1,400	55.1	0.019	0.016	0.003
8.0	120	0.5°	1,000	25.6	0.016	0.079	1,000	16.5	0.016	0.067	1,000	16.5	0.016	0.002	1,000	39.4	0.019	0.016	0.002
10.0	70	0.5°	1,900	59.1	0.047	0.142	1,200	19.7	0.047	0.071	1,200	19.7	0.031	0.006	1,900	94.5	0.024	0.020	0.008
10.0	90	0.5°	1,500	47.2	0.043	0.142	1,200	19.7	0.043	0.071	1,200	19.7	0.031	0.006	1,500	74.8	0.024	0.020	0.006
10.0	110	0.5°	1,300	39.4	0.035	0.138	1,200	19.7	0.035	0.071	1,200	19.7	0.031	0.004	1,300	63.0	0.024	0.020	0.004
10.0	130	0.5°	1,100	33.5	0.028	0.134	1,100	17.7	0.028	0.071	1,100	17.7	0.028	0.004	1,100	55.1	0.024	0.020	0.003
10.0	150	0.5°	760	23.6	0.020	0.130	760	12.6	0.020	0.071	760	12.6	0.020	0.003	760	37.4	0.024	0.020	0.002

- The above mentioned conditions according to projection lengths are intended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
- For 0.5R - 2.5R, the machining conditions are based on chucking the tool up to the base of the neck.
- Highly rigid machines and tool holders should be used.
- Tool vibrations should be kept at a minimum level for maximum accuracy.
- In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
- More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
- When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
- When cutting at greater than the recommended cutting angle, reduce the feed.





List 9570 - EXOPRO[®] PHX: High Feed, Corner Radius

List 9575 - EXOPRO[®] PHX: Deep Feed, Corner Radius

List 9576 - EXOPRO[®] PHX: Long Neck, Deep Feed, Corner Radius

List 9580 - EXOPRO[®] PHX: Pencil Neck, Deep Feed, Corner Radius

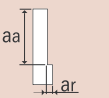
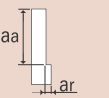
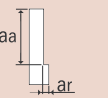
Side Milling

Hardness				Up to 40 HRC				40~55 HRC				55~60 HRC				
Work Material				Mild Steels and Carbon Steels				Hardened Steels and Prehardened Steels								
				High Feed Roughing				Semi-Finishing				Finishing				
D (mm)	r (mm)	L1	Rec'd Cutting Angle	Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Stock to Remove (in)
						Aa	Ar			Aa	Ar			Aa	Ar	
1.0	R3	10	0.3°	16,000	35.4	0.0012	0.0055	16,000	35.4	0.0012	0.0055	16,000	35.4	0.0016	0.0055	0.0020
1.0	R3	15	0.3°	8,000	17.7	0.0012	0.0055	8,000	17.7	0.0012	0.0055	8,000	17.7	0.0016	0.0055	0.0020
1.0	R3	20	0.3°	6,000	13.8	0.0008	0.0055	6,000	13.8	0.0008	0.0055	6,000	13.8	0.0016	0.0055	0.0012
1.0	R3	25	0.3°	6,000	11.8	0.0004	0.0051	6,000	11.8	0.0004	0.0051	6,000	11.8	0.0016	0.0055	0.0012
1.0	R3	30	0.3°	6,000	9.8	0.0004	0.0047	6,000	9.8	0.0004	0.0047	6,000	9.8	0.0016	0.0055	0.0012
1.5	R3	10	0.3°	16,000	55.1	0.0020	0.0118	16,000	47.2	0.0020	0.0118	16,000	55.1	0.0016	0.0138	0.0028
1.5	R3	15	0.3°	8,000	31.5	0.0020	0.0118	8,000	23.6	0.0020	0.0118	8,000	31.5	0.0016	0.0138	0.0020
1.5	R3	20	0.3°	5,500	21.7	0.0016	0.0118	5,500	19.7	0.0016	0.0118	5,500	21.7	0.0016	0.0138	0.0020
1.5	R3	25	0.3°	5,000	19.7	0.0016	0.0118	5,000	17.7	0.0016	0.0118	5,000	19.7	0.0016	0.0138	0.0012
1.5	R3	30	0.3°	4,500	17.7	0.0016	0.0118	4,500	15.7	0.0016	0.0118	4,500	17.7	0.0016	0.0138	0.0012
2.0	R0.5	10	0.3°	12,000	57.1	0.0059	0.0157	12,000	43.3	0.0059	0.0157	12,000	43.3	0.0024	0.0157	0.0028
2.0	R0.5	15	0.3°	7,800	35.4	0.0047	0.0157	7,800	27.6	0.0039	0.0157	7,800	27.6	0.0024	0.0157	0.0028
2.0	R0.5	20	0.3°	6,200	29.5	0.0039	0.0118	6,200	23.6	0.0028	0.0118	6,200	23.6	0.0024	0.0157	0.0020
2.0	R0.5	25	0.3°	4,700	21.7	0.0028	0.0118	4,700	19.7	0.0024	0.0118	4,700	19.7	0.0024	0.0157	0.0020
2.0	R0.5	30	0.3°	3,500	15.7	0.0028	0.0118	3,500	15.7	0.0020	0.0118	3,500	15.7	0.0024	0.0157	0.0020
2.0	R0.5	35	0.3°	3,500	15.7	0.0028	0.0079	3,500	15.7	0.0016	0.0079	3,500	15.7	0.0024	0.0157	0.0012
2.0	R0.5	40	0.3°	3,500	11.8	0.0028	0.0079	3,500	11.8	0.0016	0.0079	3,500	11.8	0.0024	0.0157	0.0012
2.0	R0.5	45	0.3°	3,500	7.9	0.0028	0.0079	3,500	7.9	0.0012	0.0079	3,500	7.9	0.0024	0.0157	0.0012
2.0	R0.5	50	0.3°	3,500	5.9	0.0024	0.0039	3,500	5.9	0.0012	0.0039	3,500	7.9	0.0024	0.0157	0.0012
2.0	R0.5	60	0.3°	3,500	5.9	0.0020	0.0039	3,500	5.9	0.0012	0.0039	3,500	7.9	0.0024	0.0157	0.0012
3.0	R0.8	10	0.3°	11,000	65.0	0.0051	0.0236	8,000	47.2	0.0051	0.0236	11,000	82.7	0.004	0.020	0.0039
3.0	R0.8	15	0.3°	10,000	59.1	0.0051	0.0236	8,000	47.2	0.0051	0.0236	10,000	74.8	0.004	0.020	0.0028
3.0	R0.8	20	0.3°	7,500	43.3	0.0005	0.0197	7,200	39.4	0.0005	0.0197	7,500	55.1	0.004	0.020	0.0028
3.0	R0.8	25	0.3°	4,800	27.6	0.0047	0.0157	4,600	25.6	0.0047	0.0157	4,800	35.4	0.004	0.020	0.0020
3.0	R0.8	30	0.3°	3,800	21.7	0.0039	0.0157	3,400	19.7	0.0039	0.0157	3,800	29.5	0.004	0.020	0.0012
3.0	R0.8	40	0.3°	2,600	17.7	0.0031	0.0118	2,600	15.7	0.0031	0.0118	2,600	21.7	0.004	0.020	0.0012
3.0	R0.8	50	0.3°	2,200	13.8	0.0024	0.0118	2,200	11.8	0.0024	0.0118	2,200	17.7	0.004	0.020	0.0012
3.0	R0.8	60	0.3°	2,200	13.8	0.0016	0.0118	2,200	11.8	0.0016	0.0118	2,200	15.7	0.004	0.020	0.0012
4.0	R1	10	0.5°	9,500	82.7	0.0079	0.0354	6,000	49.2	0.0079	0.0354	9,500	88.6	0.0047	0.0315	0.0039
4.0	R1	15	0.5°	9,000	78.7	0.0079	0.0315	6,000	49.2	0.0079	0.0315	9,000	84.6	0.0047	0.0315	0.0039
4.0	R1	20	0.5°	8,200	66.9	0.0079	0.0276	6,000	49.2	0.0055	0.0276	8,200	78.7	0.0047	0.0276	0.0039
4.0	R1	25	0.5°	5,500	55.1	0.0059	0.0276	5,500	45.3	0.0043	0.0276	5,500	53.1	0.0047	0.0276	0.0028
4.0	R1	30	0.5°	4,500	45.3	0.0059	0.0276	4,500	35.4	0.0035	0.0276	4,500	43.3	0.0047	0.0276	0.0028
4.0	R1	35	0.5°	3,600	43.3	0.0047	0.0236	3,600	29.5	0.0035	0.0236	3,600	35.4	0.0047	0.0276	0.0020
4.0	R1	40	0.5°	3,000	35.4	0.0047	0.0236	3,000	25.6	0.0035	0.0236	3,000	31.5	0.0047	0.0276	0.0020
4.0	R1	45	0.5°	2,700	33.5	0.0039	0.0197	2,700	23.6	0.0031	0.0197	2,700	29.5	0.0047	0.0276	0.0012
4.0	R1	50	0.5°	2,500	31.5	0.0039	0.0197	2,500	21.7	0.0031	0.0197	2,500	23.6	0.0047	0.0276	0.0012
4.0	R1	60	0.5°	2,100	27.6	0.0031	0.0197	2,100	17.7	0.0024	0.0197	2,100	19.7	0.0047	0.0276	0.0012
5.0	R1	10	0.5°	7,700	98.4	0.0079	0.0472	4,800	141.7	0.0079	0.0472	7,700	70.9	0.0047	0.0472	0.0039
5.0	R1	15	0.5°	7,700	94.5	0.0079	0.0472	4,800	133.9	0.0063	0.0472	6,100	57.1	0.0047	0.0472	0.0039
5.0	R1	20	0.5°	7,700	94.5	0.0079	0.0472	4,800	133.9	0.0063	0.0472	6,100	57.1	0.0047	0.0472	0.0039
5.0	R1	25	0.5°	5,100	86.6	0.0067	0.0394	4,800	118.1	0.0051	0.0394	5,100	47.2	0.0047	0.0472	0.0028
5.0	R1	30	0.5°	5,100	86.6	0.0067	0.0394	4,800	118.1	0.0051	0.0394	5,100	47.2	0.0047	0.0472	0.0028
5.0	R1	35	0.5°	4,400	66.9	0.0059	0.0394	4,400	94.5	0.0035	0.0394	4,400	39.4	0.0047	0.0472	0.0020
5.0	R1	40	0.5°	3,100	43.3	0.0059	0.0394	3,100	59.1	0.0031	0.0394	3,100	29.5	0.0047	0.0472	0.0020
6.0	R1.5	24	0.5°	6,500	255.9	0.0138	0.0512	4,000	66.9	0.0094	0.0512	6,500	74.8	0.0059	0.0472	0.0039
6.0	R1.5	30	0.5°	5,100	200.8	0.0094	0.0472	4,000	66.9	0.0091	0.0472	5,100	59.1	0.0059	0.0472	0.0039
6.0	R1.5	36	0.5°	4,200	165.4	0.0079	0.0394	4,000	66.9	0.0075	0.0394	4,200	49.2	0.0059	0.0472	0.0028
6.0	R1.5	42	0.5°	3,700	145.7	0.0059	0.0394	3,700	55.1	0.0055	0.0394	3,700	43.3	0.0059	0.0472	0.0028

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Side Milling

Hardness				Up to 40 HRC				40~55 HRC				55~60 HRC				
Work Material				Mild Steels and Carbon Steels				Hardened Steels and Prehardened Steels								
				High Feed Roughing				Semi-Finishing				Finishing				
D (mm)	r (mm)	L1	Rec'd Cutting Angle	Speed (RPM)	Feed (in/min)	 Depth of Cut (in)		Speed (RPM)	Feed (in/min)	 Depth of Cut (in)		Speed (RPM)	Feed (in/min)	 Depth of Cut (in)		Stock to Remove (in)
						Aa	Ar			Aa	Ar			Aa	Ar	
						6.0	R1.5			48	0.5°			2,600	102.4	
6.0	R1.5	54	0.5°	2,100	82.7	0.0039	0.0354	2,100	31.5	0.0039	0.0354	2,100	25.6	0.0059	0.0472	0.0020
6.0	R1.5	66	0.5°	1,900	74.8	0.0031	0.0354	1,900	27.6	0.0031	0.0354	1,900	21.7	0.0059	0.0472	0.0012
6.0	R1.5	80	0.5°	1,700	66.9	0.0020	0.0354	1,700	23.6	0.0020	0.0354	1,700	17.7	0.0059	0.0472	0.0012
8.0	R2	30	0.5°	4,800	78.7	0.0197	0.0669	3,000	49.2	0.0118	0.0630	4,800	70.9	0.0071	0.0630	0.0039
8.0	R2	40	0.5°	3,800	74.8	0.0157	0.0630	3,000	49.2	0.0118	0.0630	3,800	55.1	0.0071	0.0630	0.0039
8.0	R2	48	0.5°	3,200	66.9	0.0106	0.0551	3,000	49.2	0.0102	0.0551	2,300	45.3	0.0071	0.0630	0.0028
8.0	R2	56	0.5°	2,700	51.2	0.0079	0.0551	2,700	43.3	0.0079	0.0551	2,700	39.4	0.0071	0.0630	0.0028
8.0	R2	64	0.5°	1,900	34.6	0.0079	0.0512	1,900	31.5	0.0079	0.0512	1,900	27.6	0.0071	0.0630	0.0020
8.0	R2	80	0.5°	1,500	27.6	0.0059	0.0512	1,500	27.6	0.0059	0.0512	1,500	21.7	0.0071	0.0630	0.0012
8.0	R2	100	0.5°	1,200	25.6	0.0059	0.0512	1,200	25.6	0.0059	0.0512	1,200	19.7	0.0071	0.0630	0.0012
8.0	R2	120	0.5°	1,000	21.7	0.0039	0.0512	1,000	21.7	0.0039	0.0512	1,000	17.7	0.0071	0.0630	0.0012
10.0	R2	35	0.5°	3,800	82.7	0.0197	0.0984	2,400	94.5	0.0118	0.0630	3,800	149.6	0.0079	0.0945	0.0039
10.0	R2	50	0.5°	3,100	76.8	0.0157	0.0945	2,400	94.5	0.0118	0.0630	3,100	122.0	0.0079	0.0945	0.0039
10.0	R2	60	0.5°	2,500	68.9	0.0106	0.0787	2,400	94.5	0.0106	0.0630	2,500	98.4	0.0079	0.0945	0.0039
10.0	R2	70	0.5°	2,200	53.1	0.0079	0.0787	2,200	86.6	0.0079	0.0630	2,200	86.6	0.0079	0.0945	0.0028
10.0	R2	80	0.5°	1,500	35.4	0.0075	0.0787	1,500	59.1	0.0075	0.0630	1,500	59.1	0.0079	0.0945	0.0028
10.0	R2	100	0.5°	1,200	28.3	0.0063	0.0787	1,200	47.2	0.0063	0.0630	1,200	47.2	0.0079	0.0945	0.0020
10.0	R2	120	0.5°	1,050	25.6	0.0051	0.0787	1,000	39.4	0.0051	0.0630	1,050	41.3	0.0079	0.0945	0.0020
10.0	R2	140	0.5°	850	21.7	0.0039	0.0591	800	31.5	0.0039	0.0551	850	33.5	0.0079	0.0945	0.0012
10.0	R2	160	0.5°	700	19.7	0.0028	0.0591	700	27.6	0.0028	0.0551	700	27.6	0.0079	0.0945	0.0012
12.0	R2	45	0.5°	3,200	86.6	0.0236	0.1339	2,000	78.7	0.0118	0.0630	3,200	126.0	0.0094	0.1260	0.0059
12.0	R2	60	0.5°	2,500	82.7	0.0197	0.1260	2,000	78.7	0.0118	0.0630	2,500	98.4	0.0094	0.1260	0.0059
12.0	R2	70	0.5°	2,100	74.8	0.0157	0.1102	2,000	78.7	0.0110	0.0630	2,100	82.7	0.0094	0.1260	0.0039
12.0	R2	85	0.5°	1,800	59.1	0.0118	0.1063	1,500	59.1	0.0087	0.0630	1,800	70.9	0.0094	0.1260	0.0039
12.0	R2	100	0.5°	1,300	39.4	0.0079	0.1024	1,200	47.2	0.0079	0.0630	1,300	51.2	0.0094	0.1260	0.0039
12.0	R2	120	0.5°	1,000	27.6	0.0059	0.0984	1,000	39.4	0.0059	0.0630	1,000	39.4	0.0094	0.1260	0.0020
12.0	R2	140	0.5°	900	23.6	0.0059	0.0787	900	35.4	0.0039	0.0630	900	35.4	0.0094	0.1260	0.0020
12.0	R2	160	0.5°	700	19.7	0.0039	0.0787	700	27.6	0.0039	0.0630	700	27.6	0.0094	0.1260	0.0020
16.0	R3	55	0.5°	2,400	78.7	0.0197	0.1654	1,500	59.1	0.0118	0.0630	2,400	94.5	0.0118	0.1575	0.0079
16.0	R3	80	0.5°	1,900	74.8	0.0185	0.1575	1,500	59.1	0.0118	0.0630	1,900	74.8	0.0118	0.1575	0.0059
16.0	R3	90	0.5°	1,600	66.9	0.0157	0.1339	1,500	59.1	0.0118	0.0630	1,600	63.0	0.0118	0.1575	0.0039
16.0	R3	105	0.5°	1,400	51.2	0.0114	0.1299	1,400	55.1	0.0110	0.0630	1,400	55.1	0.0118	0.1575	0.0028
16.0	R3	120	0.5°	1,000	33.5	0.0079	0.1260	1,000	39.4	0.0079	0.0630	1,000	39.4	0.0118	0.1575	0.0020
20.0	R3	70	0.5°	1,900	78.7	0.0197	0.2165	1,200	47.2	0.0118	0.0630	1,900	74.8	0.0165	0.2165	0.0079
20.0	R3	90	0.5°	1,500	74.8	0.0185	0.2087	1,200	47.2	0.0118	0.0630	1,500	59.1	0.0165	0.2165	0.0059
20.0	R3	110	0.5°	1,300	66.9	0.0165	0.1654	1,200	47.2	0.0118	0.0630	1,300	51.2	0.0165	0.2165	0.0039
20.0	R3	130	0.5°	1,100	51.2	0.0122	0.1496	1,100	43.3	0.0118	0.0630	1,100	43.3	0.0165	0.2165	0.0028
20.0	R3	150	0.5°	760	29.9	0.0098	0.1339	760	29.9	0.0091	0.0630	760	29.9	0.0165	0.2165	0.0020

- The above mentioned conditions according to projection lengths are intended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
- Highly rigid machines and tool holders should be used.
- Tool vibrations should be kept at a minimum level for maximum accuracy.
- In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
- Under general machining conditions, air-blow cutting method is recommended.
- More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
- When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
- When cutting at greater than the recommended cutting angle, reduce the feed.
- When the depth of cut is less than the specified amount as listed above, the feed rate can be increased up to 150%.
- When the depth of cut is greater than the specified amount as listed above, the feed rate can be reduced by no more than 60% to ensure stable milling.





List 9592 - EXOPRO[®] PHX : Pencil-Neck, Deep Feed, Corner Radius

Side Milling

Hardness			Up to 41 HRC					42~55 HRC					49~55 HRC		
Work Material			Hardened and Pre-hardened Steels												
Cutting Speed			108~393 SFM					108~248 SFM					108~402 SFM		
D (mm)	r (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)		Depth of Cut (in)		Speed (RPM)	Feed (in/min)		Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)
				Slotting	Contouring	Aa	Ar		Slotting	Contouring	Aa	Ar			
0.8	0.1	2	18,000	28.3	36.6	0.0008	0.008	18,000	28.3	36.6	0.0008	0.008	18,000	45.3	0.0006
0.8	0.1	4	18,000	28.3	36.6	0.0008	0.008	18,000	28.3	36.6	0.0008	0.008	18,000	45.3	0.0006
0.8	0.1	6	18,000	28.3	36.6	0.0008	0.008	18,000	28.3	36.6	0.0008	0.008	18,000	45.3	0.0006
0.8	0.1	8	15,000	21.3	26.8	0.0006	0.008	15,000	21.3	24.8	0.0005	0.008	16,000	27.6	0.0005
1.0	0.1	4	18,000	32.7	43.3	0.0012	0.009	18,000	32.7	34.6	0.0012	0.009	18,000	56.7	0.0006
1.0	0.1	6	18,000	32.7	43.3	0.0009	0.009	18,000	32.7	34.6	0.0009	0.009	18,000	56.7	0.0006
1.0	0.1	8	15,000	29.5	39.4	0.0005	0.009	15,000	29.5	31.5	0.0005	0.009	15,000	47.2	0.0006
1.0	0.1	10	12,000	11.8	19.7	0.0003	0.008	12,000	11.8	15.7	0.0003	0.008	12,000	37.8	0.0006
1.0	0.1	12	10,500	8.7	14.2	0.0002	0.007	10,500	8.7	11.3	0.0002	0.007	10,500	33.1	0.0006
1.0	0.2	4	18,000	32.7	43.3	0.0012	0.009	18,000	32.7	34.6	0.0012	0.009	18,000	56.7	0.0007
1.0	0.2	6	18,000	32.7	43.3	0.0009	0.009	18,000	32.7	34.6	0.0009	0.009	18,000	56.7	0.0007
1.0	0.2	8	15,000	29.5	39.4	0.0005	0.009	15,000	29.5	31.5	0.0005	0.009	15,000	47.2	0.0007
1.0	0.2	10	12,000	11.8	19.7	0.0003	0.008	12,000	11.8	15.7	0.0003	0.008	12,000	37.8	0.0007
1.0	0.2	12	10,500	8.7	14.2	0.0002	0.007	10,500	8.7	11.4	0.0002	0.007	10,500	33.1	0.0007
1.0	0.3	4	18,000	32.7	49.6	0.0012	0.009	18,000	32.7	39.4	0.0012	0.009	18,000	56.7	0.0009
1.0	0.3	6	18,000	32.7	44.1	0.0009	0.009	18,000	32.7	35.0	0.0009	0.009	18,000	56.7	0.0009
1.5	0.1	4	18,000	48.4	65.0	0.0012	0.013	16,000	42.5	51.2	0.0012	0.013	18,000	63.8	0.0006
1.5	0.1	8	18,000	48.4	65.0	0.0010	0.013	16,000	42.5	51.2	0.0010	0.013	18,000	63.8	0.0006
1.5	0.1	12	10,000	18.9	31.5	0.0005	0.012	10,000	17.7	29.5	0.0005	0.012	10,000	35.4	0.0006
1.5	0.2	4	18,000	48.4	65.0	0.0012	0.013	16,000	42.5	51.2	0.0012	0.013	18,000	63.8	0.0007
1.5	0.2	6	18,000	48.4	65.0	0.0011	0.013	16,000	42.5	51.2	0.0011	0.013	18,000	63.8	0.0007
1.5	0.2	8	18,000	48.4	65.0	0.0010	0.013	16,000	42.5	51.2	0.0010	0.013	18,000	63.8	0.0007
2.0	0.1	8	18,000	69.3	87.0	0.0012	0.018	12,000	39.4	51.2	0.0012	0.018	18,000	63.8	0.0006
2.0	0.1	10	15,000	63.8	85.0	0.0012	0.018	12,000	39.4	47.2	0.0012	0.018	15,000	53.1	0.0006
2.0	0.1	12	13,000	52.0	69.3	0.0009	0.018	12,000	37.4	45.3	0.0009	0.018	13,000	46.1	0.0006
2.0	0.1	16	7,600	29.5	39.4	0.0005	0.018	7,600	23.6	30.7	0.0005	0.018	7,000	24.8	0.0006
2.0	0.3	8	18,000	63.8	87.0	0.0020	0.018	12,000	39.4	51.2	0.0020	0.018	18,000	63.8	0.0009
2.0	0.3	12	13,000	52.0	69.3	0.0016	0.018	12,000	37.4	45.3	0.0016	0.018	13,000	46.1	0.0009
2.0	0.5	6	18,000	69.3	87.0	0.0031	0.018	12,000	33.5	51.2	0.0031	0.018	18,000	63.8	0.0010
2.0	0.5	8	18,000	69.3	87.0	0.0030	0.018	12,000	33.5	51.2	0.0030	0.018	18,000	63.8	0.0010
2.0	0.5	10	15,000	63.8	85.0	0.0028	0.018	12,000	31.5	47.2	0.0028	0.018	15,000	53.1	0.0010
2.0	0.5	12	13,000	52.0	69.3	0.0024	0.018	12,000	27.6	45.3	0.0024	0.018	13,000	46.1	0.0010
3.0	0.3	12	12,700	55.1	91.3	0.0018	0.028	8,000	33.1	47.2	0.0018	0.028	13,000	46.1	0.0009

- Adjust the speed, feed, and plunge depth in accordance with operating conditions, including the machining shape, machine rigidity, holder rigidity, and work holding force.
- If the speed and feed rates cannot increase due to equipment performance, operate by reducing the speed and feed rates at the same ratio.
- High cutting speeds and feed rates can cause cutter wear or reduce machining precision. Therefore, operate by reducing the feed rate as needed.
- Depending on the shape to be machined, if the end mill chatters during machining, it can bite into the shape. Therefore, operate by reducing the speed and feed rates at the same ratio.
- For precise, detailed machining, use a dedicated machine that operates quietly.
- Operate by keeping the runout at the tip of the end mill below 5 microns (.0002").
- To perform finish machining with a high level of efficiency, keep the speed and feed rates below 2 times.
- To finish a flat surface, operate at a speed range with a minimal amount of equipment vibration, making sure that the feed rate does not cause the equipment to wobble.
- To finish machine a curved surface using the corner radius tool, operate by changing the machining pitch.
- Set the inclined cut angle approximately between 0.3° and 0.5°.





For Standard LDR (Up to 6:1)

Speeds

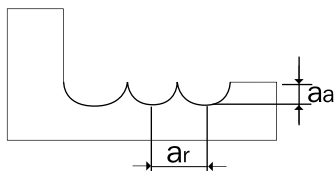
Diameter	Roughing & Semi-finishing			Finishing		
	RPM			RPM		
	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC
1/32	38,400 – 60,000	32,000 – 50,000	24,600 – 40,000	20,000 – 50,000	20,000 – 50,000	20,000 – 50,000
1/16	26,400 – 42,000	22,000 – 35,000	16,600 – 28,000	20,000 – 50,000	20,000 – 50,000	20,000 – 50,000
3/32	21,600 – 31,200	18,000 – 26,000	13,400 – 20,800	20,000 – 50,000	20,000 – 50,000	20,000 – 50,000
1/8	19,200 – 28,800	16,000 – 24,000	11,800 – 19,200	20,000 – 38,000	20,000 – 50,000	20,000 – 30,500
3/16	15,000 – 19,776	12,500 – 16,480	9,000 – 13,184	20,000 – 26,000	20,000 – 34,000	16,000 – 20,300
1/4	12,120 – 16,800	10,100 – 14,000	7,080 – 11,200	15,000 – 18,000	18,000 – 24,400	12,000 – 15,000
5/16	11,400 – 15,900	9,200 – 13,250	6,360 – 10,600	12,000 – 14,000	14,600 – 19,000	9,700 – 12,000
3/8	10,560 – 14,520	8,800 – 12,100	6,040 – 9,680	10,000 – 12,000	12,000 – 16,200	8,100 – 10,000
7/16	9,480 – 12,480	7,900 – 10,400	5,320 – 8,320	8,700 – 10,400	10,000 – 13,900	6,900 – 8,700
1/2	8,280 – 10,920	6,900 – 9,100	4,520 – 7,280	7,800 – 9,800	9,100 – 12,200	6,100 – 7,600

Chip Load per Tooth

Diameter	30 - 40 HRC		40 - 50 HRC		50 - 60 HRC	
	Rough & Semi	Finishing	Rough & Semi	Finishing	Rough & Semi	Finishing
1/32	0.0006 – 0.0010	0.0006 – 0.0009	0.0006 – 0.0008	0.0005 – 0.0007	0.0004 – 0.0007	0.0004 – 0.0006
1/16	0.0012 – 0.0016	0.0010 – 0.0015	0.0010 – 0.0015	0.0010 – 0.0014	0.0008 – 0.0012	0.0007 – 0.0010
3/32	0.0020 – 0.0025	0.0014 – 0.0024	0.0015 – 0.0022	0.0014 – 0.0020	0.0012 – 0.0020	0.0010 – 0.0014
1/8	0.0025 – 0.0030	0.0019 – 0.0028	0.0020 – 0.0027	0.0019 – 0.0026	0.0017 – 0.0022	0.0015 – 0.0020
3/16	0.0035 – 0.0043	0.0032 – 0.0042	0.0032 – 0.0041	0.0030 – 0.0040	0.0030 – 0.0039	0.0023 – 0.0031
1/4	0.0050 – 0.0060	0.0040 – 0.0053	0.0050 – 0.0057	0.0040 – 0.0051	0.0040 – 0.0050	0.0038 – 0.0048
5/16	0.0063 – 0.0070	0.0053 – 0.0068	0.0052 – 0.0066	0.0052 – 0.0063	0.0051 – 0.0062	0.0046 – 0.0054
3/8	0.0070 – 0.0080	0.0062 – 0.0079	0.0062 – 0.0077	0.0054 – 0.0065	0.0060 – 0.0072	0.0050 – 0.0061
7/16	0.0080 – 0.0087	0.0068 – 0.0086	0.0068 – 0.0084	0.0060 – 0.0078	0.0066 – 0.0080	0.0053 – 0.0070
1/2	0.0087 – 0.0100	0.0080 – 0.0094	0.0080 – 0.0092	0.0070 – 0.0090	0.0078 – 0.0090	0.0062 – 0.0081

Axial Depths of Cut

- 30 - 40 HRC 10% Diameter
- 40 - 50 HRC 7% Diameter
- 50 - 60 HRC 5% Diameter



Radial Depths of Cut

Up to 35% D for roughing and semi-finishing operations. However, radial depths of cut are normally determined by the surface finish requirements, specific to each application.

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For Long LDR (6:1 to 8:1)

Speeds

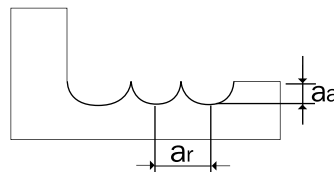
Diameter	Roughing & Semi-finishing			Finishing		
	RPM			RPM		
	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC
1/32	28,800 – 45,000	24,000 – 37,500	18,450 – 30,000	15,000 – 37,500	15,000 – 37,500	15,000 – 37,500
1/16	19,800 – 31,500	16,500 – 26,250	12,450 – 21,000	15,000 – 37,500	15,000 – 37,500	15,000 – 37,500
3/32	16,200 – 23,400	13,500 – 19,500	10,050 – 15,600	15,000 – 37,500	15,000 – 37,500	15,000 – 37,500
1/8	14,400 – 21,600	12,000 – 18,000	8,850 – 14,400	15,000 – 37,500	15,000 – 28,500	15,000 – 22,875
3/16	11,250 – 14,832	9,375 – 12,360	6,750 – 9,888	15,000 – 25,500	15,000 – 19,500	12,000 – 15,225
1/4	9,090 – 12,600	7,575 – 10,500	5,310 – 8,400	13,500 – 18,300	11,250 – 13,500	9,000 – 11,250
5/16	8,550 – 11,925	6,900 – 9,938,845	4,770 – 7,950	10,950 – 14,250	9,000 – 10,500	7,275 – 9,000
3/8	7,920 – 10,890	6,600 – 9,075	4,530 – 7,260	9,000 – 12,150	7,500 – 9,000	6,075 – 7,500
7/16	7,110 – 9,360	5,925 – 7,800	3,990 – 6,240	7,500 – 10,425	6,525 – 7,800	5,175 – 6,525
1/2	6,210 – 8,190	5,175 – 6,825	3,390 – 5,460	6,825 – 9,150	5,850 – 7,350	4,575 – 5,700

Chip Load per Tooth

Diameter	30 - 40 HRC		40 - 50 HRC		50 - 60 HRC	
	Rough & Semi	Finishing	Rough & Semi	Finishing	Rough & Semi	Finishing
1/32	0.0005 – 0.0008	0.0004 – 0.0007	0.0004 – 0.0005	0.0005 – 0.0006	0.0003 – 0.0005	0.0003 – 0.0005
1/16	0.0009 – 0.0012	0.0008 – 0.0011	0.0008 – 0.0011	0.0008 – 0.0011	0.0006 – 0.0009	0.0005 – 0.0008
3/32	0.0015 – 0.0019	0.0011 – 0.0018	0.0011 – 0.0017	0.0011 – 0.0015	0.0009 – 0.0015	0.0008 – 0.0011
1/8	0.0019 – 0.0023	0.0014 – 0.0021	0.0015 – 0.0020	0.0014 – 0.0020	0.0013 – 0.0017	0.0011 – 0.0015
3/16	0.0026 – 0.0032	0.0024 – 0.0032	0.0024 – 0.0031	0.0023 – 0.0030	0.0023 – 0.0029	0.0017 – 0.0023
1/4	0.0038 – 0.0045	0.0030 – 0.0040	0.0038 – 0.0043	0.0030 – 0.0038	0.0030 – 0.0038	0.0029 – 0.0036
5/16	0.0047 – 0.0053	0.0040 – 0.0051	0.0039 – 0.0050	0.0039 – 0.0047	0.0038 – 0.0047	0.0035 – 0.0041
3/8	0.0053 – 0.0060	0.0047 – 0.0059	0.0047 – 0.0058	0.0041 – 0.0049	0.0045 – 0.0054	0.0038 – 0.0046
7/16	0.0060 – 0.0065	0.0051 – 0.0065	0.0051 – 0.0063	0.0045 – 0.0059	0.0050 – 0.0060	0.0040 – 0.0053
1/2	0.0065 – 0.0075	0.0060 – 0.0071	0.0060 – 0.0069	0.0053 – 0.0068	0.0059 – 0.0068	0.0047 – 0.0061

Axial Depths of Cut

30 - 40 HRC 10% Diameter
 40 - 50 HRC 7% Diameter
 50 - 60 HRC 5% Diameter



Radial Depths of Cut

Up to 35% D for roughing and semi-finishing operations. However, radial depths of cut are normally determined by the surface finish requirements, specific to each application.

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For Extra Long LDR (Beyond 8:1)

Speeds

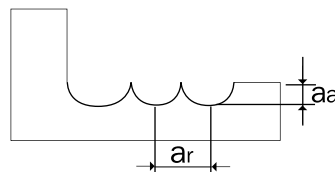
Diameter	Roughing & Semi-finishing			Finishing		
	RPM			RPM		
	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC
1/32	19,200 – 30,000	16,000 – 25,000	12,300 – 20,000	10,000 – 25,000	10,000 – 25,000	10,000 – 25,000
1/16	13,200 – 21,000	11,000 – 17,500	8,300 – 14,000	10,000 – 25,000	10,000 – 25,000	10,000 – 25,000
3/32	10,800 – 15,600	9,000 – 13,000	6,700 – 10,400	10,000 – 25,000	10,000 – 25,000	10,000 – 25,000
1/8	9,600 – 14,400	8,000 – 12,000	5,900 – 9,600	10,000 – 25,000	10,000 – 19,000	10,000 – 15,250
3/16	7,500 – 9,888	6,250 – 8,240	4,500 – 6,592	10,000 – 17,000	10,000 – 13,000	8,000 – 10,150
1/4	6,060 – 8,400	5,050 – 7,000	3,540 – 5,600	9,000 – 12,200	7,500 – 9,000	6,000 – 7,500
5/16	5,700 – 7,950	4,600 – 6,625	3,180 – 5,300	7,300 – 9,500	6,000 – 7,000	4,850 – 6,000
3/8	5,280 – 7,260	4,400 – 6,050	3,020 – 4,840	6,000 – 8,100	5,000 – 6,000	4,050 – 5,000
7/16	4,740 – 6,240	3,950 – 5,200	2,660 – 4,160	5,000 – 6,950	4,350 – 5,200	3,450 – 4,350
1/2	4,140 – 5,460	3,450 – 4,550	2,260 – 3,640	4,550 – 6,100	3,900 – 4,900	3,050 – 3,800

Chip Load per Tooth

Diameter	30 - 40 HRC		40 - 50 HRC		50 - 60 HRC	
	Rough & Semi	Finishing	Rough & Semi	Finishing	Rough & Semi	Finishing
1/32	0.0003 – 0.0005	0.0003 – 0.0005	0.0003 – 0.0004	0.0003 – 0.0004	0.0002 – 0.0004	0.0002 – 0.0003
1/16	0.0006 – 0.0008	0.0005 – 0.0008	0.0005 – 0.0008	0.0005 – 0.0007	0.0004 – 0.0006	0.0004 – 0.0005
3/32	0.0010 – 0.0013	0.0007 – 0.0012	0.0008 – 0.0011	0.0007 – 0.0010	0.0006 – 0.0010	0.0005 – 0.0007
1/8	0.0013 – 0.0015	0.0010 – 0.0014	0.0010 – 0.0014	0.0010 – 0.0013	0.0009 – 0.0011	0.0008 – 0.0010
3/16	0.0018 – 0.0022	0.0016 – 0.0021	0.0016 – 0.0021	0.0015 – 0.0020	0.0015 – 0.0020	0.0012 – 0.0016
1/4	0.0025 – 0.0030	0.0020 – 0.0027	0.0025 – 0.0029	0.0020 – 0.0026	0.0020 – 0.0025	0.0019 – 0.0024
5/16	0.0032 – 0.0035	0.0027 – 0.0034	0.0026 – 0.0033	0.0026 – 0.0032	0.0026 – 0.0031	0.0023 – 0.0027
3/8	0.0035 – 0.0040	0.0031 – 0.0040	0.0031 – 0.0039	0.0027 – 0.0033	0.0030 – 0.0036	0.0025 – 0.0031
7/16	0.0040 – 0.0044	0.0034 – 0.0043	0.0034 – 0.0042	0.0030 – 0.0039	0.0033 – 0.0040	0.0027 – 0.0035
1/2	0.0044 – 0.0050	0.0040 – 0.0047	0.0040 – 0.0046	0.0035 – 0.0045	0.0039 – 0.0045	0.0031 – 0.0041

Axial Depths of Cut

30 - 40 HRC 10% Diameter
 40 - 50 HRC 7% Diameter
 50 - 60 HRC 5% Diameter



Radial Depths of Cut

Up to 35% D for roughing and semi-finishing operations. However, radial depths of cut are normally determined by the surface finish requirements, specific to each application.





List 3610 - EXOCARB® WXL®: Ball End, Regular Length, 2 Flute

Standard Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC										
Work Material	Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2												
Cutting Speed	388 SFM		324 SFM		263 SFM		233 SFM										
Depth of Cut	<table border="1"> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> <tr><td>$D < 1/16$</td><td>$0.05D$</td><td>$0.2D$</td></tr> <tr><td>$1/16 \leq D \leq 1/2$</td><td>$0.1D$</td><td>$0.2D$</td></tr> </table>		Dia	aa	ar	$D < 1/16$	$0.05D$	$0.2D$	$1/16 \leq D \leq 1/2$	$0.1D$	$0.2D$			$aa=0.1D$ $ar=0.2D$		$aa=0.05D$ $ar=0.1D$	
	Dia	aa	ar														
$D < 1/16$	$0.05D$	$0.2D$															
$1/16 \leq D \leq 1/2$	$0.1D$	$0.2D$															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1/32	47,429	66.4	39,606	55.4	32,149	45.0	28,482	34.2									
1/16	23,715	61.7	19,803	51.5	16,075	41.8	14,241	34.2									
3/32	15,810	60.1	13,202	50.2	10,716	40.7	9,494	34.2									
1/8	11,857	56.9	9,901	47.5	8,037	38.6	7,120	31.3									
3/16	7,905	58.5	6,601	48.8	5,358	39.7	4,747	33.2									
1/4	5,929	54.5	4,951	45.5	4,019	37.0	3,560	32.0									
5/16	4,743	56.9	3,961	47.5	3,215	38.6	2,848	32.5									
3/8	3,952	55.3	3,300	46.2	2,679	37.5	2,373	28.5									
1/2	2,964	51.6	2,475	43.1	2,009	35.0	1,780	30.6									

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC													
Work Material	Copper Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2															
Cutting Speed	659 SFM		713 SFM		651 SFM		561 SFM													
Depth of Cut	$aa=0.02D$ $ar=0.05D$		<table border="1"> <tr><th>Dia</th><th>aa</th><th>ar</th></tr> <tr><td>$D < 3/16$</td><td>$0.02D$</td><td>$0.05D$</td></tr> <tr><td>$1/4 \leq D \leq 3/8$</td><td>$0.05D$</td><td>$0.1D$</td></tr> <tr><td>$D = 1/2$</td><td>$0.4D$</td><td>$0.2D$</td></tr> </table>		Dia	aa	ar	$D < 3/16$	$0.02D$	$0.05D$	$1/4 \leq D \leq 3/8$	$0.05D$	$0.1D$	$D = 1/2$	$0.4D$	$0.2D$			$aa=0.02D$ $ar=0.05D$	
			Dia	aa	ar															
$D < 3/16$	$0.02D$	$0.05D$																		
$1/4 \leq D \leq 3/8$	$0.05D$	$0.1D$																		
$D = 1/2$	$0.4D$	$0.2D$																		
Mill Diameter	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min														
1/32	50,000	70.0	50,000	70.0	50,000	70.0	50,000	60.0												
1/16	40,278	104.7	43,579	113.3	39,789	103.5	34,288	82.3												
3/32	26,852	102.0	29,052	110.4	26,526	100.8	22,859	82.3												
1/8	20,139	96.7	21,789	104.6	19,895	95.5	17,144	75.4												
3/16	13,426	99.4	14,526	107.5	13,263	98.1	11,429	80.0												
1/4	10,070	92.6	10,895	100.2	9,947	91.5	8,572	77.1												
5/16	8,056	96.7	8,716	104.6	7,958	95.5	6,858	78.2												
3/8	6,713	94.0	7,263	101.7	6,632	92.8	5,715	68.6												
1/2	5,035	87.6	5,447	94.8	4,974	86.5	4,286	73.7												

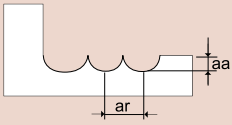
1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





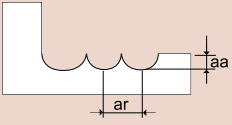
List 3710 - EXOCARB® WXL®: Ball End, Regular Length, 2 Flute

Standard Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed	388 SFM		324 SFM		263 SFM		233 SFM	
Depth of Cut	$a_a=0.05D$ $a_r=0.1D$				$a_a=0.03D$ $a_r=0.1D$		$a_a=0.02D$ $a_r=0.05D$	
Mill Diameter	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.1	50,000	10.0	50,000	10.0	50,000	10.0	50,000	10.0
0.2	50,000	20.0	50,000	20.0	50,000	20.0	50,000	20.0
0.4	50,000	40.0	50,000	40.0	50,000	40.0	50,000	30.0
0.6	50,000	60.0	50,000	60.0	42,531	51.0	37,679	31.7
0.8	47,059	75.3	39,296	62.9	31,898	51.0	28,259	31.1
1.0	37,647	67.8	31,437	56.6	25,518	45.9	22,608	31.7
2.0	18,823	60.2	15,719	50.3	12,759	40.8	11,304	29.4
3.0	12,549	67.8	10,479	56.6	8,506	45.9	7,536	33.2
4.0	9,412	73.4	7,859	61.3	6,380	49.8	5,652	40.7
6.0	6,274	67.8	5,240	56.6	4,253	45.9	3,768	33.2
8.0	4,706	63.1	3,930	52.7	3,190	42.7	2,826	31.7
10.0	3,765	57.2	3,144	47.8	2,552	38.8	2,261	28.0
12.0	3,137	56.5	2,620	47.2	2,127	38.3	1,884	29.4
16.0	2,353	42.4	1,965	35.4	1,595	28.7	1,413	22.0
20.0	1,882	33.9	1,572	28.3	1,276	23.0	1,130	17.6

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed	659 SFM		713 SFM		651 SFM		561 SFM	
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$				$a_a=0.02D$ $a_r=0.05D$		$a_a=0.01D$ $a_r=0.05D$	
Mill Diameter	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1.0	50,000	90.0	50,000	90.0	50,000	90.0	50,000	70.0
2.0	31,971	102.3	34,590	110.7	31,583	101.1	27,216	70.8
3.0	21,314	115.1	23,060	124.5	21,055	113.7	18,144	79.8
4.0	15,985	124.7	17,295	134.9	15,791	123.2	13,608	98.0
6.0	10,657	115.1	11,530	124.5	10,528	113.7	9,072	79.8
8.0	7,993	107.1	8,648	115.9	7,896	105.8	6,804	76.2
10.0	6,394	97.2	6,918	105.2	6,317	96.0	5,443	67.5
12.0	5,328	95.9	5,765	103.8	5,264	94.7	4,536	70.8
16.0	3,996	71.9	4,324	77.8	3,948	71.1	3,402	53.1
20.0	3,197	57.5	3,459	62.3	3,158	56.8	2,722	42.5


1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.






List 3670 - EXOCARB® WXL®: 4 Flute, Regular Length, Corner Radius

Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Stainless Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	396 SFM		294 SFM		258 SFM		192 SFM		156 SFM		96 SFM	
Depth of Cut	$a_a=1.2xD$ $a_r=0.2xD$ 						$a_a=1D$ $a_r=0.1D$		$a_a=1D$ $a_r=0.05D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/16	24,000	38.4	18,000	28.8	15,600	25.0	12,000	19.2	9,600	11.5	6,000	4.8
5/64	19,200	38.4	14,400	28.8	12,480	25.0	9,600	19.2	7,680	12.3	4,800	5.8
3/32	16,080	38.6	12,000	28.8	10,380	24.9	7,980	19.2	6,420	12.8	4,020	4.8
7/64	13,740	38.5	10,320	28.9	8,940	25.0	6,900	19.3	5,520	13.2	3,480	5.6
1/8	12,000	43.2	9,000	28.8	7,800	25.0	6,000	19.2	4,800	13.4	3,000	6.0
5/32	9,600	46.1	7,200	31.7	6,240	27.5	4,800	21.1	3,840	15.4	2,400	7.7
3/16	8,040	51.5	6,000	36.0	5,220	31.3	4,020	22.5	3,180	17.8	1,980	9.5
7/32	6,900	55.2	5,160	37.2	4,440	30.2	3,420	23.3	2,760	16.6	1,740	9.0
1/4	6,000	55.2	4,500	39.6	3,900	31.2	3,000	24.0	2,400	16.3	1,500	9.0
5/16	4,800	57.6	3,600	38.9	3,120	32.4	2,400	24.0	1,920	16.9	1,200	9.6
3/8	4,020	56.3	3,000	38.4	2,640	30.6	1,980	22.2	1,620	16.2	1,020	9.4
7/16	3,480	55.7	2,580	38.2	2,280	31.0	1,740	22.3	1,380	16.0	840	8.4
1/2	3,000	54.0	2,280	35.6	1,980	27.7	1,500	19.2	1,200	13.9	750	8.1

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC																				
Work Material	Carbon Steels 1045, 1055		Alloy Steels 4140, 4340		Hardened Steels Pre-hardened Steels D2, H13, 17-4PH		Tool Steels, Hardened Steels Pre-hardened Steels, D2, H13		Hardened Steels Heat Resistant Steels																				
Cutting Speed	1,560 SFM		1,380 SFM		960 SFM		600 SFM		130 SFM																				
Depth of Cut	a_a  <table border="1" style="margin-left: auto; margin-right: auto;"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>$D < 1/8$</td><td>1.5D</td><td>0.01D</td></tr> <tr><td>$1/8 \leq D$</td><td>1.5D</td><td>0.02D</td></tr> <tr><td>$5/8 < D$</td><td>1.5D</td><td>0.05D</td></tr> </table>						Dia	a_a	a_r	$D < 1/8$	1.5D	0.01D	$1/8 \leq D$	1.5D	0.02D	$5/8 < D$	1.5D	0.05D	<table border="1" style="margin-left: auto; margin-right: auto;"> <tr><th>Dia</th><th>a_a</th><th>a_r</th></tr> <tr><td>$D \leq 5/16$</td><td>1.0D</td><td>0.01D</td></tr> <tr><td>$5/16 < D$</td><td>1.0D</td><td>0.02D</td></tr> </table>		Dia	a_a	a_r	$D \leq 5/16$	1.0D	0.01D	$5/16 < D$	1.0D	0.02D
Dia	a_a	a_r																											
$D < 1/8$	1.5D	0.01D																											
$1/8 \leq D$	1.5D	0.02D																											
$5/8 < D$	1.5D	0.05D																											
Dia	a_a	a_r																											
$D \leq 5/16$	1.0D	0.01D																											
$5/16 < D$	1.0D	0.02D																											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																			
1/4	24,000	220.8	21,000	184.8	14,760	118.1	9,000	72.0	4,800	32.6																			
9/32	20,400	212.2	18,000	172.8	13,200	121.4	7,920	69.7	4,200	33.6																			
5/16	18,840	226.1	16,320	176.3	12,000	124.8	7,200	72.0	3,840	33.8																			
3/8	15,600	218.4	13,800	176.6	9,960	115.5	6,000	67.2	3,120	31.2																			
7/16	13,200	211.2	12,000	177.6	8,640	117.5	5,160	66.0	2,760	32.0																			
1/2	11,880	213.8	10,440	162.9	7,440	104.2	4,440	56.8	2,400	27.8																			

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 3604 - EXOCARB® WXL®: Regular Length, 4 Flute

Standard Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed	974 SFM		250 SFM		172 SFM		153 SFM	
Depth of Cut	Dia		aa	ar				
	D < 7/64		1.5D	0.05D				
	7/64 ≤ D		1.5D	0.1D				
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/16	50,000	80.0	14,000	22.4	8,200	13.1	7,400	11.8
5/64	47,500	95.0	12,000	24.0	7,000	14.0	6,350	12.7
3/32	42,750	102.6	10,800	25.9	6,600	15.8	5,950	14.3
7/64	35,000	98.0	8,900	24.9	5,750	16.1	5,150	14.4
1/8	28,000	100.8	7,000	25.2	4,800	15.4	4,200	13.4
5/32	25,000	130.0	6,050	31.5	4,250	20.4	3,700	16.3
3/16	21,500	137.6	5,500	35.2	3,900	23.4	3,425	19.2
7/32	17,500	140.0	4,100	32.8	2,950	20.1	2,650	18.0
1/4	14,000	128.8	3,800	35.0	2,600	20.8	2,300	18.4
9/32	12,500	130.0	3,400	35.4	2,400	23.0	2,100	18.5
5/16	12,000	144.0	3,050	36.6	2,200	25.5	1,950	19.5
3/8	10,100	141.4	2,750	38.5	1,975	22.9	1,750	19.6
7/16	8,700	139.2	2,250	36.0	1,600	21.8	1,425	18.2
1/2	7,400	133.2	1,900	34.2	1,350	18.9	1,200	15.8
5/8	6,000	110.4	1,500	27.6	1,100	16.3	995	13.9
3/4	5,000	94.0	1,275	24.0	950	16.3	850	13.9

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed	1,627 SFM		1,231 SFM		803 SFM		482 SFM	
Depth of Cut	Dia		aa	ar				
	D < 5/16		1.5D	0.01D				
	5/16 ≤ D		1.5D	0.02D				
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
7/32	26,000	208.0	20,000	160.0	13,000	88.4	7,950	54.1
1/4	22,500	207.0	19,000	174.8	11,500	92.0	7,000	56.0
9/32	24,000	249.6	17,500	182.0	10,500	100.8	6,250	55.0
5/16	19,500	234.0	14,500	174.0	9,900	114.8	5,950	59.5
3/8	17,500	245.0	13,250	185.5	8,900	103.2	5,350	59.9
7/16	14,250	228.0	10,950	175.2	7,275	98.9	4,350	55.7
1/2	12,000	216.0	9,200	165.6	6,125	85.8	3,675	48.5
5/8	9,700	178.5	7,450	137.1	4,950	73.3	2,950	41.3
3/4	9,150	172.0	6,275	118.0	4,175	71.8	2,500	41.0

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 3690 : Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing

List 3790 : Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing

Standard Milling

Hardness		-				Up to 32 HRC				33 to 41 HRC				42 to 50 HRC			
Work Material		Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Pre-hardened Steels, P20, H13, S7, A2							
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM			
Depth of Cut																	
Mill Dia.	L1																
0.1	0.30	32,000	5.9	0.0002	0.0002	32,000	3.0	0.0002	0.0002	32,000	2.0	0.00020	0.00020	32,000	1.4	0.0002	0.0002
	0.50	32,000	4.7	0.0002	0.0002	32,000	2.4	0.0002	0.0002	32,000	1.6	0.00020	0.00020	32,000	1.0	0.0002	0.0002
	0.30	32,000	11.8	0.0008	0.0008	32,000	7.9	0.0004	0.0004	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0002	0.0002
	0.50	32,000	11.8	0.0008	0.0008	32,000	7.9	0.0004	0.0004	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0002	0.0002
	0.75	32,000	11.8	0.0008	0.0008	32,000	7.9	0.0004	0.0004	32,000	7.9	0.00039	0.00039	32,000	3.9	0.0002	0.0002
	1.00	32,000	5.9	0.0008	0.0008	32,000	3.9	0.0004	0.0004	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	1.25	32,000	5.9	0.0008	0.0008	32,000	3.9	0.0004	0.0004	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	1.50	32,000	5.9	0.0008	0.0008	32,000	3.9	0.0004	0.0004	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	1.75	32,000	5.9	0.0008	0.0008	32,000	3.9	0.0004	0.0004	32,000	3.9	0.00039	0.00039	32,000	3.1	0.0002	0.0002
	2.00	32,000	5.9	0.0004	0.0004	32,000	3.9	0.0000	0.0000	32,000	3.9	0.00002	0.00002	32,000	3.1	0.0002	0.0002
0.2	2.50	32,000	3.0	0.0004	0.0004	32,000	2.0	0.0000	0.0000	32,000	2.0	0.00002	0.00002	32,000	1.6	0.0001	0.0002
	3.00	32,000	3.0	0.0004	0.0004	32,000	2.0	0.0000	0.0000	32,000	2.0	0.00002	0.00002	32,000	1.6	0.0001	0.0002
	0.50	32,000	23.6	0.0008	0.0012	32,000	15.7	0.0004	0.0006	32,000	11.8	0.00039	0.00059	32,000	11.8	0.0002	0.0002
	0.60	32,000	23.6	0.0008	0.0012	32,000	15.7	0.0004	0.0006	32,000	11.8	0.00039	0.00059	32,000	11.8	0.0002	0.0002
	0.75	32,000	23.6	0.0008	0.0012	32,000	15.7	0.0004	0.0006	32,000	11.8	0.00039	0.00059	32,000	11.8	0.0002	0.0002
	1.00	32,000	17.7	0.0008	0.0012	32,000	11.8	0.0004	0.0006	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	1.25	32,000	17.7	0.0008	0.0012	32,000	11.8	0.0004	0.0006	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	1.50	32,000	17.7	0.0008	0.0012	32,000	11.8	0.0004	0.0006	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	1.75	32,000	17.7	0.0008	0.0012	32,000	11.8	0.0004	0.0006	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
	2.00	32,000	17.7	0.0008	0.0012	32,000	11.8	0.0004	0.0006	32,000	7.9	0.00039	0.00059	32,000	7.9	0.0002	0.0002
0.3	2.25	32,000	17.7	0.0008	0.0008	32,000	11.8	0.0004	0.0004	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0004	0.0004
	2.50	32,000	17.7	0.0008	0.0008	32,000	11.8	0.0004	0.0004	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0004	0.0004
	2.75	32,000	17.7	0.0008	0.0008	32,000	11.8	0.0004	0.0004	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0004	0.0004
	3.00	32,000	17.7	0.0008	0.0008	32,000	11.8	0.0004	0.0004	32,000	7.9	0.00039	0.00039	32,000	7.9	0.0002	0.0004
	3.50	32,000	10.6	0.0008	0.0008	32,000	7.1	0.0004	0.0004	32,000	4.7	0.00039	0.00039	32,000	4.7	0.0002	0.0004
	4.00	32,000	10.6	0.0008	0.0008	32,000	7.1	0.0004	0.0004	32,000	4.7	0.00039	0.00039	32,000	4.7	0.0002	0.0002
	4.50	32,000	10.6	0.0008	0.0008	32,000	7.1	0.0004	0.0004	32,000	4.7	0.00039	0.00039	32,000	4.7	0.0001	0.0002
	5.00	32,000	5.9	0.0004	0.0008	32,000	3.9	0.0000	0.0004	32,000	2.8	0.00002	0.00039	32,000	2.8	0.0001	0.0002
	0.50	32,000	29.5	0.0010	0.0020	32,000	19.7	0.0006	0.0010	32,000	15.7	0.00059	0.00079	32,000	15.7	0.0004	0.0004
	0.75	32,000	29.5	0.0010	0.0020	32,000	19.7	0.0006	0.0010	32,000	15.7	0.00059	0.00079	32,000	15.7	0.0004	0.0004
0.4	1.00	32,000	23.6	0.0010	0.0020	32,000	15.7	0.0006	0.0010	32,000	11.8	0.00059	0.00079	32,000	11.8	0.0004	0.0004
	1.50	32,000	23.6	0.0010	0.0020	32,000	15.7	0.0006	0.0010	32,000	11.8	0.00059	0.00079	32,000	11.8	0.0004	0.0004
	2.00	27,000	17.7	0.0010	0.0020	27,000	11.8	0.0006	0.0010	27,000	7.9	0.00059	0.00079	27,000	7.9	0.0004	0.0004
	2.50	27,000	17.7	0.0010	0.0020	27,000	11.8	0.0006	0.0010	27,000	7.9	0.00059	0.00079	27,000	7.9	0.0004	0.0004
	3.00	27,000	17.7	0.0010	0.0020	27,000	11.8	0.0006	0.0010	27,000	7.9	0.00059	0.00079	27,000	7.9	0.0004	0.0004
	3.50	27,000	17.7	0.0010	0.0020	27,000	11.8	0.0006	0.0010	27,000	7.9	0.00059	0.00079	27,000	7.9	0.0004	0.0004
	4.00	27,000	17.7	0.0004	0.0012	27,000	11.8	0.0000	0.0006	27,000	7.9	0.00002	0.00047	27,000	7.9	0.0002	0.0004
	4.50	24,000	11.8	0.0004	0.0012	27,000	7.9	0.0000	0.0006	27,000	3.9	0.00002	0.00047	27,000	3.9	0.0002	0.0004
	5.00	24,000	11.8	0.0004	0.0012	27,000	7.9	0.0000	0.0006	27,000	3.9	0.00002	0.00047	27,000	3.9	0.0002	0.0004
	5.50	21,000	11.8	0.0004	0.0008	27,000	7.9	0.0000	0.0004	27,000	3.9	0.00002	0.00031	27,000	3.9	0.0002	0.0002
0.5	6.00	21,000	5.9	0.0004	0.0006	27,000	3.9	0.0000	0.0003	27,000	3.1	0.00002	0.00024	27,000	3.1	0.0001	0.0002
	1.00	32,000	29.5	0.0016	0.0020	32,000	19.7	0.0008	0.0010	32,000	15.7	0.00079	0.00079	32,000	15.7	0.0004	0.0004
	1.50	32,000	29.5	0.0016	0.0020	32,000	19.7	0.0008	0.0010	32,000	15.7	0.00079	0.00079	32,000	15.7	0.0004	0.0004
	2.00	32,000	23.6	0.0016	0.0020	32,000	15.7	0.0008	0.0010	32,000	11.8	0.00079	0.00079	32,000	11.8	0.0004	0.0004
	2.50	27,000	17.7	0.0016	0.0020	27,000	11.8	0.0008	0.0010	27,000	7.9	0.00079	0.00079	27,000	7.9	0.0004	0.0004
	3.00	27,000	17.7	0.0016	0.0020	27,000	11.8	0.0008	0.0010	27,000	7.9	0.00079	0.00079	27,000	7.9	0.0004	0.0004
	3.50	27,000	17.7	0.0016	0.0020	27,000	11.8	0.0008	0.0010	27,000	7.9	0.00079	0.00079	27,000	7.9	0.0004	0.0004
	4.00	27,000	17.7	0.0016	0.0020	27,000	11.8	0.0008	0.0010	27,000	7.9	0.00079	0.00079	27,000	7.9	0.0004	0.0004
	4.50	21,000	11.8	0.0016	0.0020	20,000	7.9	0.0008	0.0010	20,000	7.9	0.00079	0.00079	20,000	7.9	0.0004	0.0004
	5.00	21,000	11.8	0.0016	0.0020	20,000	7.9	0.0008	0.0010	20,000	5.9	0.00079	0.00079	20,000	5.9	0.0004	0.0004
5.50	21,000	11.8	0.0008	0.0012	20,000	7.9	0.0004	0.0006	20,000	5.9	0.00039	0.00039	20,000	5.9	0.0004	0.0004	
6.00	21,000	11.8	0.0008	0.0012	20,000	7.9	0.0004	0.0006	20,000	5.9	0.00039	0.00039	20,000	5.9	0.0004	0.0004	

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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Standard Milling

Hardness		-				Up to 32 HRC				33 to 41 HRC				42 to 50 HRC				
Work Material		Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Pre-hardened Steels, P20, H13, S7, A2								
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM				
Depth of Cut																		
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	
0.5	7.00	21,000	11.8	0.0008	0.0012	20,000	7.9	0.0004	0.0006	20,000	5.9	0.00039	0.00039	20,000	5.9	0.0004	0.0004	
	8.00	21,000	11.8	0.0008	0.0012	15,000	7.9	0.0004	0.0006	15,000	5.9	0.00039	0.00039	15,000	5.9	0.0002	0.0004	
	9.00	18,000	5.9	0.0008	0.0008	15,000	3.9	0.0004	0.0004	15,000	3.1	0.00002	0.00039	15,000	3.1	0.0002	0.0002	
	10.00	18,000	5.9	0.0004	0.0004	15,000	3.9	0.0000	0.0000	15,000	3.1	0.00002	0.00002	15,000	3.1	0.0001	0.0002	
0.6	1.00	32,000	35.4	0.0018	0.0047	32,000	23.6	0.0012	0.0024	32,000	19.7	0.00120	0.00200	32,000	19.7	0.0012	0.0012	
	1.50	32,000	35.4	0.0018	0.0047	32,000	23.6	0.0012	0.0024	32,000	19.7	0.00120	0.00200	32,000	19.7	0.0012	0.0012	
	2.00	32,000	26.6	0.0018	0.0047	32,000	17.7	0.0012	0.0024	32,000	11.8	0.00120	0.00200	32,000	11.8	0.0012	0.0012	
	2.50	30,000	26.6	0.0018	0.0047	32,000	17.7	0.0012	0.0024	32,000	11.8	0.00120	0.00200	32,000	11.8	0.0012	0.0012	
	3.00	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.00120	0.00200	24,000	7.9	0.0012	0.0012	
	3.50	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.00120	0.00160	24,000	7.9	0.0012	0.0012	
	4.00	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.00120	0.00160	24,000	7.9	0.0012	0.0012	
	4.50	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.00120	0.00160	24,000	7.9	0.0012	0.0012	
	5.00	30,000	14.8	0.0018	0.0047	25,000	9.8	0.0012	0.0024	24,000	7.9	0.00120	0.00160	24,000	7.9	0.0008	0.0008	
	5.50	25,000	11.8	0.0018	0.0047	20,000	7.9	0.0012	0.0024	20,000	7.9	0.00120	0.00160	20,000	7.9	0.0008	0.0008	
	6.00	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.00120	0.00160	20,000	5.9	0.0008	0.0008	
	6.50	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.00120	0.00160	20,000	5.9	0.0008	0.0008	
	7.00	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.00120	0.00160	20,000	5.9	0.0008	0.0008	
	7.50	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.00120	0.00160	20,000	5.9	0.0008	0.0008	
	8.00	25,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.00120	0.00160	20,000	5.9	0.0008	0.0008	
	8.50	22,000	8.9	0.0018	0.0047	20,000	5.9	0.0012	0.0024	20,000	5.9	0.00079	0.00160	20,000	5.9	0.0004	0.0004	
9.00	22,000	8.9	0.0012	0.0039	20,000	5.9	0.0008	0.0020	20,000	5.9	0.00079	0.00160	20,000	5.9	0.0004	0.0004		
9.50	22,000	8.9	0.0012	0.0039	17,000	5.9	0.0008	0.0020	17,000	5.9	0.00079	0.00160	17,000	5.9	0.0004	0.0004		
10.00	20,000	5.9	0.0010	0.0020	17,000	3.9	0.0006	0.0010	17,000	3.9	0.00059	0.00079	17,000	3.9	0.0002	0.0002		
11.00	20,000	5.9	0.0010	0.0020	17,000	3.9	0.0006	0.0010	17,000	3.9	0.00039	0.00079	17,000	3.9	0.0002	0.0002		
12.00	20,000	4.7	0.0010	0.0020	17,000	3.1	0.0006	0.0010	17,000	3.1	0.00039	0.00047	17,000	3.1	0.0002	0.0002		
0.8	2.00	27,000	26.6	0.0024	0.0063	23,000	17.7	0.0016	0.0031	21,000	11.8	0.00160	0.00240	21,000	11.8	0.0016	0.0016	
	3.00	27,000	26.6	0.0024	0.0063	23,000	17.7	0.0016	0.0031	21,000	11.8	0.00160	0.00240	21,000	11.8	0.0016	0.0016	
	4.00	27,000	26.6	0.0024	0.0063	23,000	17.7	0.0016	0.0031	21,000	11.8	0.00160	0.00240	21,000	11.8	0.0016	0.0016	
	5.00	24,000	14.8	0.0024	0.0047	21,000	9.8	0.0016	0.0024	19,000	7.9	0.00160	0.00200	19,000	7.9	0.0008	0.0010	
	6.00	24,000	14.8	0.0024	0.0047	21,000	9.8	0.0016	0.0024	19,000	7.9	0.00160	0.00200	19,000	7.9	0.0008	0.0010	
	7.00	24,000	14.8	0.0024	0.0047	21,000	9.8	0.0016	0.0024	19,000	7.9	0.00160	0.00200	19,000	7.9	0.0008	0.0010	
	8.00	22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.00160	0.00200	17,000	5.9	0.0008	0.0010	
	9.00	22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.00160	0.00200	17,000	5.9	0.0008	0.0010	
	10.00	22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.00160	0.00200	17,000	5.9	0.0008	0.0010	
	12.00	22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.00160	0.00200	17,000	5.9	0.0008	0.0010	
	1.0	2.50	28,000	35.4	0.0030	0.0079	25,000	23.6	0.0020	0.0039	21,000	15.7	0.00200	0.00310	21,000	15.7	0.0020	0.0020
		3.00	28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.00200	0.00310	21,000	11.8	0.0020	0.0020
4.00		28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.00200	0.00310	21,000	11.8	0.0020	0.0020	
5.00		21,000	17.7	0.0030	0.0079	19,000	11.8	0.0020	0.0039	16,000	7.9	0.00200	0.00310	16,000	7.9	0.0020	0.0020	
6.00		21,000	17.7	0.0030	0.0079	19,000	11.8	0.0020	0.0039	16,000	7.9	0.00200	0.00310	16,000	7.9	0.0020	0.0020	
7.00		21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0030	16,000	7.9	0.00200	0.00300	16,000	7.9	0.0012	0.0012	
8.00		21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0030	16,000	7.9	0.00200	0.00300	16,000	7.9	0.0012	0.0012	
9.00		21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0030	16,000	7.9	0.00200	0.00300	16,000	7.9	0.0012	0.0012	
10.00		18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.00120	0.00180	14,000	5.9	0.0004	0.0006	
12.00		18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.00120	0.00180	14,000	5.9	0.0004	0.0006	
14.00		18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.00120	0.00180	14,000	5.9	0.0004	0.0006	
16.00		16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.0020	10,000	5.9	0.00120	0.00180	10,000	5.9	0.0004	0.0006	
1.2	18.00	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.0020	10,000	5.9	0.00120	0.00180	10,000	5.9	0.0004	0.0006	
	20.00	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.0020	10,000	5.9	0.00120	0.00180	10,000	5.9	0.0004	0.0006	
	22.00	16,000	8.9	0.0020	0.0020	13,000	5.9	0.0008	0.0010	10,000	3.9	0.00079	0.00079	10,000	3.9	0.0002	0.0002	
	4.00	20,000	29.5	0.0035	0.0093	17,000	19.7	0.0024	0.0047	14,000	11.8	0.00240	0.00390	14,000	11.8	0.0024	0.0024	
	6.00	20,000	17.7	0.0035	0.0093	17,000	11.8	0.0024	0.0047	14,000	7.9	0.00240	0.00390	14,000	7.9	0.0024	0.0024	

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

▶ continued on next page ▶





List 3690: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

List 3790: Ball End, Regular Length, 2 Flute, Long Neck, Rib Processing (Continued)

Standard Milling

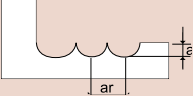
Hardness		-				Up to 32 HRC				33 to 41 HRC				42 to 50 HRC			
Work Material		Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Pre-hardened Steels, P20, H13, S7, A2							
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM			
Depth of Cut																	
Mill Dia.	L1																
1.2	8.00	20,000	17.7	0.0035	0.0093	17,000	11.8	0.0024	0.0047	14,000	7.9	0.00240	0.00390	14,000	7.9	0.0024	0.0024
	10.00	20,000	17.7	0.0035	0.0071	17,000	11.8	0.0024	0.0035	14,000	7.9	0.00240	0.00280	14,000	7.9	0.0012	0.0012
	12.00	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.00240	0.00280	11,000	5.9	0.0012	0.0012
	14.00	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.00240	0.00280	11,000	5.9	0.0004	0.0012
	16.00	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.00240	0.00280	11,000	5.9	0.0004	0.0012
	18.00	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.00240	0.00280	11,000	5.9	0.0004	0.0012
	20.00	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.00240	0.00280	11,000	5.9	0.0004	0.0012
	24.00	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.00240	0.00280	11,000	5.9	0.0004	0.0012
1.4	8.00	18,000	17.7	0.0039	0.0110	15,500	11.8	0.0028	0.0055	12,000	9.8	0.00280	0.00390	12,000	9.8	0.0028	0.0028
	12.00	18,000	17.7	0.0039	0.0079	15,500	11.8	0.0028	0.0035	12,000	9.8	0.00280	0.00310	12,000	9.8	0.0028	0.0028
	16.00	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0035	9,000	5.9	0.00180	0.00280	9,000	5.9	0.0004	0.0012
1.5	3.00	20,000	35.4	0.0047	0.0120	15,000	23.6	0.0031	0.0059	12,000	19.7	0.00310	0.00470	12,000	11.8	0.0031	0.0039
	4.00	20,000	35.4	0.0047	0.0120	15,000	23.6	0.0031	0.0059	12,000	19.7	0.00310	0.00470	12,000	11.8	0.0031	0.0039
	6.00	18,000	29.5	0.0047	0.0120	15,000	19.7	0.0031	0.0059	12,000	13.8	0.00310	0.00470	12,000	11.8	0.0031	0.0039
	8.00	17,000	17.7	0.0047	0.0120	15,000	11.8	0.0031	0.0059	12,000	9.8	0.00310	0.00470	12,000	9.8	0.0031	0.0039
	10.00	17,000	17.7	0.0047	0.0120	15,000	11.8	0.0031	0.0059	12,000	9.8	0.00310	0.00470	12,000	9.8	0.0031	0.0039
	12.00	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.00310	0.00350	12,000	9.8	0.0020	0.0024
	14.00	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.00310	0.00350	12,000	9.8	0.0020	0.0024
	16.00	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.00240	0.00280	9,500	5.9	0.0004	0.0012
	18.00	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.00240	0.00280	9,500	5.9	0.0004	0.0012
	20.00	13,000	11.8	0.0035	0.0071	12,000	7.9	0.0024	0.0039	9,500	5.9	0.00240	0.00280	9,500	5.9	0.0004	0.0012
1.6	4.00	20,000	35.4	0.0047	0.0130	14,000	23.6	0.0031	0.0063	11,000	19.7	0.00310	0.00510	11,000	13.8	0.0031	0.0004
	8.00	16,500	17.7	0.0047	0.0130	14,000	11.8	0.0031	0.0063	11,000	9.8	0.00310	0.00510	11,000	9.8	0.0031	0.0004
	12.00	16,500	17.7	0.0047	0.0094	14,000	11.8	0.0031	0.0047	11,000	9.8	0.00310	0.00310	11,000	9.8	0.0020	0.0020
	16.00	11,500	11.8	0.0047	0.0094	11,000	7.9	0.0031	0.0047	9,000	5.9	0.00310	0.00310	9,000	5.9	0.0020	0.0020
	20.00	11,500	11.8	0.0035	0.0079	11,000	7.9	0.0024	0.0047	9,000	5.9	0.00240	0.00300	9,000	5.9	0.0006	0.0012
1.8	8.00	16,500	23.6	0.0051	0.0140	14,000	15.7	0.0035	0.0071	11,000	11.8	0.00350	0.00630	11,000	11.8	0.0035	0.0047
	12.00	16,500	23.6	0.0051	0.0140	14,000	15.7	0.0035	0.0071	11,000	11.8	0.00350	0.00630	11,000	11.8	0.0035	0.0047
	16.00	16,500	23.6	0.0051	0.0055	14,000	15.7	0.0035	0.0055	11,000	11.8	0.00350	0.00470	11,000	11.8	0.0020	0.0024
2.0	20.00	11,000	11.8	0.0039	0.0087	11,000	7.9	0.0024	0.0051	8,000	7.9	0.00240	0.00310	8,000	7.9	0.0008	0.0012
	3.00	16,500	53.1	0.0059	0.0220	16,500	35.4	0.0039	0.0110	13,500	31.5	0.00390	0.01100	13,500	27.6	0.0039	0.0079
	4.00	16,500	41.3	0.0059	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.00390	0.01100	13,500	19.7	0.0039	0.0079
	6.00	16,500	41.3	0.0059	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.00390	0.01100	13,500	19.7	0.0039	0.0079
	8.00	16,500	41.3	0.0059	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.00390	0.01100	13,500	19.7	0.0039	0.0079
	10.00	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.00390	0.01100	10,000	11.8	0.0039	0.0079
	12.00	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.00390	0.01100	10,000	11.8	0.0039	0.0079
	14.00	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.00390	0.01100	10,000	11.8	0.0039	0.0079
	16.00	14,000	29.5	0.0059	0.0170	13,000	19.7	0.0039	0.0083	10,000	11.8	0.00390	0.00830	10,000	11.8	0.0024	0.0039
	18.00	14,000	29.5	0.0059	0.0170	13,000	19.7	0.0039	0.0083	10,000	11.8	0.00390	0.00830	10,000	11.8	0.0024	0.0039
	20.00	11,000	14.8	0.0059	0.0170	10,000	9.8	0.0039	0.0083	8,000	7.9	0.00390	0.00830	8,000	7.9	0.0024	0.0039
	22.00	11,000	14.8	0.0059	0.0170	10,000	9.8	0.0039	0.0083	8,000	7.9	0.00390	0.00830	8,000	7.9	0.0024	0.0039
	25.00	11,000	14.8	0.0059	0.0170	10,000	9.8	0.0039	0.0083	8,000	7.9	0.00390	0.00830	8,000	7.9	0.0024	0.0039
2.5	30.00	11,000	14.8	0.0059	0.0170	10,000	9.8	0.0039	0.0083	8,000	7.9	0.00390	0.00830	8,000	7.9	0.0024	0.0039
	35.00	10,000	14.8	0.0059	0.0170	10,000	9.8	0.0039	0.0083	8,000	7.9	0.00390	0.00830	8,000	7.9	0.0024	0.0039
	40.00	10,000	11.8	0.0059	0.0170	10,000	7.9	0.0039	0.0083	8,000	6.3	0.00390	0.00830	8,000	6.3	0.0024	0.0039
	6.00	16,000	41.3	0.0071	0.0280	12,000	27.6	0.0047	0.0140	10,000	23.6	0.00470	0.01200	10,000	23.6	0.0039	0.0098
	10.00	14,000	41.3	0.0071	0.0280	12,000	27.6	0.0047	0.0140	10,000	23.6	0.00470	0.01200	10,000	23.6	0.0039	0.0098
	15.00	14,000	23.6	0.0071	0.0280	13,000	15.7	0.0047	0.0140	8,500	11.8	0.00470	0.01200	8,500	11.8	0.0039	0.0098
	20.00	12,000	23.6	0.0071	0.0220	13,000	15.7	0.0047	0.0110	8,500	11.8	0.00470	0.00790	8,500	11.8	0.0031	0.0059
25.00	12,000	17.7	0.0071	0.0220	8,000	11.8	0.0047	0.0110	6,500	9.8	0.00470	0.00790	6,500	9.8	0.0031	0.0059	

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page



Standard Milling

Hardness		-				Up to 32 HRC				33 to 41 HRC				42 to 50 HRC			
Work Material		Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Pre-hardened Steels, P20, H13, S7, A2							
Cutting Speed		388 SFM				324 SFM				263 SFM				233 SFM			
Depth of Cut																	
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)
2.5	30.00	12,000	14.8	0.0071	0.0220	8,000	9.8	0.0047	0.0110	6,500	7.9	0.00470	0.00790	6,500	7.9	0.0031	0.0059
	35.00	12,000	14.8	0.0071	0.0220	8,000	9.8	0.0047	0.0110	6,500	7.9	0.00470	0.00790	6,500	7.9	0.0031	0.0059
3.0	6.00	15,000	47.2	0.0079	0.0330	9,500	31.5	0.0059	0.0170	7,500	23.6	0.00590	0.01700	7,500	23.6	0.0059	0.0120
	8.00	12,000	35.4	0.0079	0.0330	9,500	23.6	0.0059	0.0170	7,500	15.7	0.00590	0.01400	7,500	15.7	0.0059	0.0120
	10.00	12,000	35.4	0.0079	0.0330	9,500	23.6	0.0059	0.0170	7,500	15.7	0.00590	0.01400	7,500	15.7	0.0059	0.0120
	12.00	10,000	35.4	0.0079	0.0330	9,500	23.6	0.0059	0.0170	7,500	15.7	0.00590	0.01400	7,500	15.7	0.0059	0.0120
	14.00	10,000	35.4	0.0079	0.0330	9,500	23.6	0.0059	0.0170	7,500	15.7	0.00590	0.01400	7,500	15.7	0.0059	0.0120
	15.00	10,000	23.6	0.0079	0.0330	8,500	15.7	0.0059	0.0170	6,500	9.8	0.00590	0.01400	6,500	9.8	0.0059	0.0120
	16.00	10,000	17.7	0.0079	0.0330	8,500	11.8	0.0059	0.0170	6,500	9.8	0.00590	0.01400	6,500	9.8	0.0059	0.0120
	20.00	10,000	17.7	0.0079	0.0330	8,500	11.8	0.0059	0.0170	6,500	9.8	0.00590	0.01400	6,500	9.8	0.0059	0.0120
	25.00	10,000	17.7	0.0079	0.0330	8,500	11.8	0.0059	0.0170	6,500	9.8	0.00590	0.01200	6,500	9.8	0.0035	0.0059
	30.00	9,000	14.8	0.0079	0.0330	7,500	9.8	0.0059	0.0170	6,000	7.9	0.00590	0.01200	6,000	7.9	0.0035	0.0059
3.5	10.00	10,000	41.3	0.0160	0.0390	8,500	27.6	0.0059	0.0190	6,500	19.7	0.00590	0.01700	6,500	19.7	0.0059	0.0140
	15.00	10,000	35.4	0.0160	0.0390	8,500	23.6	0.0059	0.0190	6,500	15.7	0.00590	0.01700	6,500	15.7	0.0059	0.0140
	20.00	8,000	29.5	0.0160	0.0390	7,500	19.7	0.0059	0.0190	5,500	11.8	0.00590	0.01700	5,500	11.8	0.0059	0.0140
	25.00	8,000	23.6	0.0160	0.0390	7,500	15.7	0.0059	0.0190	5,500	10.8	0.00590	0.01700	5,500	10.8	0.0059	0.0140
	30.00	8,000	17.7	0.0160	0.0390	7,500	11.8	0.0059	0.0190	5,500	9.8	0.00590	0.01400	5,500	9.8	0.0039	0.0079
	35.00	8,000	14.8	0.0160	0.0390	6,000	9.8	0.0059	0.0190	5,000	7.9	0.00590	0.01400	5,000	7.9	0.0039	0.0079
	40.00	6,000	14.8	0.0120	0.0390	6,000	9.8	0.0059	0.0190	5,000	7.9	0.00590	0.01400	5,000	7.9	0.0039	0.0079
	45.00	6,000	14.8	0.0120	0.0390	6,000	9.8	0.0059	0.0190	5,000	7.9	0.00590	0.01400	5,000	7.9	0.0039	0.0079
	8.00	11,000	47.2	0.0200	0.0500	7,500	31.5	0.0079	0.0250	6,000	27.6	0.00790	0.02400	6,000	27.6	0.0079	0.0180
	10.00	9,000	35.4	0.0200	0.0500	7,500	23.6	0.0079	0.0250	6,000	15.7	0.00790	0.02400	6,000	15.7	0.0079	0.0180
4.0	12.00	9,000	35.4	0.0200	0.0500	7,500	23.6	0.0079	0.0250	6,000	15.7	0.00790	0.02400	6,000	15.7	0.0079	0.0180
	14.00	9,000	35.4	0.0200	0.0500	7,500	23.6	0.0079	0.0250	6,000	15.7	0.00790	0.02400	6,000	15.7	0.0079	0.0180
	15.00	9,000	35.4	0.0200	0.0500	7,500	23.6	0.0079	0.0250	6,000	15.7	0.00790	0.02400	6,000	15.7	0.0079	0.0180
	16.00	9,000	35.4	0.0200	0.0500	7,500	23.6	0.0079	0.0250	6,000	15.7	0.00790	0.02400	6,000	15.7	0.0079	0.0180
	20.00	7,000	23.6	0.0200	0.0500	6,000	15.7	0.0079	0.0250	5,000	9.8	0.00790	0.02400	5,000	9.8	0.0079	0.0180
	25.00	7,000	23.6	0.0200	0.0500	6,000	15.7	0.0079	0.0250	5,000	9.8	0.00790	0.02400	5,000	9.8	0.0079	0.0180
	30.00	7,000	23.6	0.0160	0.0500	6,000	15.7	0.0079	0.0250	5,000	9.8	0.00790	0.02200	5,000	9.8	0.0047	0.0079
	35.00	7,000	23.6	0.0160	0.0500	6,000	15.7	0.0079	0.0250	5,000	9.8	0.00790	0.02200	5,000	9.8	0.0047	0.0079
	40.00	5,000	14.8	0.0140	0.0500	5,000	9.8	0.0079	0.0250	4,000	7.9	0.00790	0.02200	4,000	7.9	0.0047	0.0079
	45.00	5,000	14.8	0.0140	0.0500	5,000	9.8	0.0079	0.0250	4,000	7.9	0.00790	0.02200	4,000	7.9	0.0047	0.0079
5.0	50.00	5,000	14.8	0.0140	0.0500	5,000	9.8	0.0079	0.0250	4,000	7.9	0.00790	0.02200	4,000	7.9	0.0047	0.0079
	10.00	9,000	53.1	0.0240	0.0710	6,500	35.4	0.0098	0.0350	5,000	29.5	0.00980	0.02800	5,000	29.5	0.0098	0.0200
	15.00	9,000	53.1	0.0240	0.0710	6,500	35.4	0.0098	0.0350	5,000	29.5	0.00980	0.02800	5,000	29.5	0.0098	0.0200
	20.00	7,000	29.5	0.0240	0.0710	6,500	19.7	0.0098	0.0350	5,000	15.7	0.00980	0.02800	5,000	15.7	0.0098	0.0200
	25.00	6,000	29.5	0.0240	0.0710	5,000	19.7	0.0098	0.0350	4,000	9.8	0.00980	0.02800	4,000	9.8	0.0098	0.0200
	30.00	6,000	29.5	0.0240	0.0710	5,000	19.7	0.0098	0.0350	4,000	9.8	0.00980	0.02800	4,000	9.8	0.0098	0.0200
	35.00	6,000	29.5	0.0240	0.0710	5,000	19.7	0.0098	0.0350	4,000	9.8	0.00980	0.02800	4,000	9.8	0.0098	0.0200
	40.00	5,000	23.6	0.0160	0.0710	4,000	15.7	0.0098	0.0350	4,000	7.9	0.00980	0.02400	4,000	7.9	0.0079	0.0098
	45.00	5,000	23.6	0.0160	0.0710	4,000	15.7	0.0098	0.0350	4,000	7.9	0.00980	0.02400	4,000	7.9	0.0079	0.0098
	50.00	5,000	17.7	0.0160	0.0710	4,000	11.8	0.0098	0.0350	4,000	7.9	0.00980	0.02400	4,000	7.9	0.0079	0.0098
6.0	10.00	7,000	59.1	0.0300	0.0940	5,500	39.4	0.0120	0.0470	4,500	31.5	0.01200	0.03800	4,500	31.5	0.0120	0.0240
	20.00	7,000	47.2	0.0300	0.0940	5,500	31.5	0.0120	0.0470	4,500	23.6	0.01200	0.03800	4,500	23.6	0.0120	0.0240
	25.00	6,000	35.4	0.0300	0.0940	5,500	23.6	0.0120	0.0470	4,500	15.7	0.01200	0.03800	4,500	15.7	0.0120	0.0240
	30.00	5,000	23.6	0.0300	0.0940	4,000	15.7	0.0120	0.0470	4,000	11.8	0.01200	0.03800	4,000	11.8	0.0120	0.0240
	35.00	5,000	23.6	0.0300	0.0940	4,000	15.7	0.0120	0.0470	4,000	11.8	0.01200	0.03800	4,000	11.8	0.0120	0.0240
	40.00	5,000	23.6	0.0240	0.0940	4,000	15.7	0.0120	0.0470	4,000	11.8	0.01200	0.03800	4,000	11.8	0.0120	0.0240
6.0	45.00	5,000	23.6	0.0240	0.0940	4,000	15.7	0.0120	0.0470	4,000	11.8	0.01200	0.03800	4,000	11.8	0.0120	0.0240
	50.00	5,000	23.6	0.0240	0.0940	4,000	15.7	0.0120	0.0470	4,000	11.8	0.01200	0.03800	4,000	11.8	0.0120	0.0240

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3620 - EXOCARB® WXL®: Stub Length, 2 Flute

List 3621 - EXOCARB® WXL®: Regular Length, 2 Flute

Slotting

Hardness	-	Up to 32 HRC	33 to 41 HRC	42 to 50 HRC						
Work Material	Copper Copper Alloy	Mild Steels Carbon Steels	Hardened Steels Pre-hardened Steels, Stainless Steels							
Cutting Speed	52~522 SFM	33~251 SFM	33~186 SFM	33~159 SFM						
Depth of Cut	<table border="1"> <tr> <td>Dia.</td> <td>aa</td> </tr> <tr> <td>$D < 1/8$</td> <td>0.3D</td> </tr> <tr> <td>$1/8 \leq D$</td> <td>0.5D</td> </tr> </table>		Dia.	aa	$D < 1/8$	0.3D	$1/8 \leq D$	0.5D		
	Dia.	aa								
$D < 1/8$	0.3D									
$1/8 \leq D$	0.5D									
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min		
1/16	31,000	12.6	12,000	4.7	8,500	3.5	7,500	2.6		
5/64	24,000	12.2	9,700	5.1	7,000	3.5	6,300	2.8		
3/32	20,500	13.8	8,600	5.9	6,300	3.5	5,500	2.8		
7/64	17,500	15.0	7,300	6.7	5,500	3.9	4,700	3.0		
1/8	15,000	16.5	6,500	7.1	5,000	4.3	4,200	3.1		
5/32	12,000	17.7	5,400	8.3	4,200	4.9	3,500	3.5		
3/16	10,500	20.9	4,900	10.2	3,700	5.1	3,100	3.7		
7/32	8,700	21.3	4,300	10.6	3,100	5.1	2,600	3.9		
1/4	7,500	20.9	3,700	10.6	2,700	5.1	2,300	3.9		
9/32	6,900	20.9	3,400	10.6	2,500	5.1	2,100	3.9		
5/16	5,900	20.5	3,000	10.2	2,200	4.9	1,900	3.9		
3/8	5,100	20.1	2,500	10.2	1,800	4.9	1,400	3.7		
7/16	4,400	19.7	2,200	9.8	1,600	4.9	1,100	3.7		
1/2	4,000	20.1	2,000	9.8	1,400	4.9	1,200	3.7		
5/8	3,000	15.7	1,500	7.9	1,100	4.5	800	3.1		
3/4	2,700	14.2	1,300	7.1	900	3.9	700	2.8		

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3704 - EXOCARB® WXL®: Regular Length, 4 Flute

Side Milling

Hardness	-		Up to 32 HRC		33~41 HRC		42~50 HRC									
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels Pre-hardened Steels Stainless Steels											
Cutting Speed	516~990 SFM		248~254 SFM		143~184 SFM		129~164 SFM									
Depth of Cut			<table border="1"> <thead> <tr> <th>Dia.</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<3</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>3≤D</td> <td>1.5D</td> <td>0.10D</td> </tr> </tbody> </table>			Dia.	aa	ar	D<3	1.5D	0.05D	3≤D	1.5D	0.10D	aa = 1.0D ar = 0.02D	
			Dia.	aa	ar											
D<3	1.5D	0.05D														
3≤D	1.5D	0.10D														
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min								
1	50,000	17.3	24,000	8.3	14,000	3.1	12,500	2.8								
1.5	50,000	38.4	16,000	12.2	9,250	4.5	8,400	4.1								
2	47,500	43.3	12,000	11.6	7,000	4.3	6,350	3.9								
2.5	38,000	74.8	9,600	18.9	6,200	5.5	5,550	4.9								
3	32,000	63.0	8,150	16.9	5,300	4.9	4,750	4.3								
4	24,000	66.9	6,050	17.7	4,250	5.3	3,700	4.5								
5	19,000	78.7	4,900	20.5	3,550	5.5	3,150	4.9								
6	16,000	78.7	4,100	20.5	2,950	5.7	2,650	5.1								
8	12,000	74.8	3,050	19.9	2,200	5.7	1,950	5.1								
10	9,500	74.8	2,450	19.9	1,750	5.7	1,550	5.1								
12	7,900	74.8	2,050	19.9	1,450	5.7	1,300	5.1								
14	6,800	74.8	1,750	19.5	1,250	5.7	1,100	4.9								
15	6,300	74.8	1,600	19.3	1,150	5.3	1,050	4.7								
16	5,900	70.9	1,500	18.9	1,100	5.1	995	4.5								
18	5,300	70.9	1,350	18.5	990	4.5	880	4.1								
20	4,700	66.9	1,200	17.5	890	4.1	795	3.7								
25	3,800	55.1	970	14.2	710	3.3	635	3.0								
30	3,100	43.3	815	11.8	590	2.8	530	2.4								

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Milling

Hardness	-		Up to 32 HRC		33~41 HRC		42~50 HRC									
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels Pre-hardened Steels											
Cutting Speed	1597~1625 SFM		1197~1238 SFM		805~820 SFM		480~492 SFM									
Depth of Cut			<table border="1"> <thead> <tr> <th>Dia.</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D<3</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>3≤D</td> <td>1.5D</td> <td>0.02D</td> </tr> </tbody> </table>			Dia.	aa	ar	D<3	1.5D	0.01D	3≤D	1.5D	0.02D	aa = 1.0D ar = 0.02D	
			Dia.	aa	ar											
D<3	1.5D	0.01D														
3≤D	1.5D	0.02D														
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min								
6	26,000	114.2	20,000	90.6	13,000	59.1	7,950	31.3								
8	19,500	118.1	14,500	90.6	9,900	57.1	5,950	31.3								
10	15,500	114.2	12,000	90.6	7,950	57.1	4,750	31.3								
12	13,000	118.1	9,900	90.6	6,600	57.1	3,950	31.1								
14	11,100	110.2	8,500	86.6	5,650	53.1	3,400	29.1								
15	10,500	110.2	7,950	84.6	5,250	53.1	3,150	28.7								
16	9,700	106.3	7,450	82.7	4,950	53.1	2,950	28.1								
18	8,600	106.3	6,600	82.7	4,400	51.2	2,650	27.8								
20	7,800	102.4	5,950	78.7	3,950	51.2	2,350	26.2								
25	6,200	78.7	4,750	63.0	3,150	41.3	1,900	22.0								
30	5,200	66.9	3,950	53.1	2,650	35.0	1,550	17.9								





List 3742 - EXOCARB® WXL®: 4 Flute, Square End, Long Length

Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC				
Work Material	Mild Steel Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels				
Cutting Speed	200 SFM		160 SFM		130 SFM		110 SFM		80 SFM				
Depth of Cut	Dia.		aa		ar		Dia.		aa		ar		
	D≤20		2.5D		0.05D		D≤8		1D		0.01D		
		20<D		2.5D		0.1mm		8<D		1D		0.5mm	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	
3	6,350	8.9	5,300	7.5	4,200	5.9	3,700	5.2	2,100	2.9			
4	4,750	8.9	3,950	7.5	3,150	5.9	2,750	5.2	1,550	2.9			
5	3,800	8.9	3,150	7.5	2,500	5.9	2,200	5.2	1,250	2.9			
6	3,150	8.9	2,650	7.5	2,100	5.9	1,850	5.2	1,050	3.0			
8	2,350	8.9	1,950	7.5	1,550	5.9	1,350	5.1	995	3.8			
10	1,900	8.9	1,550	7.5	1,250	5.9	1,100	5.2	795	3.7			
12	1,550	8.9	1,300	7.5	1,050	6.0	925	5.3	660	3.8			
14	1,350	8.9	1,100	7.5	905	6.0	795	5.2	565	3.7			
16	1,150	8.9	995	7.5	795	6.2	695	5.4	495	3.8			
18	1,050	8.9	880	7.5	705	6.0	615	5.2	440	3.7			
20	955	8.9	795	7.5	635	5.9	555	5.2	395	3.7			
22	865	8.9	720	7.5	575	5.9	505	5.2	360	3.7			
24	795	8.7	660	7.1	530	5.8	460	5.0	330	3.6			
25	760	8.3	635	6.7	505	5.5	445	4.9	315	3.4			

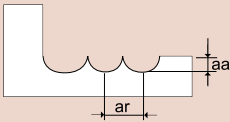
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously,
3. Use a suitable cutting fluid with high smoke retardant.





List 3711 - EXOCARB® WXL®: 2 Flute, Ball End, Regular Length, Long Shank

Side Milling

Hardness	-	Up to 20 HRC	20 to 30 HRC	30 to 38 HRC	38 to 45 HRC	45 to 55 HRC	55 to 60 HRC							
Work Material	Cast Iron	Mild Steels Carbon Steels	Alloy Steels Tool Steels	Hardened Steels Pre-hardened Steels	Stainless Steel Hardened Steels	Hardened Steels	Hardened Steels							
Cutting Speed	330-490 SFM	330-390 SFM	300-330 SFM	230-260 SFM	200-230 SFM	170-200 SFM	120-150 SFM							
Depth of Cut							$aa=0.1D$ $ar=0.2D$		$aa=0.05D$ $ar=0.1D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	32,000	64.0	32,000	64.0	31,500	63.0	25,000	50.0	22,000	35.2	19,000	26.6	14,000	19.6
2	23,500	79.9	19,000	64.6	15,500	52.7	12,500	42.5	11,000	35.2	9,500	26.6	7,150	20.0
3	15,500	74.4	12,500	60.0	10,500	50.4	8,450	40.6	7,400	32.6	6,350	25.4	4,750	19.0
4	11,500	69.0	9,500	57.0	7,950	47.7	6,350	38.1	5,550	31.1	4,750	24.7	3,550	18.5
5	9,500	72.2	7,600	57.8	6,350	48.3	5,050	38.4	4,450	32.0	3,800	25.8	2,850	19.4
6	7,950	70.0	6,350	55.9	5,300	46.6	4,200	37.0	3,700	31.1	3,150	25.2	2,350	18.8
8	5,950	71.4	4,750	57.0	3,950	47.4	3,150	37.8	2,750	31.9	2,350	26.3	1,750	19.6
10	4,750	67.5	3,800	54.0	3,150	44.7	2,500	35.5	2,200	30.4	1,900	25.5	1,400	18.8
12	3,950	67.2	3,150	53.6	2,650	45.1	2,100	35.7	1,850	30.7	1,550	24.8	1,150	18.4
14	3,400	57.8	2,700	45.9	2,250	38.3	1,800	30.6	1,550	25.7	1,350	21.6	1,000	16.0
16	2,950	50.2	2,350	40.0	1,950	33.2	1,550	26.4	1,350	22.4	1,150	18.4	895	14.3
18	2,650	45.1	2,100	35.7	1,750	29.8	1,400	23.8	1,200	19.9	1,050	16.8	795	12.7
20	2,350	40.0	1,900	32.3	1,550	26.4	1,250	21.3	1,100	18.3	955	15.3	715	11.4
25	1,900	32.3	1,500	25.5	1,250	21.3	1,000	17.0	890	14.8	760	12.2	570	9.1
30	1,550	26.4	1,250	21.3	1,050	17.9	845	14.4	740	12.3	635	10.2	475	7.6

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 3791 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length

Slotting

Hardness		-			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		45~376 SFM*			41~309 SFM*			41~309 SFM*			40~258 SFM*		
Depth of Cut													
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)
0.2	0.5	35,200	19.3	0.0009	32,000	17.7	0.0007	32,000	17.7	0.0006	29,000	9.8	0.0005
0.2	1	35,200	15.0	0.0006	32,000	13.8	0.0005	32,000	13.8	0.0004	29,000	7.9	0.0004
0.2	1.5	31,000	10.6	0.0004	28,000	9.8	0.0003	28,000	9.8	0.0003	25,000	5.9	0.0002
0.2	2	24,000	8.7	0.0002	22,000	7.9	0.0002	22,000	7.9	0.0002	20,000	4.7	0.0001
0.2	2.5	22,000	7.5	0.0002	20,000	7.1	0.0002	20,000	6.7	0.0002	20,000	3.9	0.0001
0.2	3	22,000	7.1	0.0002	20,000	6.7	0.0001	20,000	6.3	0.0001	20,000	3.5	0.0001
0.2	3.5	22,000	5.9	0.0002	20,000	5.5	0.0001	20,000	5.1	0.0001	20,000	3.1	0.0001
0.2	4	22,000	1.6	0.0001	20,000	1.6	0.0001	20,000	1.4	0.0001	20,000	1.2	0.0001
0.3	1	38,500	18.9	0.0013	32,000	15.7	0.0011	32,000	13.8	0.0009	29,000	11.8	0.0007
0.3	1.5	38,500	16.9	0.0011	32,000	14.2	0.0009	32,000	11.8	0.0008	29,000	9.8	0.0006
0.3	2	33,500	14.2	0.0009	28,000	11.8	0.0008	28,000	9.8	0.0007	25,000	7.9	0.0005
0.3	2.5	33,500	13.0	0.0007	28,000	11.0	0.0006	28,000	9.1	0.0005	25,000	7.5	0.0003
0.3	3	26,500	11.8	0.0004	22,000	9.8	0.0004	22,000	6.3	0.0003	20,000	5.9	0.0002
0.3	4	24,000	8.7	0.0003	20,000	7.5	0.0003	20,000	5.9	0.0002	20,000	5.1	0.0001
0.3	5	24,000	7.5	0.0002	20,000	6.3	0.0002	20,000	5.5	0.0001	18,000	4.7	0.0001
0.3	6	24,000	3.9	0.0001	20,000	3.5	0.0001	20,000	3.1	0.0001	16,000	2.4	0.0001
0.3	9	19,000	1.2	0.0001	16,000	1.2	0.0001	16,000	1.2	0.0001	13,000	0.8	0.0001
0.4	1.5	38,500	20.5	0.0013	32,000	17.3	0.0011	32,000	15.0	0.0009	29,000	13.0	0.0007
0.4	2	38,500	18.9	0.0012	32,000	15.7	0.0010	32,000	13.8	0.0009	29,000	11.8	0.0007
0.4	3	33,500	14.2	0.0008	28,000	11.8	0.0007	28,000	9.8	0.0006	25,000	7.9	0.0004
0.4	4	26,500	11.8	0.0006	22,000	9.8	0.0005	22,000	7.9	0.0004	20,000	5.9	0.0003
0.4	5	24,000	9.4	0.0003	20,000	7.9	0.0002	20,000	6.3	0.0002	20,000	5.1	0.0001
0.4	6	24,000	8.3	0.0002	20,000	7.1	0.0002	20,000	5.5	0.0002	20,000	4.7	0.0001
0.4	7	24,000	6.3	0.0002	20,000	5.5	0.0002	20,000	4.7	0.0001	20,000	4.3	0.0001
0.4	8	24,000	5.9	0.0001	20,000	5.1	0.0001	20,000	4.3	0.0001	20,000	3.9	0.0001
0.4	9	24,000	5.5	0.0001	20,000	4.7	0.0001	20,000	3.9	0.0001	20,000	3.1	0.0001
0.4	10	24,000	5.1	0.0001	20,000	4.3	0.0001	20,000	3.3	0.0001	18,000	2.8	0.0001
0.4	12	24,000	3.9	0.0001	20,000	3.5	0.0001	20,000	3.1	0.0001	16,000	2.4	0.0001
0.5	1.5	38,500	26.0	0.0021	32,000	21.7	0.0018	32,000	16.5	0.0015	29,000	13.0	0.0012
0.5	2	38,500	23.6	0.0021	32,000	19.7	0.0018	32,000	15.7	0.0015	29,000	11.8	0.0012
0.5	3	36,000	21.3	0.0014	30,000	17.7	0.0012	30,000	14.2	0.0011	27,000	11.0	0.0009
0.5	4	33,500	18.9	0.0010	28,000	15.7	0.0008	28,000	12.6	0.0007	25,000	9.8	0.0006
0.5	5	33,500	17.7	0.0007	28,000	15.0	0.0006	25,000	11.8	0.0004	22,000	9.1	0.0003
0.5	6	26,500	16.5	0.0003	22,000	13.8	0.0002	22,000	8.7	0.0002	20,000	7.1	0.0002
0.5	7	24,000	15.0	0.0002	20,000	12.6	0.0002	20,000	7.9	0.0002	20,000	6.7	0.0001
0.5	8	24,000	12.6	0.0002	20,000	10.6	0.0002	20,000	7.1	0.0001	20,000	5.9	0.0001
0.5	9	24,000	11.8	0.0001	20,000	9.8	0.0001	18,000	6.3	0.0001	18,000	5.5	0.0001
0.5	10	24,000	9.4	0.0001	20,000	7.9	0.0001	18,000	5.9	0.0001	18,000	5.1	0.0001
0.5	12	24,000	7.5	0.0001	20,000	6.3	0.0001	18,000	4.7	0.0001	18,000	3.9	0.0001
0.5	15	21,500	3.9	0.0001	18,000	3.5	0.0001	16,000	3.1	0.0001	16,000	2.8	0.0001
0.6	2	38,500	28.3	0.0026	32,000	23.6	0.0021	32,000	15.7	0.0018	27,000	11.8	0.0014
0.6	3	38,500	26.0	0.0024	32,000	21.7	0.0020	32,000	14.2	0.0016	27,000	11.0	0.0012
0.6	4	33,500	21.3	0.0019	28,000	17.7	0.0016	28,000	11.8	0.0013	25,000	7.9	0.0010
0.6	5	33,500	18.9	0.0014	28,000	15.7	0.0012	25,000	8.7	0.0008	22,000	7.1	0.0008
0.6	6	26,500	11.8	0.0009	22,000	9.8	0.0007	22,000	7.9	0.0006	20,000	5.9	0.0005
0.6	7	26,500	11.8	0.0005	22,000	9.8	0.0004	22,000	7.9	0.0003	20,000	5.9	0.0003
0.6	8	26,500	11.8	0.0003	22,000	9.8	0.0003	22,000	7.9	0.0002	20,000	5.9	0.0002
0.6	10	24,000	9.4	0.0002	20,000	7.9	0.0002	18,000	5.9	0.0002	18,000	5.1	0.0001
0.6	12	21,500	8.7	0.0001	18,000	7.5	0.0001	18,000	5.9	0.0001	18,000	4.7	0.0001

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

* Maximum speed will vary by diameter.

continued on next page





Slotting

Hardness		-			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		45~376 SFM*			41~309 SFM*			41~309 SFM*			40~258 SFM*		
Depth of Cut													
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)
0.6	15	21,500	5.9	0.0001	18,000	5.1	0.0001	16,000	4.3	0.0001	16,000	3.9	0.0001
0.6	18	18,000	3.5	0.0001	15,000	3.1	0.0001	14,000	2.8	0.0001	14,000	2.4	0.0001
0.7	2	38,500	28.3	0.0030	32,000	23.6	0.0025	32,000	19.7	0.0021	26,000	15.7	0.0017
0.7	4	33,500	21.3	0.0022	28,000	17.7	0.0018	28,000	11.8	0.0015	22,000	11.8	0.0012
0.7	6	33,500	21.3	0.0014	28,000	17.7	0.0011	28,000	7.9	0.0010	22,000	7.9	0.0008
0.7	8	26,500	11.8	0.0008	22,000	9.8	0.0007	22,000	7.9	0.0006	20,000	5.9	0.0004
0.7	10	26,500	11.8	0.0004	22,000	9.8	0.0003	22,000	7.9	0.0003	20,000	5.9	0.0002
0.8	4	38,500	28.3	0.0025	32,000	23.6	0.0021	32,000	23.6	0.0017	25,000	15.7	0.0014
0.8	6	31,000	21.3	0.0016	26,000	17.7	0.0013	26,000	15.7	0.0011	21,000	11.8	0.0009
0.8	8	26,500	16.5	0.0011	22,000	13.8	0.0009	22,000	11.8	0.0008	18,000	9.8	0.0006
0.8	10	26,500	16.5	0.0005	22,000	13.8	0.0004	22,000	11.8	0.0003	18,000	9.4	0.0002
0.8	12	20,500	14.2	0.0003	17,000	11.8	0.0003	17,000	11.8	0.0002	15,000	7.9	0.0002
0.8	14	20,500	12.6	0.0002	17,000	10.6	0.0001	17,000	9.8	0.0001	13,000	6.7	0.0001
0.8	16	19,000	10.6	0.0001	16,000	9.1	0.0001	16,000	8.7	0.0001	12,000	5.9	0.0001
0.8	20	17,000	7.9	0.0001	14,000	6.7	0.0001	14,000	6.3	0.0001	12,000	5.1	0.0001
0.8	24	14,500	3.9	0.0001	12,000	3.5	0.0001	12,000	3.1	0.0001	10,000	2.8	0.0001
0.9	4	38,500	57.1	0.0028	32,000	47.2	0.0024	30,000	33.9	0.0024	23,000	25.6	0.0016
0.9	6	36,000	47.2	0.0028	30,000	39.4	0.0023	28,000	30.7	0.0020	22,000	23.6	0.0016
0.9	8	31,000	37.8	0.0018	26,000	31.5	0.0015	25,000	23.6	0.0013	19,000	15.7	0.0010
0.9	10	24,000	28.3	0.0013	20,000	23.6	0.0011	20,000	19.7	0.0009	16,000	11.8	0.0007
0.9	15	20,500	14.2	0.0004	17,000	11.8	0.0003	17,000	11.8	0.0002	16,000	11.8	0.0002
1.0	3	36,000	57.1	0.0043	30,000	47.2	0.0035	30,000	43.3	0.0031	22,000	31.5	0.0024
1.0	4	36,000	55.1	0.0038	30,000	45.3	0.0031	30,000	43.3	0.0028	22,000	25.6	0.0020
1.0	5	36,000	51.2	0.0038	30,000	43.3	0.0031	28,000	37.4	0.0028	20,000	23.6	0.0018
1.0	6	32,500	47.2	0.0033	27,000	39.4	0.0028	26,000	35.4	0.0024	20,000	23.6	0.0016
1.0	7	30,000	47.2	0.0024	25,000	39.4	0.0020	24,000	31.5	0.0020	20,000	19.7	0.0012
1.0	8	27,500	37.8	0.0019	23,000	31.5	0.0016	22,000	27.6	0.0016	18,000	15.7	0.0012
1.0	9	24,000	33.1	0.0014	20,000	27.6	0.0012	19,000	23.6	0.0012	18,000	15.7	0.0010
1.0	10	23,000	28.3	0.0014	19,000	23.6	0.0012	18,000	19.7	0.0011	15,000	11.8	0.0008
1.0	12	23,000	28.3	0.0009	19,000	23.6	0.0008	18,000	19.7	0.0007	15,000	11.8	0.0004
1.0	14	18,000	18.9	0.0005	15,000	15.7	0.0004	15,000	15.7	0.0004	12,000	7.9	0.0003
1.0	16	18,000	14.2	0.0004	15,000	11.8	0.0003	15,000	11.8	0.0003	12,000	7.9	0.0002
1.0	18	15,500	10.6	0.0003	13,000	9.1	0.0002	13,000	8.7	0.0002	11,000	7.1	0.0002
1.0	20	14,500	8.7	0.0002	12,000	7.5	0.0002	11,000	7.1	0.0002	10,000	5.1	0.0001
1.0	22	13,000	7.5	0.0002	11,000	6.3	0.0001	10,000	5.9	0.0001	9,000	3.9	0.0001
1.0	25	11,000	3.9	0.0002	9,000	3.5	0.0001	9,000	3.3	0.0001	8,500	3.1	0.0001
1.0	30	9,600	1.6	0.0001	8,000	1.6	0.0001	8,000	1.4	0.0001	8,000	1.2	0.0001
1.2	4	29,000	51.2	0.0043	24,000	43.3	0.0035	23,000	39.4	0.0031	18,000	27.6	0.0024
1.2	6	27,500	47.2	0.0038	23,000	39.4	0.0031	22,000	35.4	0.0028	17,000	23.6	0.0020
1.2	8	24,000	33.1	0.0033	20,000	27.6	0.0028	19,000	27.6	0.0020	14,000	15.7	0.0016
1.2	10	24,000	33.1	0.0024	20,000	27.6	0.0020	19,000	27.6	0.0016	14,000	15.7	0.0012
1.2	12	20,500	28.3	0.0019	17,000	23.6	0.0016	16,000	19.7	0.0012	11,000	11.8	0.0008
1.2	14	18,000	21.3	0.0007	15,000	17.7	0.0006	13,000	15.0	0.0005	11,000	9.8	0.0004
1.2	16	14,500	14.2	0.0004	12,000	11.8	0.0003	11,000	9.8	0.0003	10,000	8.7	0.0002
1.2	20	12,000	9.4	0.0002	10,000	7.9	0.0002	10,000	7.5	0.0002	9,000	7.1	0.0002
1.4	6	24,000	47.2	0.0061	20,000	39.4	0.0051	19,000	35.4	0.0043	15,000	23.6	0.0035
1.4	8	21,500	37.8	0.0043	18,000	31.5	0.0035	17,000	27.6	0.0031	13,000	15.7	0.0024
1.4	10	21,500	37.8	0.0028	18,000	31.5	0.0024	17,000	27.6	0.0020	13,000	15.7	0.0016
1.4	12	21,500	37.8	0.0024	18,000	31.5	0.0020	17,000	27.6	0.0016	13,000	15.7	0.0012
1.4	14	18,000	28.3	0.0019	15,000	23.6	0.0016	14,000	19.7	0.0014	11,000	11.8	0.0012

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- * Maximum speed will vary by diameter.

continued on next page





List 3791 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length (Continued)

Slotting

Hardness		-			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		45~376 SFM*			41~309 SFM*			41~309 SFM*			40~258 SFM*		
Depth of Cut													
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)
1.4	16	18,000	28.3	0.0014	15,000	23.6	0.0012	14,000	19.7	0.0008	11,000	11.8	0.0008
1.4	22	12,000	11.8	0.0002	10,000	9.8	0.0002	9,000	8.3	0.0002	8,000	7.1	0.0002
1.5	4	21,500	47.2	0.0066	18,000	39.4	0.0055	18,000	35.4	0.0043	14,000	23.6	0.0035
1.5	6	21,500	47.2	0.0066	18,000	39.4	0.0055	18,000	35.4	0.0043	14,000	23.6	0.0035
1.5	8	19,000	37.8	0.0047	16,000	31.5	0.0039	15,000	27.6	0.0031	12,000	15.7	0.0028
1.5	10	19,000	37.8	0.0038	16,000	31.5	0.0031	15,000	27.6	0.0028	12,000	15.7	0.0020
1.5	12	19,000	37.8	0.0028	16,000	31.5	0.0024	15,000	27.6	0.0020	12,000	15.7	0.0016
1.5	14	19,000	37.8	0.0024	16,000	31.5	0.0020	15,000	27.6	0.0018	12,000	15.7	0.0014
1.5	16	17,000	28.3	0.0024	14,000	23.6	0.0020	13,000	19.7	0.0016	10,000	11.8	0.0012
1.5	18	17,000	28.3	0.0014	14,000	23.6	0.0012	13,000	19.7	0.0008	10,000	11.8	0.0008
1.5	20	14,500	19.7	0.0009	12,000	16.5	0.0008	11,000	15.0	0.0006	10,000	11.8	0.0004
1.5	25	12,000	13.4	0.0004	10,000	11.4	0.0003	9,000	9.1	0.0003	8,000	8.3	0.0002
1.5	30	9,000	7.9	0.0002	7,500	6.7	0.0002	7,400	5.9	0.0002	7,000	5.1	0.0001
1.5	38	8,150	3.9	0.0002	6,800	3.5	0.0002	6,700	3.3	0.0001	6,000	3.0	0.0001
1.5	40	7,200	3.5	0.0002	6,000	3.0	0.0001	5,900	2.8	0.0001	5,600	2.4	0.0001
1.5	45	6,600	2.0	0.0002	5,500	1.8	0.0001	5,400	1.6	0.0001	5,400	1.6	0.0000
1.6	6	20,500	47.2	0.0071	17,000	39.4	0.0059	17,000	35.4	0.0051	13,000	23.6	0.0039
1.6	8	18,000	37.8	0.0066	15,000	31.5	0.0055	15,000	27.6	0.0047	11,000	15.7	0.0039
1.6	10	18,000	37.8	0.0052	15,000	31.5	0.0043	15,000	27.6	0.0035	11,000	15.7	0.0028
1.6	12	18,000	37.8	0.0033	15,000	31.5	0.0028	15,000	27.6	0.0024	11,000	15.7	0.0020
1.6	14	18,000	37.8	0.0028	15,000	31.5	0.0024	15,000	27.6	0.0020	11,000	15.7	0.0016
1.6	16	15,500	28.3	0.0024	13,000	23.6	0.0020	13,000	19.7	0.0016	9,000	11.8	0.0014
1.6	18	15,500	28.3	0.0019	13,000	23.6	0.0016	13,000	19.7	0.0012	9,000	11.8	0.0012
1.6	20	15,500	28.3	0.0009	13,000	23.6	0.0008	13,000	19.7	0.0008	9,000	11.8	0.0004
1.8	6	19,000	51.2	0.0104	16,000	43.3	0.0087	15,000	39.4	0.0071	12,000	27.6	0.0055
1.8	8	19,000	51.2	0.0099	16,000	43.3	0.0083	15,000	39.4	0.0067	12,000	27.6	0.0051
1.8	10	17,000	37.8	0.0057	14,000	31.5	0.0047	14,000	27.6	0.0039	10,000	19.7	0.0031
1.8	12	17,000	37.8	0.0047	14,000	31.5	0.0039	14,000	27.6	0.0031	10,000	19.7	0.0028
1.8	14	17,000	37.8	0.0038	14,000	31.5	0.0031	14,000	27.6	0.0024	10,000	19.7	0.0020
1.8	16	17,000	37.8	0.0033	14,000	31.5	0.0028	14,000	27.6	0.0020	10,000	19.7	0.0016
1.8	18	14,500	28.3	0.0024	12,000	23.6	0.0020	12,000	19.7	0.0018	8,000	15.7	0.0014
1.8	20	14,500	28.3	0.0019	12,000	23.6	0.0016	12,000	19.7	0.0016	8,000	15.7	0.0012
1.8	25	9,600	14.2	0.0004	8,000	11.8	0.0004	7,000	9.8	0.0003	6,000	7.9	0.0003
2.0	6	18,000	51.2	0.0146	15,000	43.3	0.0122	14,000	39.4	0.0102	11,000	27.6	0.0083
2.0	8	18,000	51.2	0.0123	15,000	43.3	0.0102	14,000	39.4	0.0087	11,000	27.6	0.0071
2.0	10	15,500	37.8	0.0113	13,000	31.5	0.0094	12,000	27.6	0.0079	9,000	19.7	0.0063
2.0	12	15,500	37.8	0.0061	13,000	31.5	0.0051	12,000	27.6	0.0043	9,000	19.7	0.0035
2.0	14	15,500	37.8	0.0052	13,000	31.5	0.0043	12,000	27.6	0.0035	9,000	19.7	0.0028
2.0	16	15,500	37.8	0.0038	13,000	31.5	0.0031	12,000	27.6	0.0028	9,000	19.7	0.0024
2.0	18	15,500	37.8	0.0033	13,000	31.5	0.0028	12,000	27.6	0.0024	9,000	19.7	0.0020
2.0	20	13,000	28.3	0.0024	11,000	23.6	0.0020	10,000	19.7	0.0020	7,000	15.7	0.0016
2.0	25	13,000	28.3	0.0014	11,000	23.6	0.0012	10,000	19.7	0.0008	7,000	15.7	0.0008
2.0	30	13,000	28.3	0.0009	11,000	23.6	0.0008	10,000	19.7	0.0004	7,000	15.7	0.0004
2.0	35	11,000	18.1	0.0004	9,000	15.4	0.0004	8,000	15.0	0.0003	6,000	10.6	0.0003
2.0	40	7,800	9.4	0.0002	6,500	7.9	0.0002	6,000	7.1	0.0002	6,000	5.5	0.0001
2.0	50	6,950	4.7	0.0001	5,800	3.9	0.0001	5,700	3.7	0.0001	5,000	3.1	0.0001
2.0	60	6,000	2.4	0.0000	5,000	2.0	0.0000	5,000	1.8	0.0000	5,000	1.6	0.0000
2.5	8	14,500	51.2	0.0184	12,000	43.3	0.0154	11,000	39.4	0.0130	9,000	27.6	0.0102
2.5	10	14,500	51.2	0.0156	12,000	43.3	0.0130	11,000	39.4	0.0110	9,000	27.6	0.0087
2.5	12	14,500	51.2	0.0109	12,000	43.3	0.0091	11,000	39.4	0.0075	9,000	27.6	0.0059

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- * Maximum speed will vary by diameter.

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Slotting

Hardness		-			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		45~376 SFM*			41~309 SFM*			41~309 SFM*			40~258 SFM*		
Depth of Cut													
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)
2.5	14	12,000	37.8	0.0080	10,000	31.5	0.0067	9,000	27.6	0.0055	7,000	19.7	0.0043
2.5	16	12,000	37.8	0.0057	10,000	31.5	0.0047	9,000	27.6	0.0039	7,000	19.7	0.0031
2.5	18	12,000	37.8	0.0052	10,000	31.5	0.0043	9,000	27.6	0.0035	7,000	19.7	0.0028
2.5	20	12,000	37.8	0.0043	10,000	31.5	0.0035	9,000	27.6	0.0031	7,000	19.7	0.0024
2.5	25	9,600	28.3	0.0038	8,000	23.6	0.0031	8,000	19.7	0.0024	6,000	15.7	0.0020
2.5	30	9,600	28.3	0.0014	8,000	23.6	0.0012	8,000	19.7	0.0012	6,000	15.7	0.0008
2.5	40	7,800	13.0	0.0003	6,500	11.0	0.0003	6,000	10.6	0.0002	6,000	9.4	0.0002
2.5	50	6,950	7.9	0.0001	5,800	6.7	0.0001	5,700	6.3	0.0001	5,000	5.1	0.0001
3.0	8	12,000	51.2	0.0170	10,000	43.3	0.0142	10,000	39.4	0.0118	8,000	27.6	0.0094
3.0	10	12,000	51.2	0.0137	10,000	43.3	0.0114	10,000	39.4	0.0094	8,000	27.6	0.0075
3.0	12	12,000	51.2	0.0128	10,000	43.3	0.0106	10,000	39.4	0.0091	8,000	27.6	0.0071
3.0	14	12,000	51.2	0.0118	10,000	43.3	0.0098	10,000	39.4	0.0083	8,000	27.6	0.0067
3.0	16	12,000	37.8	0.0094	10,000	31.5	0.0079	9,000	27.6	0.0067	6,000	19.7	0.0051
3.0	18	12,000	37.8	0.0066	10,000	31.5	0.0055	9,000	27.6	0.0047	6,000	19.7	0.0039
3.0	20	12,000	37.8	0.0061	10,000	31.5	0.0051	9,000	27.6	0.0043	6,000	19.7	0.0031
3.0	25	12,000	37.8	0.0052	10,000	31.5	0.0043	9,000	27.6	0.0035	6,000	19.7	0.0028
3.0	30	9,600	28.3	0.0043	8,000	23.6	0.0035	7,000	19.7	0.0031	5,000	15.7	0.0024
3.0	35	9,600	28.3	0.0033	8,000	23.6	0.0028	7,000	19.7	0.0024	5,000	15.7	0.0020
3.0	40	9,600	28.3	0.0019	8,000	23.6	0.0016	7,000	19.7	0.0012	5,000	15.7	0.0008
3.0	50	6,950	12.6	0.0004	5,800	10.6	0.0004	5,700	9.4	0.0002	5,000	7.9	0.0002
4.0	12	8,550	53.1	0.0180	7,000	43.3	0.0150	7,000	39.4	0.0126	6,000	27.6	0.0102
4.0	16	8,550	53.1	0.0170	7,000	43.3	0.0142	7,000	39.4	0.0118	6,000	27.6	0.0094
4.0	20	8,550	38.2	0.0161	7,000	31.5	0.0134	6,000	27.6	0.0110	5,000	19.7	0.0087
4.0	25	8,550	38.2	0.0123	7,000	31.5	0.0102	6,000	27.6	0.0087	5,000	19.7	0.0071
4.0	30	8,550	38.2	0.0090	7,000	31.5	0.0075	6,000	27.6	0.0063	5,000	19.7	0.0051
4.0	35	8,550	38.2	0.0080	7,000	31.5	0.0067	6,000	27.6	0.0055	5,000	19.7	0.0043
4.0	40	7,300	28.7	0.0066	6,000	23.6	0.0055	5,000	23.6	0.0047	4,000	15.7	0.0039
4.0	45	7,300	28.7	0.0057	6,000	23.6	0.0047	5,000	23.6	0.0039	4,000	15.7	0.0031
4.0	50	7,300	28.7	0.0024	6,000	23.6	0.0020	5,000	23.6	0.0016	4,000	15.7	0.0012
4.0	60	6,100	13.4	0.0009	5,000	11.0	0.0008	5,000	10.6	0.0008	4,000	9.8	0.0004
5.0	16	7,300	53.1	0.0213	6,000	43.3	0.0177	5,000	35.4	0.0150	5,000	23.6	0.0118
5.0	20	7,300	45.3	0.0203	6,000	37.4	0.0169	5,000	30.7	0.0142	5,000	23.6	0.0114
5.0	25	6,100	38.2	0.0198	5,000	31.5	0.0165	5,000	27.6	0.0138	5,000	23.6	0.0110
5.0	30	6,100	38.2	0.0180	5,000	31.5	0.0150	5,000	27.6	0.0118	5,000	23.6	0.0098
5.0	35	6,100	38.2	0.0156	5,000	31.5	0.0130	5,000	27.6	0.0110	5,000	23.6	0.0087
5.0	40	6,100	28.7	0.0134	5,000	23.6	0.0110	4,000	22.8	0.0079	4,000	19.7	0.0071
5.0	50	4,900	24.0	0.0071	4,000	19.7	0.0059	3,000	15.7	0.0051	3,000	15.7	0.0039
5.0	60	4,900	16.5	0.0028	4,000	13.8	0.0024	3,000	13.0	0.0024	3,000	11.8	0.0016

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- * Maximum speed will vary by diameter.





List 3720 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length

Slotting

Hardness	-		Up to 32 HRC		33~41 HRC		42~50 HRC									
Work Material	Copper Copper Alloys		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels											
Cutting Speed	52~682 SFM*		41~323 SFM*		41~241 SFM*		41~208 SFM*									
Depth of Cut	<table border="1"> <tr><td>Dia.</td><td>a_a</td></tr> <tr><td>D<1</td><td>0.1D</td></tr> <tr><td>1≤D<3</td><td>0.3D</td></tr> <tr><td>3≤D</td><td>0.5D</td></tr> </table>		Dia.	a _a	D<1	0.1D	1≤D<3	0.3D	3≤D	0.5D						
	Dia.	a _a														
D<1	0.1D															
1≤D<3	0.3D															
3≤D	0.5D															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min								
0.1	50,000	4.7	40,000	3.1	40,000	3.0	40,000	1.5								
0.2	50,000	6.7	40,000	4.3	40,000	3.5	40,000	1.8								
0.3	50,000	8.3	40,000	5.5	40,000	3.9	40,000	2.8								
0.4	50,000	9.1	40,000	5.9	40,000	4.3	34,500	3.0								
0.5	50,000	9.8	38,500	5.9	31,000	4.3	27,500	3.0								
0.6	50,000	11.0	33,500	5.9	24,500	4.3	21,000	3.0								
0.7	50,000	12.2	30,000	5.9	21,500	4.3	18,500	3.0								
0.8	50,000	14.2	27,000	5.9	19,500	4.3	17,000	3.1								
0.9	50,000	15.7	23,500	5.9	17,000	4.3	15,000	3.1								
1.0	50,000	16.9	22,000	5.9	15,500	4.3	13,500	3.1								
1.1	50,000	16.5	20,000	5.9	14,000	4.3	12,500	3.1								
1.2	50,000	16.5	18,500	5.9	13,500	4.3	11,500	3.1								
1.3	47,000	16.1	17,500	5.9	12,500	4.3	11,000	3.1								
1.4	44,000	16.1	16,000	5.9	11,500	4.3	10,000	3.1								
1.5	40,000	15.7	15,500	5.9	11,000	4.3	9,900	3.1								
1.6	39,000	15.7	15,000	5.9	10,500	4.3	9,400	3.1								
1.7	36,500	15.7	14,000	5.9	9,900	4.3	8,800	3.1								
1.8	34,500	15.7	13,500	6.3	9,400	4.3	8,500	3.1								
1.9	32,500	15.7	12,500	6.3	8,800	4.3	7,900	3.3								
2.0	30,000	15.0	12,000	6.3	8,700	4.3	7,900	3.5								
2.1	29,000	16.1	11,500	6.7	8,300	4.3	7,400	3.5								
2.2	28,000	16.1	11,000	6.7	8,200	4.3	7,200	3.5								
2.3	27,500	16.1	11,000	7.1	8,000	4.3	7,000	3.5								
2.4	26,000	16.9	10,500	7.1	7,900	4.3	6,900	3.5								
2.5	24,500	16.9	10,500	7.9	7,600	4.3	6,600	3.5								
2.6	23,500	18.5	9,800	7.9	7,400	4.9	6,300	3.5								
2.7	23,000	18.5	9,500	7.9	7,100	4.9	6,100	3.5								
2.8	22,000	18.5	9,100	8.3	6,900	4.9	5,800	3.7								
2.9	21,500	18.5	8,800	8.3	6,700	4.9	5,700	3.7								
3.0	21,000	21.3	8,900	9.1	6,800	5.1	5,700	3.9								
3.1	20,000	21.7	8,700	9.4	6,700	5.1	5,600	3.9								
3.2	19,500	22.0	8,400	9.4	6,500	5.7	5,400	4.1								
3.3	19,000	22.0	8,100	9.8	6,300	5.7	5,200	4.1								
3.4	18,000	22.0	7,900	9.8	6,100	5.7	5,100	4.1								
3.5	18,000	22.0	7,800	9.8	6,000	6.1	5,000	4.1								
3.6	17,500	22.8	7,600	10.6	5,900	6.1	4,900	4.3								
3.7	16,500	22.8	7,400	10.6	5,700	6.1	4,700	4.3								
3.8	16,000	23.2	7,300	11.0	5,700	6.1	4,600	4.3								
3.9	15,500	23.2	7,100	11.0	5,500	6.3	4,500	4.3								
4.0	15,500	23.6	7,000	11.0	5,500	6.3	4,500	4.5								
4.1	15,500	25.2	6,900	11.4	5,400	6.3	4,400	4.5								
4.2	15,000	25.2	6,800	11.4	5,300	6.3	4,400	4.5								
4.3	14,000	25.2	6,700	12.2	5,200	6.3	4,300	4.5								
4.4	14,000	26.4	6,600	12.6	5,100	6.7	4,200	4.9								
4.5	14,000	26.4	6,600	12.6	5,100	6.7	4,200	4.9								
4.6	13,500	27.6	6,500	13.0	4,900	6.7	4,100	4.9								
4.7	13,500	27.6	6,500	13.8	4,900	6.7	4,100	4.9								
4.8	13,500	28.0	6,400	13.8	4,800	6.7	4,100	4.9								

1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- *Maximum speed will vary by diameter.

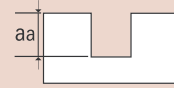
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Slotting

Hardness	-		Up to 32 HRC		33~41 HRC		42~50 HRC											
Work Material	Copper Copper Alloys		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels													
Cutting Speed	52~682 SFM*		41~323 SFM*		41~241 SFM*		41~208 SFM*											
Depth of Cut			<table border="1"> <tr> <td>Dia.</td> <td>a_a</td> </tr> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3≤D</td> <td>0.5D</td> </tr> </table>		Dia.	a _a	D<1	0.1D	1≤D<3	0.3D	3≤D	0.5D						
	Dia.	a _a																
D<1	0.1D																	
1≤D<3	0.3D																	
3≤D	0.5D																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min										
4.9	13,500	28.0	6,300	14.2	4,700	6.7	4,000	4.9										
5.0	12,500	28.3	6,200	14.6	4,600	6.7	3,900	5.1										
5.1	12,500	28.3	6,100	14.6	4,500	6.7	3,900	5.1										
5.2	12,000	28.3	6,000	14.6	4,400	6.7	3,800	5.1										
5.3	12,000	28.3	5,900	14.6	4,400	6.7	3,800	5.1										
5.4	11,500	28.3	5,800	14.6	4,300	6.7	3,600	5.1										
5.5	11,500	28.3	5,700	14.6	4,200	6.7	3,500	5.1										
5.6	11,500	28.3	5,600	14.6	4,100	6.7	3,500	5.1										
5.7	11,000	28.3	5,500	14.6	4,000	6.7	3,400	5.1										
5.8	11,000	28.0	5,400	14.6	3,900	6.7	3,300	5.1										
5.9	10,500	28.0	5,300	14.6	3,800	6.7	3,300	5.1										
6.0	10,000	28.0	5,200	14.6	3,800	6.7	3,200	5.1										



1. Use a rigid and precise machine and holder.
 2. When chattering occurs, reduce the speed and feed simultaneously.
 3. Use a suitable cutting fluid with high smoke retardant.
- *Maximum speed will vary by diameter.





List 3721 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length

Slotting

Hardness	-		Up to 32 HRC		33~41 HRC		42~50 HRC										
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels												
Depth of Cut			<table border="1"> <tr><td>Dia.</td><td>aa</td></tr> <tr><td>D<1</td><td>0.1D</td></tr> <tr><td>1≤D<3</td><td>0.3D</td></tr> <tr><td>3≤D</td><td>0.5D</td></tr> </table>		Dia.	aa	D<1	0.1D	1≤D<3	0.3D	3≤D	0.5D					
	Dia.	aa															
	D<1	0.1D															
	1≤D<3	0.3D															
3≤D	0.5D																
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
0.1	50,000	3.9	32,000	2.8	32,000	2.4	32,000	1.2									
0.2	50,000	5.5	32,000	3.5	32,000	3.0	32,000	1.4									
0.3	50,000	6.7	32,000	4.3	32,000	3.1	32,000	2.2									
0.4	50,000	7.5	32,000	4.7	32,000	3.5	27,500	2.4									
0.5	50,000	7.9	31,000	4.7	25,000	3.5	22,000	2.4									
0.6	50,000	9.1	27,000	4.7	19,500	3.5	17,000	2.4									
0.7	50,000	9.8	24,000	4.7	17,000	3.5	15,000	2.4									
0.8	50,000	11.4	21,500	4.7	15,500	3.5	13,500	2.6									
0.9	49,000	12.6	19,000	4.7	13,500	3.5	12,000	2.6									
1.0	47,500	13.8	17,500	4.7	12,500	3.5	11,000	2.6									
1.1	43,000	13.4	16,000	4.7	11,500	3.5	9,900	2.6									
1.2	40,500	13.4	15,000	4.7	10,500	3.5	9,300	2.6									
1.3	38,000	13.0	14,000	4.7	9,900	3.5	8,700	2.6									
1.4	35,000	13.0	13,000	4.7	9,200	3.5	8,100	2.6									
1.5	32,000	12.6	12,500	4.7	8,900	3.5	7,900	2.6									
1.6	31,000	12.6	12,000	4.7	8,500	3.5	7,500	2.6									
1.7	29,000	12.6	11,000	4.7	7,900	3.5	7,000	2.6									
1.8	28,000	12.6	10,500	5.1	7,500	3.5	6,800	2.7									
1.9	26,000	12.6	10,000	5.1	7,100	3.5	6,300	2.7									
2.0	24,000	12.2	9,700	5.1	7,000	3.5	6,300	2.8									
2.1	23,000	13.0	9,300	5.5	6,600	3.5	5,900	2.8									
2.2	22,500	13.0	9,000	5.5	6,500	3.5	5,700	2.8									
2.3	22,000	13.0	8,800	5.9	6,400	3.5	5,600	2.8									
2.4	20,500	13.8	8,600	5.9	6,300	3.5	5,500	2.8									
2.5	20,000	13.8	8,200	6.3	6,100	3.5	5,300	2.8									
2.6	19,000	15.0	7,900	6.3	5,900	3.9	5,000	2.8									
2.7	18,000	15.0	7,600	6.3	5,700	3.9	4,900	2.8									
2.8	17,500	15.0	7,300	6.7	5,500	3.9	4,700	3.0									
2.9	17,000	15.0	7,100	6.7	5,300	3.9	4,500	3.0									
3.0	16,000	15.7	6,900	6.7	5,300	3.9	4,400	3.0									
3.1	15,500	16.1	6,700	7.1	5,100	3.9	4,300	3.0									
3.2	15,000	16.5	6,500	7.1	5,000	4.3	4,200	3.1									
3.3	14,500	16.5	6,300	7.5	4,800	4.3	4,000	3.1									
3.4	14,000	16.5	6,100	7.5	4,600	4.3	3,900	3.1									
3.5	14,000	16.5	6,000	7.5	4,600	4.7	3,800	3.1									
3.6	13,500	16.9	5,900	7.9	4,500	4.7	3,700	3.3									
3.7	12,500	16.9	5,700	7.9	4,400	4.7	3,600	3.3									
3.8	12,500	17.3	5,600	8.3	4,400	4.7	3,600	3.3									
3.9	12,000	17.3	5,500	8.3	4,200	4.9	3,500	3.3									
4.0	12,000	17.7	5,400	8.3	4,200	4.9	3,500	3.5									
4.1	11,500	18.9	5,300	8.7	4,100	4.9	3,400	3.5									
4.2	11,500	18.9	5,300	8.7	4,100	4.9	3,300	3.5									
4.3	11,000	18.9	5,200	9.1	4,000	4.9	3,300	3.5									
4.4	11,000	19.7	5,100	9.4	3,900	5.1	3,200	3.7									
4.5	10,500	19.7	5,100	9.4	3,900	5.1	3,200	3.7									
4.6	10,500	20.5	5,000	9.8	3,800	5.1	3,200	3.7									
4.7	10,500	20.5	5,000	10.2	3,800	5.1	3,100	3.7									
4.8	10,500	20.9	4,900	10.2	3,700	5.1	3,100	3.7									
4.9	10,000	20.9	4,900	10.6	3,600	5.1	3,100	3.7									
5.0	9,500	21.3	4,800	10.6	3,500	5.1	3,000	3.9									
5.1	9,500	21.3	4,700	10.6	3,500	5.1	3,000	3.9									

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





Slotting

Hardness	-		Up to 32 HRC		33~41 HRC		42~50 HRC											
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels													
Depth of Cut			<table border="1"> <tr> <td>Dia.</td> <td>aa</td> </tr> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3≤D</td> <td>0.5D</td> </tr> </table>		Dia.	aa	D<1	0.1D	1≤D<3	0.3D	3≤D	0.5D						
	Dia.	aa																
	D<1	0.1D																
	1≤D<3	0.3D																
3≤D	0.5D																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min										
5.2	9,300	21.3	4,600	10.6	3,400	5.1	2,900	3.9										
5.3	9,200	21.3	4,600	10.6	3,400	5.1	2,900	3.9										
5.4	9,000	21.3	4,500	10.6	3,300	5.1	2,800	3.9										
5.5	8,800	21.3	4,400	10.6	3,200	5.1	2,700	3.9										
5.6	8,700	21.3	4,300	10.6	3,100	5.1	2,600	3.9										
5.7	8,500	21.3	4,200	10.6	3,100	5.1	2,600	3.9										
5.8	8,400	20.9	4,200	10.6	3,000	5.1	2,600	3.9										
5.9	8,200	20.9	4,100	10.6	2,900	5.1	2,500	3.9										
6.0	7,900	20.9	4,000	10.6	2,900	5.1	2,500	3.9										
6.5	7,500	20.9	3,700	10.6	2,700	5.1	2,300	3.9										
7.0	6,900	20.9	3,400	10.6	2,500	5.1	2,100	3.9										
7.5	6,400	20.9	3,200	10.6	2,300	5.1	2,000	3.9										
8.0	5,900	20.5	3,000	10.2	2,200	4.9	1,900	3.9										
8.5	5,600	20.5	2,800	10.2	2,000	4.9	1,700	3.9										
9.0	5,300	20.1	2,600	10.2	1,900	4.9	1,500	3.9										
9.5	5,100	20.1	2,500	10.2	1,800	4.9	1,400	3.7										
10.0	4,700	19.7	2,400	9.8	1,700	4.9	1,500	3.7										
11.0	4,400	19.7	2,200	9.8	1,600	4.9	1,100	3.7										
12.0	4,000	20.1	2,000	9.8	1,400	4.9	1,200	3.7										
16.0	3,000	15.7	1,500	7.9	1,100	4.5	800	3.1										
18.0	2,700	14.2	1,300	7.1	900	3.9	700	2.8										
20.0	2,400	11.8	1,200	5.9	800	3.5	600	2.4										

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck

Standard Milling

Hardness				-		Up to 32 HRC		33~41 HRC		42~50 HRC					
Work Material				Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels Pre-hardened Steels							
Cutting Speed				66~464 SFM		66~340 SFM		66~279 SFM							
Depth of Cut															
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle									Speed (RPM)	Feed (in/min)	Depth of Cut (in)	Speed (RPM)
						Aa Ar			Aa Ar			Aa Ar			
0.10	0.5°	1	0.3°	32,000	7.9	0.0008 0.0008	32,000	5.9	0.0004 0.0004	32,000	5.9	0.0004 0.0004	32,000	3.9	0.0002 0.0002
0.10	0.5°	1.5	0.3°	32,000	7.9	0.0008 0.0008	32,000	5.9	0.0004 0.0004	32,000	5.9	0.0004 0.0004	32,000	3.9	0.0002 0.0002
0.10	0.5°	2	0.3°	32,000	5.9	0.0008 0.0008	32,000	3.9	0.0004 0.0004	32,000	3.9	0.0004 0.0004	32,000	3.1	0.0002 0.0002
0.10	0.5°	2.5	0.3°	32,000	5.9	0.0004 0.0004	32,000	3.9	0.0002 0.0002	32,000	3.9	0.0002 0.0002	32,000	3.1	0.0002 0.0002
0.10	0.5°	3	0.3°	32,000	3.9	0.0004 0.0004	32,000	3.1	0.0002 0.0002	32,000	3.1	0.0002 0.0002	32,000	2.4	0.0001 0.0002
0.10	1°	2	0.3°	32,000	5.9	0.0008 0.0008	32,000	3.9	0.0004 0.0004	32,000	3.9	0.0004 0.0004	32,000	3.1	0.0002 0.0002
0.10	1°	2.5	0.3°	32,000	5.9	0.0008 0.0008	32,000	3.9	0.0004 0.0004	32,000	3.9	0.0004 0.0004	32,000	3.1	0.0002 0.0002
0.10	1°	3	0.3°	32,000	5.9	0.0004 0.0004	32,000	3.9	0.0002 0.0002	32,000	3.9	0.0002 0.0002	32,000	3.1	0.0002 0.0002
0.15	0.5°	2	0.3°	32,000	23.6	0.0008 0.0012	32,000	11.8	0.0004 0.0006	32,000	7.9	0.0004 0.0006	32,000	7.9	0.0002 0.0002
0.15	0.5°	3	0.3°	32,000	17.7	0.0008 0.0008	32,000	11.8	0.0004 0.0004	32,000	7.9	0.0004 0.0004	32,000	7.9	0.0004 0.0004
0.15	1°	3	0.3°	32,000	17.7	0.0008 0.0008	32,000	11.8	0.0004 0.0006	32,000	7.9	0.0004 0.0006	32,000	7.9	0.0002 0.0002
0.15	1°	4	0.3°	32,000	17.7	0.0008 0.0008	32,000	11.8	0.0004 0.0004	32,000	7.9	0.0004 0.0004	32,000	7.9	0.0004 0.0004
0.20	0.5°	2	0.3°	27,000	17.7	0.0012 0.0020	32,000	15.7	0.0006 0.0010	32,000	11.8	0.0006 0.0008	32,000	11.8	0.0004 0.0004
0.20	0.5°	3	0.3°	27,000	17.7	0.0010 0.0020	27,000	11.8	0.0006 0.0010	27,000	7.9	0.0006 0.0008	27,000	7.9	0.0004 0.0004
0.20	0.5°	4	0.3°	27,000	17.7	0.0008 0.0020	27,000	11.8	0.0006 0.0010	27,000	7.9	0.0006 0.0008	27,000	7.9	0.0004 0.0004
0.20	0.5°	5	0.3°	27,000	15.7	0.0006 0.0020	27,000	11.8	0.0002 0.0006	27,000	7.9	0.0002 0.0005	27,000	7.9	0.0002 0.0004
0.20	0.5°	6	0.3°	27,000	11.8	0.0004 0.0012	27,000	11.8	0.0002 0.0006	27,000	7.9	0.0002 0.0005	27,000	7.9	0.0002 0.0004
0.20	1°	4	0.3°	27,000	17.7	0.0010 0.0020	27,000	11.8	0.0006 0.0010	27,000	7.9	0.0006 0.0008	27,000	7.9	0.0004 0.0004
0.20	1°	5	0.3°	27,000	17.7	0.0008 0.0020	27,000	11.8	0.0006 0.0010	27,000	7.9	0.0006 0.0008	27,000	7.9	0.0004 0.0004
0.20	1°	6	0.3°	27,000	15.7	0.0006 0.0020	27,000	11.8	0.0002 0.0006	27,000	7.9	0.0002 0.0005	27,000	7.9	0.0002 0.0004
0.25	0.5°	4	0.3°	32,000	23.6	0.0016 0.0020	32,000	15.7	0.0008 0.0010	32,000	11.8	0.0008 0.0008	32,000	11.8	0.0004 0.0006
0.25	0.5°	6	0.3°	27,000	17.7	0.0016 0.0020	20,000	7.9	0.0008 0.0010	20,000	5.9	0.0008 0.0008	20,000	5.9	0.0004 0.0004
0.25	0.5°	8	0.3°	21,000	11.8	0.0008 0.0012	20,000	7.9	0.0004 0.0006	20,000	5.9	0.0004 0.0004	20,000	5.9	0.0004 0.0004
0.25	0.5°	10	0.3°	21,000	11.8	0.0008 0.0012	20,000	7.9	0.0004 0.0006	20,000	5.9	0.0004 0.0004	20,000	5.9	0.0002 0.0004
0.25	1°	4	0.3°	32,000	23.6	0.0016 0.0020	32,000	15.7	0.0008 0.0010	32,000	11.8	0.0008 0.0008	32,000	11.8	0.0004 0.0004
0.25	1°	6	0.3°	27,000	17.7	0.0016 0.0020	32,000	15.7	0.0008 0.0010	32,000	11.8	0.0008 0.0008	32,000	11.8	0.0004 0.0004
0.25	1°	8	0.3°	27,000	17.7	0.0016 0.0020	20,000	7.9	0.0008 0.0010	20,000	5.9	0.0008 0.0008	20,000	5.9	0.0004 0.0004
0.25	1°	10	0.3°	21,000	11.8	0.0008 0.0012	20,000	7.9	0.0008 0.0010	20,000	5.9	0.0008 0.0008	20,000	5.9	0.0004 0.0004
0.25	1°	12	0.3°	21,000	11.8	0.0008 0.0012	20,000	7.9	0.0004 0.0006	20,000	5.9	0.0004 0.0004	20,000	5.9	0.0004 0.0004
0.30	0.5°	2	0.3°	32,000	26.6	0.0018 0.0047	32,000	17.7	0.0012 0.0024	32,000	11.8	0.0012 0.0020	32,000	11.8	0.0012 0.0012
0.30	0.5°	4	0.3°	30,000	14.8	0.0018 0.0047	25,000	9.8	0.0012 0.0024	24,000	7.9	0.0012 0.0020	24,000	7.9	0.0012 0.0012
0.30	0.5°	6	0.3°	30,000	14.8	0.0018 0.0047	25,000	9.8	0.0012 0.0024	24,000	7.9	0.0012 0.0016	24,000	7.9	0.0008 0.0008
0.30	0.5°	8	0.3°	25,000	8.9	0.0018 0.0047	20,000	5.9	0.0012 0.0024	20,000	5.9	0.0012 0.0016	20,000	5.9	0.0008 0.0008
0.30	0.5°	10	0.3°	25,000	8.9	0.0018 0.0047	20,000	5.9	0.0012 0.0024	20,000	5.9	0.0012 0.0016	20,000	5.9	0.0008 0.0008
0.30	0.5°	12	0.3°	25,000	8.9	0.0018 0.0047	20,000	5.9	0.0012 0.0024	20,000	5.9	0.0008 0.0016	20,000	5.9	0.0004 0.0004
0.30	0.5°	16	0.3°	20,000	5.9	0.0010 0.0020	20,000	5.9	0.0012 0.0024	20,000	5.9	0.0004 0.0016	20,000	5.9	0.0004 0.0004
0.30	1°	4	0.3°	30,000	14.8	0.0018 0.0047	25,000	9.8	0.0012 0.0024	24,000	7.9	0.0012 0.0020	24,000	7.9	0.0012 0.0012
0.30	1°	6	0.3°	30,000	14.8	0.0018 0.0047	25,000	9.8	0.0012 0.0024	24,000	7.9	0.0012 0.0016	24,000	7.9	0.0008 0.0008
0.30	1°	8	0.3°	30,000	14.8	0.0018 0.0047	25,000	9.8	0.0012 0.0024	24,000	7.9	0.0012 0.0016	24,000	7.9	0.0008 0.0008
0.30	1°	10	0.3°	25,000	8.9	0.0018 0.0047	20,000	5.9	0.0012 0.0024	20,000	5.9	0.0012 0.0016	20,000	5.9	0.0008 0.0008
0.30	1°	12	0.3°	25,000	8.9	0.0018 0.0047	20,000	5.9	0.0012 0.0024	20,000	5.9	0.0012 0.0016	20,000	5.9	0.0008 0.0008
0.30	1°	16	0.3°	25,000	8.9	0.0018 0.0047	20,000	5.9	0.0012 0.0024	20,000	5.9	0.0012 0.0016	20,000	5.9	0.0008 0.0008
0.40	0.5°	4	0.3°	27,000	26.6	0.0024 0.0063	23,000	17.7	0.0016 0.0031	21,000	11.8	0.0016 0.0024	21,000	11.8	0.0016 0.0031
0.40	0.5°	6	0.3°	24,000	14.8	0.0024 0.0047	21,000	9.8	0.0016 0.0024	19,000	7.9	0.0016 0.0020	19,000	7.9	0.0012 0.0020
0.40	0.5°	8	0.3°	24,000	14.8	0.0024 0.0047	21,000	9.8	0.0016 0.0024	19,000	7.9	0.0016 0.0020	19,000	7.9	0.0012 0.0020
0.40	0.5°	12	0.3°	22,000	8.9	0.0024 0.0047	19,000	5.9	0.0016 0.0024	17,000	5.9	0.0016 0.0020	17,000	5.9	0.0008 0.0020
0.40	1°	8	0.3°	24,000	14.8	0.0024 0.0047	21,000	9.8	0.0016 0.0024	19,000	7.9	0.0016 0.0020	19,000	7.9	0.0012 0.0020
0.40	1°	12	0.3°	24,000	14.8	0.0024 0.0047	21,000	9.8	0.0016 0.0024	19,000	7.9	0.0016 0.0020	19,000	7.9	0.0008 0.0020

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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Standard Milling

Hardness				-		Up to 32 HRC				33~41 HRC				42~50 HRC					
Work Material				Copper Copper Alloy		Mild Steels Carbon Steels				Hardened Steels Pre-hardened Steels									
Cutting Speed				66~464 SFM		66~340 SFM				66~279 SFM									
Depth of Cut																			
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle																
						Aa	Ar			Aa	Ar			Aa	Ar			Aa	Ar
0.40	1°	16	0.3°	22,000	8.9	0.0024	0.0047	19,000	5.9	0.0016	0.0024	17,000	5.9	0.0016	0.0020	17,000	5.9	0.0008	0.0008
0.50	0.5°	6	0.3°	28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.0020	0.0031	21,000	11.8	0.0020	0.0020
0.50	0.5°	8	0.3°	28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.0020	0.0031	21,000	11.8	0.0020	0.0020
0.50	0.5°	10	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.50	0.5°	12	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.50	0.5°	16	0.3°	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0010
0.50	0.5°	18	0.3°	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0010
0.50	0.5°	20	0.3°	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0010
0.50	0.5°	25	0.3°	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.0020	10,000	5.9	0.0012	0.0016	10,000	5.9	0.0004	0.0006
0.50	0.5°	30	0.3°	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.0020	10,000	5.9	0.0012	0.0016	10,000	5.9	0.0004	0.0006
0.50	0.5°	35	0.3°	13,000	11.8	0.0016	0.0047	13,000	7.9	0.0004	0.0020	10,000	5.9	0.0004	0.0016	10,000	5.9	0.0002	0.0006
0.50	1°	10	0.3°	28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.0020	0.0031	21,000	11.8	0.0020	0.0020
0.50	1°	16	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.50	1°	20	0.3°	21,000	17.7	0.0030	0.0059	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0008
0.50	1°	25	0.3°	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0008
0.50	1°	30	0.3°	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0006
0.50	1°	35	0.3°	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0006
0.50	1°	40	0.3°	18,000	11.8	0.0024	0.0047	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0006
0.50	1°	50	0.3°	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.0020	10,000	5.9	0.0012	0.0016	10,000	5.9	0.0004	0.0006
0.50	1°	60	0.3°	16,000	11.8	0.0024	0.0047	13,000	7.9	0.0012	0.0020	10,000	5.9	0.0012	0.0016	10,000	5.9	0.0004	0.0006
0.50	1°	70	0.3°	12,000	11.8	0.0024	0.0047	13,000	7.9	0.0008	0.0020	10,000	5.9	0.0008	0.0016	10,000	5.9	0.0004	0.0006
0.50	1.5°	8	0.3°	28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.0020	0.0031	21,000	11.8	0.0020	0.0020
0.50	1.5°	10	0.3°	28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.0020	0.0031	21,000	11.8	0.0020	0.0020
0.50	1.5°	12	0.3°	28,000	29.5	0.0030	0.0079	25,000	19.7	0.0020	0.0039	21,000	11.8	0.0020	0.0031	21,000	11.8	0.0020	0.0020
0.50	1.5°	16	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.50	1.5°	20	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.50	1.5°	25	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.50	1.5°	30	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.50	1.5°	35	0.3°	21,000	17.7	0.0030	0.0059	17,000	7.9	0.0012	0.0020	14,000	5.9	0.0012	0.0016	14,000	5.9	0.0004	0.0008
0.50	2°	45	0.3°	21,000	17.7	0.0030	0.0059	19,000	11.8	0.0020	0.0039	16,000	7.9	0.0020	0.0031	16,000	7.9	0.0020	0.0020
0.60	0.5°	12	0.3°	20,000	17.7	0.0035	0.0094	17,000	11.8	0.0024	0.0047	14,000	7.9	0.0024	0.0039	14,000	7.9	0.0024	0.0024
0.60	0.5°	25	0.3°	16,000	11.8	0.0035	0.0071	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.0008	0.0012
0.60	1°	12	0.3°	20,000	17.7	0.0035	0.0094	17,000	11.8	0.0024	0.0047	14,000	7.9	0.0024	0.0039	14,000	7.9	0.0024	0.0024
0.60	1°	25	0.3°	16,000	11.8	0.0035	0.0094	14,000	7.9	0.0024	0.0035	11,000	5.9	0.0024	0.0028	11,000	5.9	0.0008	0.0012
0.60	1.5°	12	0.3°	20,000	23.6	0.0035	0.0094	17,000	17.7	0.0024	0.0047	14,000	11.8	0.0024	0.0039	14,000	11.8	0.0024	0.0024
0.60	1.5°	25	0.3°	20,000	17.7	0.0035	0.0094	17,000	11.8	0.0024	0.0047	14,000	7.9	0.0024	0.0039	14,000	7.9	0.0024	0.0024
0.75	0.5°	8	0.3°	18,000	29.5	0.0055	0.0118	15,000	19.7	0.0031	0.0059	12,000	13.8	0.0031	0.0059	12,000	11.8	0.0031	0.0059
0.75	0.5°	10	0.3°	17,000	17.7	0.0055	0.0118	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059
0.75	0.5°	12	0.3°	17,000	17.7	0.0047	0.0118	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059
0.75	0.5°	16	0.3°	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039	12,000	9.8	0.0030	0.0039
0.75	0.5°	20	0.3°	13,000	11.8	0.0047	0.0079	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0039	9,500	5.9	0.0020	0.0039
0.75	0.5°	25	0.3°	13,000	11.8	0.0047	0.0079	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0039	9,500	5.9	0.0020	0.0039
0.75	0.5°	30	0.3°	13,000	11.8	0.0047	0.0079	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0039	9,500	5.9	0.0014	0.0039
0.75	0.5°	35	0.3°	13,000	11.8	0.0035	0.0079	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0039	9,500	5.9	0.0012	0.0039
0.75	1°	10	0.3°	18,000	29.5	0.0055	0.0118	15,000	19.7	0.0031	0.0059	12,000	13.8	0.0031	0.0059	12,000	11.8	0.0031	0.0059
0.75	1°	12	0.3°	17,000	17.7	0.0055	0.0118	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059
0.75	1°	16	0.3°	17,000	17.7	0.0047	0.0118	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059
0.75	1°	20	0.3°	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039	12,000	9.8	0.0030	0.0039

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck (Continued)

Standard Milling

Hardness				-		Up to 32 HRC		33~41 HRC		42~50 HRC									
Work Material				Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels Pre-hardened Steels											
Cutting Speed				66~464 SFM		66~340 SFM		66~279 SFM											
Depth of Cut																			
R (mm)	theta_n	L2 (mm)	Recom'd Cutting Angle									Speed (RPM)	Feed (in/min)	Depth of Cut (in)	Speed (RPM)	Feed (in/min)	Depth of Cut (in)	Speed (RPM)	Feed (in/min)
						Aa	Ar					Aa	Ar						
0.75	1°	25	0.3°	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039	12,000	9.8	0.0020	0.0039
0.75	1°	30	0.3°	13,000	11.8	0.0035	0.0079	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0039	9,500	5.9	0.0012	0.0039
0.75	1°	35	0.3°	13,000	11.8	0.0035	0.0079	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0039	9,500	5.9	0.0008	0.0039
0.75	1.5°	10	0.3°	18,000	29.5	0.0047	0.0118	15,000	19.7	0.0031	0.0059	12,000	13.8	0.0031	0.0059	12,000	11.8	0.0031	0.0059
0.75	1.5°	12	0.3°	17,000	17.7	0.0047	0.0118	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059
0.75	1.5°	16	0.3°	17,000	17.7	0.0047	0.0118	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059
0.75	1.5°	20	0.3°	17,000	17.7	0.0047	0.0118	15,000	11.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059	12,000	9.8	0.0031	0.0059
0.75	1.5°	25	0.3°	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039	12,000	9.8	0.0030	0.0039
0.75	1.5°	30	0.3°	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039	12,000	9.8	0.0030	0.0039
0.75	1.5°	35	0.3°	13,000	11.8	0.0030	0.0079	12,000	7.9	0.0024	0.0039	9,500	5.9	0.0024	0.0039	9,500	5.9	0.0020	0.0039
0.75	2°	38.6	0.3°	17,000	17.7	0.0047	0.0094	15,000	11.8	0.0031	0.0047	12,000	9.8	0.0031	0.0039	12,000	9.8	0.0030	0.0039
1.00	0.5°	8	0.3°	16,500	41.3	0.0079	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.0039	0.0110	13,500	19.7	0.0039	0.0079
1.00	0.5°	10	0.3°	16,500	41.3	0.0079	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.0039	0.0110	13,500	19.7	0.0039	0.0079
1.00	0.5°	12	0.3°	16,500	41.3	0.0079	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.0039	0.0110	13,500	19.7	0.0039	0.0079
1.00	0.5°	16	0.3°	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.00	0.5°	20	0.3°	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.00	0.5°	25	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	0.5°	30	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	0.5°	35	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	0.5°	40	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	1°	16	0.3°	16,500	41.3	0.0079	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.0039	0.0110	13,500	19.7	0.0039	0.0079
1.00	1°	20	0.3°	14,000	29.5	0.0079	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.00	1°	25	0.3°	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.00	1°	30	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0031	0.0039
1.00	1°	35	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0031	0.0039
1.00	1°	40	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	1°	50	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	1°	60	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	1°	70	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	1.5°	16	0.3°	16,500	41.3	0.0079	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.0039	0.0110	13,500	19.7	0.0039	0.0079
1.00	1.5°	20	0.3°	16,500	41.3	0.0079	0.0220	16,500	27.6	0.0039	0.0110	13,500	19.7	0.0039	0.0110	13,500	19.7	0.0039	0.0079
1.00	1.5°	25	0.3°	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.00	1.5°	30	0.3°	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.00	1.5°	35	0.3°	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.00	1.5°	41.5	0.3°	11,000	14.8	0.0059	0.0165	10,000	9.8	0.0039	0.0083	8,000	7.9	0.0039	0.0071	8,000	7.9	0.0024	0.0039
1.00	2°	31.5	0.3°	14,000	29.5	0.0059	0.0220	13,000	19.7	0.0039	0.0110	10,000	11.8	0.0039	0.0110	10,000	11.8	0.0039	0.0079
1.50	0.5°	8	0.3°	15,000	47.2	0.0079	0.0331	9,500	31.5	0.0059	0.0165	7,500	23.6	0.0059	0.0165	7,500	23.6	0.0059	0.0118
1.50	0.5°	10	0.3°	15,000	47.2	0.0079	0.0331	9,500	31.5	0.0059	0.0165	7,500	23.6	0.0059	0.0165	7,500	23.6	0.0059	0.0118
1.50	0.5°	12	0.3°	12,000	35.4	0.0079	0.0331	9,500	23.6	0.0059	0.0165	7,500	15.7	0.0059	0.0142	7,500	15.7	0.0059	0.0118
1.50	0.5°	16	0.3°	10,000	35.4	0.0079	0.0331	9,500	23.6	0.0059	0.0165	7,500	15.7	0.0059	0.0142	7,500	15.7	0.0059	0.0118
1.50	0.5°	20	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
1.50	0.5°	25	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
1.50	0.5°	30	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0118	6,500	9.8	0.0035	0.0059
1.50	0.5°	35	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0118	6,500	9.8	0.0035	0.0059
1.50	0.5°	40	0.3°	9,000	14.8	0.0079	0.0331	7,500	9.8	0.0059	0.0165	6,000	7.9	0.0059	0.0118	6,000	7.9	0.0035	0.0059
1.50	0.5°	50	0.3°	9,000	14.8	0.0079	0.0331	7,500	9.8	0.0059	0.0165	6,000	7.9	0.0059	0.0118	6,000	7.9	0.0035	0.0059
1.50	1°	20	0.3°	10,000	35.4	0.0079	0.0331	9,500	23.6	0.0059	0.0165	7,500	15.7	0.0059	0.0142	7,500	15.7	0.0059	0.0118
1.50	1°	25	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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Standard Milling

Hardness				-		Up to 32 HRC		33~41 HRC		42~50 HRC									
Work Material				Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels Pre-hardened Steels											
Cutting Speed				66~464 SFM		66~340 SFM		66~279 SFM											
Depth of Cut																			
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle													Speed (RPM)	Feed (in/min)	Depth of Cut (in)	Speed (RPM)
				Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar				
1.50	1°	30	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
1.50	1°	35	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0118	6,500	9.8	0.0035	0.0059
1.50	1°	40	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0118	6,500	9.8	0.0035	0.0059
1.50	1°	50	0.3°	9,000	14.8	0.0079	0.0331	7,500	9.8	0.0059	0.0165	6,000	7.9	0.0059	0.0118	6,000	7.9	0.0035	0.0059
1.50	1°	60	0.3°	9,000	14.8	0.0079	0.0331	7,500	9.8	0.0059	0.0165	6,000	7.9	0.0059	0.0118	6,000	7.9	0.0035	0.0059
1.50	1°	70	0.3°	9,000	14.8	0.0079	0.0331	7,500	9.8	0.0059	0.0165	6,000	7.9	0.0059	0.0118	6,000	7.9	0.0035	0.0059
1.50	1.5°	20	0.3°	10,000	35.4	0.0118	0.0331	9,500	23.6	0.0059	0.0165	7,500	15.7	0.0059	0.0142	7,500	15.7	0.0059	0.0118
1.50	1.5°	25	0.3°	10,000	17.7	0.0098	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
1.50	1.5°	30	0.3°	10,000	17.7	0.0098	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
1.50	1.5°	35	0.3°	10,000	17.7	0.0098	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
1.50	1.5°	40	0.3°	10,000	17.7	0.0098	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
1.50	1.5°	50	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0118	6,500	9.8	0.0035	0.0059
1.50	1.5°	62.5	0.3°	10,000	17.7	0.0079	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0118	6,500	9.8	0.0035	0.0059
1.50	1.5°	47.5	0.3°	10,000	17.7	0.0098	0.0331	8,500	11.8	0.0059	0.0165	6,500	9.8	0.0059	0.0142	6,500	9.8	0.0059	0.0118
2.00	1°	20	0.5°	9,000	35.4	0.0197	0.0504	7,500	23.6	0.0079	0.0252	6,000	15.7	0.0079	0.0236	6,000	15.7	0.0079	0.0157
2.00	1°	30	0.5°	7,000	23.6	0.0197	0.0504	6,000	15.7	0.0079	0.0252	5,000	9.8	0.0079	0.0236	5,000	9.8	0.0079	0.0157
2.00	1°	40	0.5°	7,000	23.6	0.0157	0.0504	6,000	15.7	0.0079	0.0252	5,000	9.8	0.0079	0.0220	5,000	9.8	0.0047	0.0118
2.00	1°	50	0.5°	7,000	23.6	0.0157	0.0504	6,000	15.7	0.0079	0.0252	5,000	9.8	0.0079	0.0220	5,000	9.8	0.0047	0.0079
2.00	1°	60	0.5°	5,000	14.8	0.0138	0.0504	5,000	9.8	0.0079	0.0252	4,000	7.9	0.0079	0.0220	4,000	7.9	0.0047	0.0079
2.00	1.5°	44.2	0.5°	7,000	23.6	0.0197	0.0504	6,000	15.7	0.0079	0.0252	5,000	9.8	0.0079	0.0236	5,000	9.8	0.0079	0.0157
2.00	2°	34	0.5°	7,000	23.6	0.0197	0.0504	6,000	15.7	0.0079	0.0252	5,000	9.8	0.0079	0.0236	5,000	9.8	0.0079	0.0197
2.50	1°	30	0.5°	7,000	29.5	0.0236	0.0709	6,500	19.7	0.0098	0.0354	5,000	15.7	0.0098	0.0276	5,000	15.7	0.0098	0.0197
2.50	1°	40	0.5°	6,000	29.5	0.0236	0.0709	5,000	19.7	0.0098	0.0354	4,000	9.8	0.0098	0.0276	4,000	9.8	0.0098	0.0197
2.50	1°	60	0.5°	5,000	23.6	0.0157	0.0709	4,000	15.7	0.0098	0.0354	4,000	7.9	0.0098	0.0236	4,000	7.9	0.0079	0.0098
2.50	1.5°	26.9	0.5°	9,000	53.1	0.0236	0.0709	6,500	35.4	0.0098	0.0354	5,000	29.5	0.0098	0.0276	5,000	29.5	0.0098	0.0197
2.50	1.5°	65.1	0.5°	6,000	29.5	0.0236	0.0709	5,000	19.7	0.0098	0.0354	4,000	9.8	0.0098	0.0276	4,000	9.8	0.0098	0.0197
2.50	2°	50.1	0.5°	6,000	29.5	0.0236	0.0709	5,000	19.7	0.0098	0.0354	4,000	9.8	0.0098	0.0276	4,000	9.8	0.0098	0.0197
3.00	1°	30	0.5°	7,000	47.2	0.0295	0.0945	5,500	31.5	0.0118	0.0472	4,500	23.6	0.0118	0.0378	4,500	23.6	0.0118	0.0236
3.00	1°	40	0.5°	5,000	23.6	0.0295	0.0945	4,000	15.7	0.0118	0.0472	4,000	11.8	0.0118	0.0378	4,000	11.8	0.0118	0.0236
3.00	1°	50	0.5°	5,000	23.6	0.0236	0.0945	4,000	15.7	0.0118	0.0472	4,000	11.8	0.0118	0.0378	4,000	11.8	0.0118	0.0236
3.00	1°	60	0.5°	5,000	23.6	0.0236	0.0945	4,000	15.7	0.0118	0.0472	4,000	11.8	0.0118	0.0378	4,000	11.8	0.0118	0.0236
3.00	1°	70	0.5°	5,000	23.6	0.0236	0.0945	4,000	15.7	0.0118	0.0472	4,000	11.8	0.0118	0.0378	4,000	11.8	0.0118	0.0118
3.00	1°	80	0.5°	5,000	23.6	0.0177	0.0945	4,000	15.7	0.0079	0.0472	4,000	11.8	0.0079	0.0378	4,000	11.8	0.0079	0.0118
3.00	1.5°	49	0.5°	5,000	23.6	0.0236	0.0945	4,000	15.7	0.0118	0.0472	4,000	11.8	0.0118	0.0378	4,000	11.8	0.0118	0.0236
3.00	2°	36	0.5°	7,000	47.2	0.0295	0.0945	5,500	31.5	0.0118	0.0472	4,500	23.6	0.0118	0.0378	4,500	23.6	0.0118	0.0236

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck (Continued)

High Speed Milling

Hardness				-				Up to 32 HRC				33~41 HRC				42~50 HRC			
Work Material				Copper Copper Alloy				Mild Steels Carbon Steels				Hardened Steels Pre-hardened Steels							
Cutting Speed				103~1031 SFM				78~928 SFM				76~774 SFM							
Depth of Cut																			
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle																
				Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar	Aa	Ar
0.10	0.5°	1	0.3°	50,000	17.3	0.0003	0.0004	50,000	14.2	0.0002	0.0002	50,000	13.4	0.0002	0.0002	50,000	13.4	0.0002	0.0002
0.10	0.5°	1.5	0.3°	50,000	17.3	0.0003	0.0004	50,000	14.2	0.0002	0.0002	50,000	13.4	0.0002	0.0002	50,000	13.4	0.0002	0.0002
0.10	0.5°	2	0.3°	50,000	14.2	0.0003	0.0004	45,000	11.8	0.0002	0.0002	45,000	11.0	0.0002	0.0002	45,000	11.0	0.0002	0.0002
0.10	0.5°	2.5	0.3°	50,000	12.6	0.0003	0.0004	38,000	9.1	0.0002	0.0002	38,000	8.3	0.0002	0.0002	37,000	7.9	0.0002	0.0002
0.10	0.5°	3	0.3°	50,000	9.8	0.0003	0.0004	38,000	7.9	0.0002	0.0002	38,000	7.1	0.0002	0.0002	37,000	5.9	0.0001	0.0002
0.10	1°	3.5	0.3°	50,000	17.3	0.0003	0.0004	50,000	14.2	0.0002	0.0002	50,000	13.4	0.0002	0.0002	50,000	13.4	0.0002	0.0002
0.10	1°	4	0.3°	50,000	14.2	0.0003	0.0004	45,000	11.8	0.0002	0.0002	45,000	11.0	0.0002	0.0002	45,000	11.0	0.0002	0.0002
0.10	1°	4.5	0.3°	50,000	12.6	0.0003	0.0004	38,000	9.1	0.0002	0.0002	38,000	8.3	0.0002	0.0002	37,000	7.9	0.0002	0.0002
0.15	0.5°	2	0.3°	50,000	28.7	0.0003	0.0008	50,000	23.6	0.0002	0.0004	50,000	22.4	0.0002	0.0004	50,000	22.4	0.0002	0.0002
0.15	0.5°	3	0.3°	50,000	22.8	0.0003	0.0004	45,000	18.9	0.0002	0.0002	45,000	17.7	0.0002	0.0002	45,000	17.7	0.0002	0.0002
0.15	1°	3	0.3°	50,000	24.0	0.0003	0.0008	47,000	20.1	0.0002	0.0004	47,000	18.9	0.0002	0.0004	47,000	18.9	0.0002	0.0002
0.15	1°	4	0.3°	50,000	22.8	0.0003	0.0004	45,000	18.9	0.0002	0.0002	45,000	17.7	0.0002	0.0002	45,000	17.7	0.0002	0.0002
0.20	0.5°	2	0.3°	50,000	38.2	0.0006	0.0016	50,000	31.5	0.0004	0.0008	50,000	29.9	0.0004	0.0008	50,000	29.9	0.0004	0.0004
0.20	0.5°	3	0.3°	50,000	26.4	0.0005	0.0012	45,000	21.7	0.0003	0.0006	45,000	20.5	0.0003	0.0006	45,000	20.5	0.0003	0.0004
0.20	0.5°	4	0.3°	48,000	21.3	0.0003	0.0008	43,000	19.7	0.0002	0.0004	43,000	18.5	0.0002	0.0004	43,000	18.5	0.0002	0.0004
0.20	0.5°	5	0.3°	45,000	18.9	0.0003	0.0008	40,000	16.5	0.0002	0.0004	40,000	15.7	0.0002	0.0004	40,000	15.7	0.0002	0.0004
0.20	0.5°	6	0.3°	40,000	15.7	0.0003	0.0004	36,000	14.6	0.0002	0.0002	36,000	13.8	0.0002	0.0002	35,000	13.4	0.0002	0.0002
0.20	1°	4	0.3°	50,000	26.4	0.0005	0.0012	45,000	21.7	0.0003	0.0006	45,000	20.5	0.0003	0.0006	45,000	20.5	0.0003	0.0004
0.20	1°	5	0.3°	48,000	21.3	0.0003	0.0008	43,000	19.7	0.0002	0.0004	43,000	18.5	0.0002	0.0004	43,000	18.5	0.0002	0.0004
0.20	1°	6	0.3°	45,000	18.9	0.0003	0.0008	40,000	16.5	0.0002	0.0004	40,000	15.7	0.0002	0.0004	40,000	15.7	0.0002	0.0004
0.25	0.5°	4	0.3°	50,000	47.2	0.0006	0.0016	48,000	35.4	0.0004	0.0008	48,000	33.5	0.0004	0.0008	48,000	33.5	0.0004	0.0006
0.25	0.5°	6	0.3°	38,000	37.0	0.0006	0.0008	38,000	19.7	0.0004	0.0004	38,000	18.5	0.0004	0.0004	38,000	18.5	0.0004	0.0004
0.25	0.5°	8	0.3°	30,000	29.9	0.0003	0.0008	30,000	15.7	0.0002	0.0004	30,000	15.0	0.0002	0.0004	29,000	14.2	0.0002	0.0004
0.25	0.5°	10	0.3°	30,000	19.7	0.0002	0.0008	30,000	15.7	0.0002	0.0004	30,000	11.8	0.0002	0.0004	29,000	9.8	0.0002	0.0004
0.25	1°	4	0.3°	50,000	47.2	0.0006	0.0016	48,000	35.4	0.0004	0.0008	48,000	33.5	0.0004	0.0008	48,000	33.5	0.0004	0.0004
0.25	1°	6	0.3°	50,000	47.2	0.0006	0.0016	48,000	35.4	0.0004	0.0008	48,000	33.5	0.0004	0.0008	48,000	33.5	0.0004	0.0004
0.25	1°	8	0.3°	50,000	47.2	0.0006	0.0016	48,000	35.4	0.0004	0.0008	48,000	33.5	0.0004	0.0008	48,000	33.5	0.0004	0.0004
0.25	1°	10	0.3°	30,000	29.9	0.0003	0.0008	30,000	15.7	0.0002	0.0004	30,000	15.0	0.0002	0.0004	29,000	14.2	0.0002	0.0004
0.25	1°	12	0.3°	30,000	29.9	0.0003	0.0008	30,000	15.7	0.0002	0.0004	30,000	15.0	0.0002	0.0004	29,000	14.2	0.0002	0.0004
0.30	0.5°	2	0.3°	50,000	61.0	0.0012	0.0024	50,000	47.2	0.0008	0.0012	50,000	43.3	0.0008	0.0012	50,000	43.3	0.0008	0.0012
0.30	0.5°	4	0.3°	50,000	53.1	0.0012	0.0024	45,000	39.4	0.0008	0.0012	45,000	37.4	0.0008	0.0012	45,000	37.4	0.0008	0.0012
0.30	0.5°	6	0.3°	35,000	37.8	0.0006	0.0016	30,000	26.8	0.0004	0.0008	30,000	25.2	0.0004	0.0008	30,000	25.2	0.0004	0.0008
0.30	0.5°	8	0.3°	30,000	28.3	0.0006	0.0016	26,000	23.6	0.0004	0.0008	26,000	22.4	0.0004	0.0008	25,000	21.3	0.0004	0.0008
0.30	0.5°	10	0.3°	30,000	19.7	0.0006	0.0016	26,000	18.9	0.0004	0.0008	26,000	17.7	0.0004	0.0008	25,000	15.0	0.0004	0.0008
0.30	0.5°	12	0.3°	30,000	19.7	0.0004	0.0016	26,000	18.9	0.0003	0.0008	26,000	17.7	0.0003	0.0008	25,000	15.0	0.0003	0.0004
0.30	0.5°	16	0.3°	30,000	15.7	0.0003	0.0016	26,000	15.0	0.0002	0.0008	26,000	14.2	0.0002	0.0008	25,000	11.8	0.0002	0.0004
0.30	1°	4	0.3°	50,000	53.1	0.0012	0.0024	45,000	39.4	0.0008	0.0012	45,000	37.4	0.0008	0.0012	45,000	37.4	0.0008	0.0012
0.30	1°	6	0.3°	35,000	37.8	0.0006	0.0016	30,000	26.8	0.0004	0.0008	30,000	25.2	0.0004	0.0008	30,000	25.2	0.0004	0.0008
0.30	1°	8	0.3°	35,000	37.8	0.0006	0.0016	30,000	26.8	0.0004	0.0008	30,000	25.2	0.0004	0.0008	30,000	25.2	0.0004	0.0008
0.30	1°	10	0.3°	30,000	28.3	0.0006	0.0016	26,000	23.6	0.0004	0.0008	26,000	22.4	0.0004	0.0008	25,000	21.3	0.0004	0.0008
0.30	1°	12	0.3°	30,000	28.3	0.0006	0.0016	26,000	23.6	0.0004	0.0008	26,000	22.4	0.0004	0.0008	25,000	21.3	0.0004	0.0008
0.30	1°	16	0.3°	30,000	19.7	0.0006	0.0016	26,000	18.9	0.0004	0.0008	26,000	17.7	0.0004	0.0008	25,000	15.0	0.0004	0.0008
0.40	0.5°	4	0.3°	50,000	68.9	0.0024	0.0063	48,000	63.0	0.0016	0.0031	48,000	59.1	0.0016	0.0024	48,000	59.1	0.0016	0.0016
0.40	0.5°	6	0.3°	43,000	63.0	0.0018	0.0039	34,000	37.4	0.0012	0.0020	34,000	35.4	0.0012	0.0020	34,000	35.4	0.0008	0.0010
0.40	0.5°	8	0.3°	32,000	49.2	0.0018	0.0039	30,000	31.5	0.0012	0.0020	30,000	29.9	0.0012	0.0020	30,000	29.9	0.0008	0.0010
0.40	0.5°	12	0.3°	24,000	28.3	0.0004	0.0016	23,000	17.7	0.0002	0.0004	23,000	16.5	0.0002	0.0004	23,000	16.5	0.0002	0.0010
0.40	1°	8	0.3°	43,000	63.0	0.0018	0.0039	34,000	37.4	0.0012	0.0020	34,000	35.4	0.0012	0.0020	34,000	35.4	0.0008	0.0010
0.40	1°	12	0.3°	32,000	49.2	0.0018	0.0039	30,000	31.5	0.0012	0.0020	30,000	29.9	0.0012	0.0020	30,000	29.9	0.0008	0.0010

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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High Speed Milling

Hardness				-				Up to 32 HRC				33~41 HRC				42~50 HRC			
Work Material				Copper Copper Alloy				Mild Steels Carbon Steels				Hardened Steels Pre-hardened Steels							
Cutting Speed				103~1031 SFM				78~928 SFM								76~774 SFM			
Depth of Cut																			
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle																
						Aa	Ar			Aa	Ar			Aa	Ar			Aa	Ar
0.40	1°	16	0.3°	24,000	28.3	0.0004	0.0016	23,000	17.7	0.0002	0.0004	23,000	16.5	0.0002	0.0004	23,000	16.5	0.0002	0.0006
0.50	0.5°	6	0.3°	47,000	112.2	0.0030	0.0079	36,000	90.6	0.0020	0.0039	36,000	82.7	0.0020	0.0031	36,000	82.7	0.0020	0.0020
0.50	0.5°	8	0.3°	30,000	92.5	0.0030	0.0059	27,000	66.9	0.0020	0.0039	27,000	63.0	0.0020	0.0031	27,000	63.0	0.0020	0.0020
0.50	0.5°	10	0.3°	27,000	78.7	0.0030	0.0059	26,000	63.0	0.0020	0.0039	26,000	59.1	0.0020	0.0031	26,000	59.1	0.0020	0.0020
0.50	0.5°	12	0.3°	24,000	55.1	0.0006	0.0016	22,000	43.3	0.0004	0.0008	22,000	39.4	0.0004	0.0020	21,000	37.4	0.0004	0.0008
0.50	0.5°	16	0.3°	24,000	39.4	0.0006	0.0016	22,000	30.3	0.0004	0.0008	22,000	27.6	0.0004	0.0008	21,000	26.8	0.0004	0.0008
0.50	0.5°	18	0.3°	24,000	39.4	0.0004	0.0016	22,000	30.3	0.0003	0.0008	22,000	27.6	0.0003	0.0008	21,000	26.8	0.0003	0.0008
0.50	0.5°	20	0.3°	24,000	39.4	0.0004	0.0012	22,000	30.3	0.0003	0.0006	22,000	27.6	0.0003	0.0006	21,000	26.8	0.0003	0.0006
0.50	0.5°	25	0.3°	20,000	31.5	0.0004	0.0012	18,000	23.6	0.0003	0.0006	18,000	18.9	0.0003	0.0006	17,000	21.7	0.0003	0.0006
0.50	0.5°	30	0.3°	20,000	31.5	0.0003	0.0012	18,000	23.6	0.0002	0.0006	18,000	18.9	0.0002	0.0006	17,000	21.7	0.0002	0.0006
0.50	0.5°	35	0.3°	15,000	21.7	0.0002	0.0012	14,000	17.7	0.0002	0.0004	12,000	15.7	0.0002	0.0004	11,000	13.8	0.0002	0.0004
0.50	1°	10	0.3°	30,000	92.5	0.0030	0.0059	27,000	66.9	0.0020	0.0039	27,000	63.0	0.0020	0.0020	27,000	63.0	0.0020	0.0020
0.50	1°	16	0.3°	24,000	55.1	0.0006	0.0016	22,000	43.3	0.0004	0.0008	22,000	39.4	0.0004	0.0008	21,000	37.4	0.0004	0.0008
0.50	1°	20	0.3°	24,000	39.4	0.0006	0.0016	22,000	30.3	0.0004	0.0008	22,000	27.6	0.0004	0.0008	21,000	26.8	0.0004	0.0006
0.50	1°	25	0.3°	24,000	39.4	0.0006	0.0016	22,000	30.3	0.0004	0.0008	22,000	27.6	0.0004	0.0008	21,000	26.8	0.0004	0.0006
0.50	1°	30	0.3°	24,000	39.4	0.0004	0.0016	22,000	30.3	0.0003	0.0008	22,000	27.6	0.0003	0.0008	21,000	26.8	0.0003	0.0006
0.50	1°	35	0.3°	24,000	39.4	0.0004	0.0012	22,000	30.3	0.0003	0.0006	22,000	27.6	0.0003	0.0006	21,000	26.8	0.0003	0.0006
0.50	1°	40	0.3°	22,000	39.4	0.0004	0.0012	20,000	30.3	0.0003	0.0006	20,000	27.6	0.0003	0.0006	19,000	26.8	0.0003	0.0006
0.50	1°	50	0.3°	20,000	31.5	0.0004	0.0012	18,000	23.6	0.0003	0.0006	18,000	18.9	0.0003	0.0006	17,000	21.7	0.0003	0.0004
0.50	1°	60	0.3°	18,000	31.5	0.0003	0.0012	16,000	23.6	0.0002	0.0006	16,000	18.9	0.0002	0.0006	15,000	21.7	0.0002	0.0006
0.50	1°	70	0.3°	15,000	23.6	0.0002	0.0012	14,000	18.9	0.0002	0.0006	13,000	15.0	0.0002	0.0006	12,000	17.7	0.0002	0.0006
0.50	1.5°	8	0.3°	47,000	112.2	0.0030	0.0079	36,000	90.6	0.0020	0.0039	36,000	82.7	0.0020	0.0031	36,000	82.7	0.0020	0.0020
0.50	1.5°	10	0.3°	30,000	92.5	0.0030	0.0059	27,000	66.9	0.0020	0.0039	27,000	63.0	0.0020	0.0031	27,000	63.0	0.0020	0.0020
0.50	1.5°	12	0.3°	30,000	92.5	0.0030	0.0059	27,000	66.9	0.0020	0.0039	27,000	63.0	0.0020	0.0031	27,000	63.0	0.0020	0.0020
0.50	1.5°	16	0.3°	24,000	55.1	0.0006	0.0016	22,000	43.3	0.0004	0.0008	22,000	39.4	0.0004	0.0008	21,000	37.4	0.0004	0.0008
0.50	1.5°	20	0.3°	24,000	55.1	0.0006	0.0016	22,000	43.3	0.0004	0.0008	22,000	39.4	0.0004	0.0008	21,000	37.4	0.0004	0.0008
0.50	1.5°	25	0.3°	24,000	55.1	0.0006	0.0016	22,000	43.3	0.0004	0.0008	22,000	39.4	0.0004	0.0008	21,000	37.4	0.0004	0.0008
0.50	1.5°	30	0.3°	24,000	39.4	0.0006	0.0016	22,000	30.3	0.0004	0.0008	22,000	27.6	0.0004	0.0008	21,000	26.8	0.0004	0.0008
0.50	1.5°	35	0.3°	24,000	39.4	0.0006	0.0016	22,000	30.3	0.0004	0.0008	22,000	27.6	0.0004	0.0008	21,000	26.8	0.0004	0.0008
0.50	2°	45	0.3°	24,000	55.1	0.0006	0.0016	22,000	43.3	0.0004	0.0008	22,000	39.4	0.0004	0.0008	21,000	37.4	0.0004	0.0008
0.60	0.5°	12	0.3°	30,000	78.7	0.0035	0.0083	25,000	66.9	0.0024	0.0047	25,000	63.0	0.0024	0.0039	25,000	63.0	0.0024	0.0024
0.60	0.5°	25	0.3°	24,000	39.4	0.0008	0.0016	22,000	30.3	0.0006	0.0008	22,000	27.6	0.0006	0.0008	21,000	26.8	0.0006	0.0012
0.60	1°	12	0.3°	30,000	86.6	0.0035	0.0083	25,000	78.7	0.0024	0.0047	25,000	78.7	0.0024	0.0039	25,000	74.8	0.0024	0.0024
0.60	1°	25	0.3°	30,000	78.7	0.0016	0.0083	25,000	66.9	0.0024	0.0035	25,000	63.0	0.0024	0.0020	25,000	63.0	0.0008	0.0012
0.60	1.5°	12	0.3°	30,000	86.6	0.0035	0.0083	25,000	78.7	0.0024	0.0047	25,000	78.7	0.0024	0.0039	25,000	74.8	0.0024	0.0024
0.60	1.5°	25	0.3°	30,000	78.7	0.0020	0.0083	25,000	66.9	0.0024	0.0047	25,000	63.0	0.0024	0.0039	25,000	63.0	0.0020	0.0024
0.75	0.5°	8	0.3°	32,000	118.1	0.0047	0.0118	30,000	114.2	0.0030	0.0059	30,000	106.3	0.0030	0.0047	30,000	106.3	0.0030	0.0039
0.75	0.5°	10	0.3°	30,000	104.3	0.0047	0.0118	24,000	90.6	0.0030	0.0059	24,000	82.7	0.0030	0.0047	24,000	82.7	0.0030	0.0039
0.75	0.5°	12	0.3°	30,000	94.5	0.0047	0.0118	24,000	78.7	0.0030	0.0059	24,000	74.8	0.0030	0.0047	24,000	74.8	0.0030	0.0039
0.75	0.5°	16	0.3°	24,000	55.1	0.0047	0.0079	21,000	55.1	0.0030	0.0039	21,000	51.2	0.0030	0.0035	21,000	51.2	0.0020	0.0024
0.75	0.5°	20	0.3°	22,000	55.1	0.0039	0.0079	18,000	47.2	0.0020	0.0039	18,000	43.3	0.0020	0.0028	17,000	43.3	0.0012	0.0012
0.75	0.5°	25	0.3°	22,000	43.3	0.0039	0.0079	18,000	39.4	0.0020	0.0039	18,000	35.4	0.0020	0.0028	17,000	35.4	0.0008	0.0012
0.75	0.5°	30	0.3°	22,000	43.3	0.0030	0.0079	18,000	39.4	0.0014	0.0039	18,000	35.4	0.0014	0.0028	17,000	35.4	0.0004	0.0012
0.75	0.5°	35	0.3°	20,000	39.4	0.0020	0.0079	17,000	35.4	0.0012	0.0039	17,000	31.5	0.0012	0.0028	15,000	31.5	0.0004	0.0012
0.75	1°	10	0.3°	32,000	118.1	0.0047	0.0118	30,000	114.2	0.0030	0.0059	30,000	106.3	0.0030	0.0047	30,000	106.3	0.0030	0.0039
0.75	1°	12	0.3°	30,000	104.3	0.0047	0.0118	24,000	90.6	0.0030	0.0059	24,000	82.7	0.0030	0.0047	24,000	82.7	0.0030	0.0039
0.75	1°	16	0.3°	30,000	94.5	0.0047	0.0118	24,000	78.7	0.0030	0.0059	24,000	74.8	0.0030	0.0047	24,000	74.8	0.0030	0.0039
0.75	1°	20	0.3°	24,000	55.1	0.0047	0.0079	21,000	55.1	0.0030	0.0039	21,000	51.2	0.0030	0.0035	21,000	51.2	0.0020	0.0024

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck (Continued)

High Speed Milling

Hardness				-				Up to 32 HRC				33~41 HRC				42~50 HRC			
Work Material				Copper Copper Alloy				Mild Steels Carbon Steels				Hardened Steels Pre-hardened Steels							
Cutting Speed				103~1031 SFM				78~928 SFM				76~774 SFM							
Depth of Cut																			
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle																
				Speed (RPM)	Feed (in/min)	Aa	Ar	Speed (RPM)	Feed (in/min)	Aa	Ar	Speed (RPM)	Feed (in/min)	Aa	Ar	Speed (RPM)	Feed (in/min)	Aa	Ar
0.75	1°	25	0.3°	22,000	55.1	0.0039	0.0079	18,000	47.2	0.0020	0.0039	18,000	43.3	0.0020	0.0035	17,000	43.3	0.0020	0.0024
0.75	1°	30	0.3°	22,000	55.1	0.0028	0.0079	18,000	47.2	0.0020	0.0039	18,000	43.3	0.0020	0.0028	17,000	43.3	0.0012	0.0012
0.75	1°	35	0.3°	22,000	43.3	0.0028	0.0079	18,000	39.4	0.0020	0.0039	18,000	35.4	0.0020	0.0028	17,000	35.4	0.0008	0.0012
0.75	1.5°	10	0.3°	32,000	118.1	0.0047	0.0118	30,000	114.2	0.0030	0.0059	30,000	106.3	0.0030	0.0047	30,000	106.3	0.0030	0.0039
0.75	1.5°	12	0.3°	32,000	118.1	0.0047	0.0118	30,000	114.2	0.0030	0.0059	30,000	106.3	0.0030	0.0047	30,000	106.3	0.0030	0.0039
0.75	1.5°	16	0.3°	30,000	94.5	0.0047	0.0118	24,000	78.7	0.0030	0.0059	24,000	74.8	0.0030	0.0047	24,000	74.8	0.0030	0.0039
0.75	1.5°	20	0.3°	30,000	94.5	0.0047	0.0118	24,000	78.7	0.0030	0.0059	24,000	74.8	0.0030	0.0047	24,000	74.8	0.0031	0.0039
0.75	1.5°	25	0.3°	24,000	55.1	0.0039	0.0079	21,000	55.1	0.0030	0.0039	21,000	51.2	0.0030	0.0035	21,000	51.2	0.0020	0.0024
0.75	1.5°	30	0.3°	24,000	55.1	0.0039	0.0079	21,000	55.1	0.0030	0.0039	21,000	51.2	0.0030	0.0035	21,000	51.2	0.0020	0.0024
0.75	1.5°	35	0.3°	22,000	55.1	0.0020	0.0079	18,000	47.2	0.0020	0.0039	18,000	43.3	0.0020	0.0028	17,000	43.3	0.0008	0.0012
0.75	2°	38.6	0.3°	24,000	55.1	0.0039	0.0079	21,000	55.1	0.0030	0.0039	21,000	51.2	0.0030	0.0035	21,000	51.2	0.0020	0.0024
1.00	0.5°	8	0.3°	27,000	131.9	0.0059	0.0157	25,000	102.4	0.0039	0.0079	25,000	94.5	0.0039	0.0079	23,000	86.6	0.0039	0.0079
1.00	0.5°	10	0.3°	22,000	120.1	0.0059	0.0157	20,000	94.5	0.0039	0.0079	20,000	86.6	0.0039	0.0079	19,000	78.7	0.0039	0.0079
1.00	0.5°	12	0.3°	22,000	120.1	0.0059	0.0157	20,000	94.5	0.0039	0.0079	20,000	86.6	0.0039	0.0079	19,000	78.7	0.0039	0.0079
1.00	0.5°	16	0.3°	15,000	94.5	0.0059	0.0118	15,000	70.9	0.0039	0.0079	15,000	66.9	0.0039	0.0079	14,000	59.1	0.0039	0.0079
1.00	0.5°	20	0.3°	15,000	86.6	0.0059	0.0079	14,000	66.9	0.0039	0.0039	14,000	63.0	0.0039	0.0039	13,000	55.1	0.0039	0.0039
1.00	0.5°	25	0.3°	12,000	47.2	0.0039	0.0079	12,000	47.2	0.0020	0.0039	11,000	43.3	0.0020	0.0039	10,000	39.4	0.0020	0.0039
1.00	0.5°	30	0.3°	12,000	39.4	0.0039	0.0079	12,000	39.4	0.0020	0.0039	11,000	35.4	0.0020	0.0039	10,000	31.5	0.0020	0.0039
1.00	0.5°	35	0.3°	12,000	39.4	0.0030	0.0079	12,000	39.4	0.0012	0.0039	11,000	35.4	0.0012	0.0039	10,000	31.5	0.0012	0.0039
1.00	0.5°	40	0.3°	12,000	31.5	0.0020	0.0079	12,000	31.5	0.0008	0.0039	11,000	31.5	0.0008	0.0039	10,000	27.6	0.0008	0.0039
1.00	1°	16	0.3°	22,000	120.1	0.0059	0.0157	20,000	94.5	0.0039	0.0079	20,000	86.6	0.0039	0.0079	19,000	78.7	0.0039	0.0079
1.00	1°	20	0.3°	15,000	94.5	0.0059	0.0118	15,000	70.9	0.0039	0.0079	15,000	66.9	0.0039	0.0079	14,000	59.1	0.0039	0.0079
1.00	1°	25	0.3°	15,000	86.6	0.0059	0.0079	14,000	66.9	0.0039	0.0039	14,000	63.0	0.0039	0.0039	13,000	55.1	0.0039	0.0039
1.00	1°	30	0.3°	14,000	86.6	0.0059	0.0079	14,000	66.9	0.0039	0.0039	14,000	63.0	0.0039	0.0039	13,000	55.1	0.0028	0.0039
1.00	1°	35	0.3°	12,000	47.2	0.0039	0.0079	12,000	47.2	0.0020	0.0039	11,000	43.3	0.0020	0.0039	10,000	39.4	0.0020	0.0039
1.00	1°	40	0.3°	12,000	39.4	0.0039	0.0079	12,000	39.4	0.0020	0.0039	11,000	35.4	0.0020	0.0039	10,000	31.5	0.0020	0.0039
1.00	1°	50	0.3°	12,000	39.4	0.0030	0.0079	12,000	39.4	0.0012	0.0039	11,000	35.4	0.0012	0.0039	10,000	31.5	0.0012	0.0039
1.00	1°	60	0.3°	12,000	31.5	0.0020	0.0079	12,000	31.5	0.0008	0.0039	11,000	31.5	0.0008	0.0039	10,000	27.6	0.0008	0.0039
1.00	1°	70	0.3°	12,000	31.5	0.0012	0.0039	12,000	31.5	0.0004	0.0020	11,000	31.5	0.0004	0.0020	10,000	27.6	0.0004	0.0020
1.00	1.5°	16	0.3°	22,000	120.1	0.0079	0.0157	20,000	94.5	0.0039	0.0079	20,000	86.6	0.0039	0.0079	19,000	78.7	0.0039	0.0079
1.00	1.5°	20	0.3°	22,000	120.1	0.0079	0.0157	20,000	94.5	0.0039	0.0079	20,000	86.6	0.0039	0.0079	19,000	78.7	0.0039	0.0079
1.00	1.5°	25	0.3°	15,000	94.5	0.0059	0.0118	15,000	70.9	0.0039	0.0079	15,000	66.9	0.0039	0.0079	14,000	59.1	0.0039	0.0079
1.00	1.5°	30	0.3°	15,000	86.6	0.0059	0.0079	14,000	66.9	0.0039	0.0039	14,000	63.0	0.0039	0.0039	13,000	55.1	0.0039	0.0039
1.00	1.5°	35	0.3°	15,000	86.6	0.0059	0.0079	14,000	66.9	0.0039	0.0039	14,000	63.0	0.0039	0.0039	13,000	55.1	0.0039	0.0039
1.00	1.5°	41.5	0.3°	12,000	47.2	0.0039	0.0079	12,000	47.2	0.0020	0.0039	11,000	43.3	0.0020	0.0039	10,000	39.4	0.0020	0.0039
1.00	2°	31.5	0.3°	15,000	94.5	0.0059	0.0118	15,000	70.9	0.0039	0.0079	15,000	66.9	0.0039	0.0079	14,000	59.1	0.0039	0.0079
1.50	0.5°	8	0.3°	32,000	181.1	0.0079	0.0236	30,000	177.2	0.0059	0.0118	30,000	165.4	0.0059	0.0118	25,000	137.8	0.0059	0.0118
1.50	0.5°	10	0.3°	28,000	157.5	0.0079	0.0236	25,000	149.6	0.0059	0.0118	25,000	141.7	0.0059	0.0118	20,000	110.2	0.0059	0.0118
1.50	0.5°	12	0.3°	28,000	157.5	0.0079	0.0236	25,000	149.6	0.0059	0.0118	25,000	141.7	0.0059	0.0118	20,000	110.2	0.0059	0.0118
1.50	0.5°	16	0.3°	22,000	114.2	0.0079	0.0236	18,000	106.3	0.0059	0.0118	18,000	98.4	0.0059	0.0118	15,000	78.7	0.0059	0.0118
1.50	0.5°	20	0.3°	20,000	102.4	0.0059	0.0157	16,000	78.7	0.0039	0.0079	16,000	74.8	0.0039	0.0079	13,000	59.1	0.0039	0.0079
1.50	0.5°	25	0.3°	16,000	86.6	0.0059	0.0157	14,000	70.9	0.0039	0.0079	14,000	66.9	0.0039	0.0079	11,000	51.2	0.0039	0.0079
1.50	0.5°	30	0.3°	16,000	70.9	0.0049	0.0079	12,000	47.2	0.0020	0.0039	12,000	43.3	0.0020	0.0039	9,000	32.3	0.0020	0.0039
1.50	0.5°	35	0.3°	12,000	39.4	0.0030	0.0039	10,000	31.5	0.0012	0.0020	9,000	29.9	0.0012	0.0020	7,800	23.2	0.0012	0.0020
1.50	0.5°	40	0.3°	12,000	31.5	0.0030	0.0039	10,000	23.6	0.0012	0.0020	9,000	23.6	0.0012	0.0020	7,800	18.9	0.0012	0.0020
1.50	0.5°	50	0.3°	10,000	25.6	0.0020	0.0039	8,000	19.7	0.0008	0.0020	7,500	19.7	0.0008	0.0020	6,200	15.7	0.0008	0.0020
1.50	1°	20	0.3°	22,000	114.2	0.0079	0.0236	18,000	106.3	0.0059	0.0118	18,000	98.4	0.0059	0.0118	15,000	78.7	0.0059	0.0118
1.50	1°	25	0.3°	20,000	102.4	0.0079	0.0157	16,000	78.7	0.0039	0.0079	16,000	74.8	0.0039	0.0079	13,000	59.1	0.0039	0.0079

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page





High Speed Milling

Hardness				-				Up to 32 HRC				33~41 HRC				42~50 HRC			
Work Material				Copper Copper Alloy				Mild Steels Carbon Steels				Hardened Steels Pre-hardened Steels							
Cutting Speed				103~1031 SFM				78~928 SFM								76~774 SFM			
Depth of Cut																			
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle	Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)	
						Aa	Ar			Aa	Ar			Aa	Ar			Aa	Ar
1.50	1°	30	0.3°	16,000	86.6	0.0079	0.0157	14,000	70.9	0.0039	0.0079	14,000	66.9	0.0039	0.0079	11,000	51.2	0.0039	0.0079
1.50	1°	35	0.3°	16,000	70.9	0.0049	0.0079	12,000	47.2	0.0020	0.0039	12,000	43.3	0.0020	0.0039	9,000	32.3	0.0020	0.0039
1.50	1°	40	0.3°	16,000	70.9	0.0049	0.0079	12,000	47.2	0.0020	0.0039	12,000	43.3	0.0020	0.0039	9,000	32.3	0.0020	0.0039
1.50	1°	50	0.3°	12,000	39.4	0.0030	0.0039	10,000	31.5	0.0012	0.0020	9,000	29.9	0.0012	0.0020	7,800	23.2	0.0012	0.0020
1.50	1°	60	0.3°	12,000	31.5	0.0030	0.0039	10,000	23.6	0.0012	0.0020	9,000	23.6	0.0012	0.0020	7,800	18.9	0.0012	0.0020
1.50	1°	70	0.3°	10,000	25.6	0.0020	0.0039	8,000	19.7	0.0008	0.0020	7,500	19.7	0.0008	0.0020	6,200	15.7	0.0008	0.0020
1.50	1.5°	20	0.3°	22,000	114.2	0.0098	0.0236	18,000	106.3	0.0059	0.0118	18,000	98.4	0.0059	0.0118	15,000	78.7	0.0059	0.0118
1.50	1.5°	25	0.3°	20,000	102.4	0.0079	0.0157	16,000	78.7	0.0039	0.0079	16,000	74.8	0.0039	0.0079	13,000	59.1	0.0039	0.0079
1.50	1.5°	30	0.3°	20,000	102.4	0.0079	0.0157	16,000	78.7	0.0039	0.0079	16,000	74.8	0.0039	0.0079	13,000	59.1	0.0039	0.0079
1.50	1.5°	35	0.3°	16,000	86.6	0.0079	0.0157	14,000	70.9	0.0039	0.0079	14,000	66.9	0.0039	0.0079	11,000	51.2	0.0039	0.0079
1.50	1.5°	40	0.3°	16,000	86.6	0.0079	0.0157	14,000	70.9	0.0039	0.0079	14,000	66.9	0.0039	0.0079	11,000	51.2	0.0039	0.0079
1.50	1.5°	50	0.3°	16,000	70.9	0.0049	0.0079	12,000	47.2	0.0020	0.0039	12,000	43.3	0.0020	0.0039	9,000	32.3	0.0020	0.0039
1.50	1.5°	62.5	0.3°	12,000	39.4	0.0030	0.0039	10,000	31.5	0.0012	0.0020	9,000	29.9	0.0012	0.0020	7,800	23.2	0.0012	0.0020
1.50	1.5°	47.5	0.3°	16,000	86.6	0.0098	0.0157	14,000	70.9	0.0039	0.0079	14,000	66.9	0.0039	0.0079	11,000	51.2	0.0039	0.0079
2.00	1°	20	0.5°	20,000	135.8	0.0157	0.0236	18,000	126.0	0.0079	0.0197	18,000	118.1	0.0079	0.0197	14,000	90.6	0.0079	0.0157
2.00	1°	30	0.5°	18,000	118.1	0.0157	0.0197	16,000	110.2	0.0079	0.0157	16,000	102.4	0.0079	0.0157	12,000	74.8	0.0079	0.0157
2.00	1°	40	0.5°	18,000	118.1	0.0098	0.0236	16,000	110.2	0.0039	0.0118	16,000	102.4	0.0039	0.0118	12,000	74.8	0.0039	0.0118
2.00	1°	50	0.5°	14,000	86.6	0.0098	0.0157	12,000	70.9	0.0039	0.0079	12,000	66.9	0.0039	0.0079	9,000	66.9	0.0039	0.0079
2.00	1°	60	0.5°	16,000	70.9	0.0049	0.0079	12,000	47.2	0.0020	0.0039	12,000	43.3	0.0020	0.0039	9,000	32.3	0.0020	0.0039
2.00	1.5°	44.2	0.5°	18,000	118.1	0.0098	0.0236	16,000	110.2	0.0039	0.0118	16,000	102.4	0.0039	0.0118	12,000	74.8	0.0039	0.0118
2.00	2°	34	0.5°	20,000	135.8	0.0157	0.0236	18,000	126.0	0.0079	0.0197	18,000	118.1	0.0079	0.0197	14,000	90.6	0.0079	0.0197
2.50	1°	30	0.5°	20,000	133.9	0.0157	0.0295	15,000	126.0	0.0079	0.0118	15,000	118.1	0.0079	0.0118	12,000	94.5	0.0079	0.0118
2.50	1°	40	0.5°	16,000	114.2	0.0098	0.0295	14,000	98.4	0.0039	0.0118	14,000	90.6	0.0039	0.0118	11,000	70.9	0.0039	0.0118
2.50	1°	60	0.5°	12,000	70.9	0.0098	0.0197	10,000	47.2	0.0039	0.0079	10,000	43.3	0.0039	0.0079	8,000	34.6	0.0039	0.0079
2.50	1.5°	26.9	0.5°	18,000	149.6	0.0197	0.0492	16,000	137.8	0.0098	0.0197	16,000	129.9	0.0098	0.0197	12,000	94.5	0.0098	0.0197
2.50	1.5°	65.1	0.5°	14,000	86.6	0.0098	0.0295	12,000	63.0	0.0039	0.0118	12,000	59.1	0.0039	0.0118	9,000	43.3	0.0039	0.0118
2.50	2°	50.1	0.5°	16,000	114.2	0.0098	0.0295	14,000	98.4	0.0039	0.0118	14,000	90.6	0.0039	0.0118	11,000	70.9	0.0039	0.0118
3.00	1°	30	0.5°	14,000	157.5	0.0236	0.0492	12,000	126.0	0.0118	0.0197	12,000	118.1	0.0118	0.0197	9,000	88.6	0.0118	0.0197
3.00	1°	40	0.5°	10,000	126.0	0.0236	0.0492	10,000	102.4	0.0118	0.0197	10,000	94.5	0.0118	0.0197	8,000	74.8	0.0118	0.0197
3.00	1°	50	0.5°	9,000	118.1	0.0157	0.0394	9,000	90.6	0.0079	0.0157	9,000	82.7	0.0079	0.0157	7,000	63.0	0.0079	0.0157
3.00	1°	60	0.5°	9,000	110.2	0.0157	0.0295	9,000	78.7	0.0079	0.0118	9,000	74.8	0.0079	0.0118	7,000	55.1	0.0079	0.0118
3.00	1°	70	0.5°	7,000	90.6	0.0157	0.0295	7,000	63.0	0.0079	0.0118	7,000	59.1	0.0079	0.0118	5,500	43.3	0.0079	0.0118
3.00	1°	80	0.5°	6,000	78.7	0.0118	0.0295	6,000	51.2	0.0059	0.0118	6,000	47.2	0.0059	0.0118	5,000	35.4	0.0059	0.0118
3.00	1.5°	49	0.5°	10,000	126.0	0.0236	0.0492	10,000	102.4	0.0118	0.0197	10,000	94.5	0.0118	0.0197	8,000	74.8	0.0118	0.0197
3.00	2°	36	0.5°	14,000	157.5	0.0236	0.0492	12,000	126.0	0.0118	0.0197	12,000	118.1	0.0118	0.0197	9,000	88.6	0.0118	0.0197

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3722: 2 Flute, Square End, Regular Length

Slotting

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC											
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels													
Cutting Speed	52~522 SFM		33~251 SFM		33~186 SFM		33~159 SFM											
Depth of Cut			<table border="1"> <tr><td>Dia.</td><td>aa</td></tr> <tr><td>D<1</td><td>0.1D</td></tr> <tr><td>1≤D<3</td><td>0.3D</td></tr> <tr><td>3≤D</td><td>0.5D</td></tr> </table>		Dia.	aa	D<1	0.1D	1≤D<3	0.3D	3≤D	0.5D						
	Dia.	aa																
	D<1	0.1D																
	1≤D<3	0.3D																
3≤D	0.5D																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min										
0.1	50,000	3.9	32,000	2.8	32,000	2.4	32,000	1.2										
0.2	50,000	5.5	32,000	3.5	32,000	3.0	32,000	1.4										
0.3	50,000	6.7	32,000	4.3	32,000	3.1	32,000	2.2										
0.4	50,000	7.5	32,000	4.7	32,000	3.5	27,500	2.4										
0.5	50,000	7.9	31,000	4.7	25,000	3.5	22,000	2.4										
0.6	50,000	9.1	27,000	4.7	19,500	3.5	17,000	2.4										
0.7	50,000	9.8	24,000	4.7	17,000	3.5	15,000	2.4										
0.8	50,000	11.4	21,500	4.7	15,500	3.5	13,500	2.6										
0.9	49,000	12.6	19,000	4.7	13,500	3.5	12,000	2.6										
1.0	47,500	13.8	17,500	4.7	12,500	3.5	11,000	2.6										
1.1	43,000	13.4	16,000	4.7	11,500	3.5	9,900	2.6										
1.2	40,500	13.4	15,000	4.7	10,500	3.5	9,300	2.6										
1.3	38,000	13.0	14,000	4.7	9,900	3.5	8,700	2.6										
1.4	35,000	13.0	13,000	4.7	9,200	3.5	8,100	2.6										
1.5	32,000	12.6	12,500	4.7	8,900	3.5	7,900	2.6										
1.6	31,000	12.6	12,000	4.7	8,500	3.5	7,500	2.6										
1.7	29,000	12.6	11,000	4.7	7,900	3.5	7,000	2.6										
1.8	28,000	12.6	10,500	5.1	7,500	3.5	6,800	2.7										
1.9	26,000	12.6	10,000	5.1	7,100	3.5	6,300	2.7										
2.0	24,000	12.2	9,700	5.1	7,000	3.5	6,300	2.8										
2.1	23,000	13.0	9,300	5.5	6,600	3.5	5,900	2.8										
2.2	22,500	13.0	9,000	5.5	6,500	3.5	5,700	2.8										
2.3	22,000	13.0	8,800	5.9	6,400	3.5	5,600	2.8										
2.4	20,500	13.8	8,600	5.9	6,300	3.5	5,500	2.8										
2.5	20,000	13.8	8,200	6.3	6,100	3.5	5,300	2.8										
2.6	19,000	15.0	7,900	6.3	5,900	3.9	5,000	2.8										
2.7	18,000	15.0	7,600	6.3	5,700	3.9	4,900	2.8										
2.8	17,500	15.0	7,300	6.7	5,500	3.9	4,700	3.0										
2.9	17,000	15.0	7,100	6.7	5,300	3.9	4,500	3.0										
3.0	16,000	15.7	6,900	6.7	5,300	3.9	4,400	3.0										
3.1	15,500	16.1	6,700	7.1	5,100	3.9	4,300	3.0										
3.2	15,000	16.5	6,500	7.1	5,000	4.3	4,200	3.1										
3.3	14,500	16.5	6,300	7.5	4,800	4.3	4,000	3.1										
3.4	14,000	16.5	6,100	7.5	4,600	4.3	3,900	3.1										
3.5	14,000	16.5	6,000	7.5	4,600	4.7	3,800	3.1										
3.6	13,500	16.9	5,900	7.9	4,500	4.7	3,700	3.3										
3.7	12,500	16.9	5,700	7.9	4,400	4.7	3,600	3.3										
3.8	12,500	17.3	5,600	8.3	4,400	4.7	3,600	3.3										
3.9	12,000	17.3	5,500	8.3	4,200	4.9	3,500	3.3										
4.0	12,000	17.7	5,400	8.3	4,200	4.9	3,500	3.5										
4.1	11,500	18.9	5,300	8.7	4,100	4.9	3,400	3.5										
4.2	11,500	18.9	5,300	8.7	4,100	4.9	3,300	3.5										
4.3	11,000	18.9	5,200	9.1	4,000	4.9	3,300	3.5										
4.4	11,000	19.7	5,100	9.4	3,900	5.1	3,200	3.7										
4.5	10,500	19.7	5,100	9.4	3,900	5.1	3,200	3.7										
4.6	10,500	20.5	5,000	9.8	3,800	5.1	3,200	3.7										
4.7	10,500	20.5	5,000	10.2	3,800	5.1	3,100	3.7										
4.8	10,500	20.9	4,900	10.2	3,700	5.1	3,100	3.7										
4.9	10,000	20.9	4,900	10.6	3,600	5.1	3,100	3.7										

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

continued on next page





Slotting

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC											
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels													
Cutting Speed	52~522 SFM		33~251 SFM		33~186 SFM		33~159 SFM											
Depth of Cut			<table border="1"> <tr> <th>Dia.</th> <th>aa</th> </tr> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3≤D</td> <td>0.5D</td> </tr> </table>		Dia.	aa	D<1	0.1D	1≤D<3	0.3D	3≤D	0.5D						
	Dia.	aa																
	D<1	0.1D																
	1≤D<3	0.3D																
3≤D	0.5D																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min										
5.0	9,500	21.3	4,800	10.6	3,500	5.1	3,000	3.9										
5.1	9,500	21.3	4,700	10.6	3,500	5.1	3,000	3.9										
5.2	9,300	21.3	4,600	10.6	3,400	5.1	2,900	3.9										
5.3	9,200	21.3	4,600	10.6	3,400	5.1	2,900	3.9										
5.4	9,000	21.3	4,500	10.6	3,300	5.1	2,800	3.9										
5.5	8,800	21.3	4,400	10.6	3,200	5.1	2,700	3.9										
5.6	8,700	21.3	4,300	10.6	3,100	5.1	2,600	3.9										
5.7	8,500	21.3	4,200	10.6	3,100	5.1	2,600	3.9										
5.8	8,400	20.9	4,200	10.6	3,000	5.1	2,600	3.9										
5.9	8,200	20.9	4,100	10.6	2,900	5.1	2,500	3.9										
6.0	7,900	20.9	4,000	10.6	2,900	5.1	2,500	3.9										
6.5	7,500	20.9	3,700	10.6	2,700	5.1	2,300	3.9										
7.0	6,900	20.9	3,400	10.6	2,500	5.1	2,100	3.9										
7.5	6,400	20.9	3,200	10.6	2,300	5.1	2,000	3.9										
8.0	5,900	20.5	3,000	10.2	2,200	4.9	1,900	3.9										
8.5	5,600	20.5	2,800	10.2	2,000	4.9	1,700	3.9										
9.0	5,300	20.1	2,600	10.2	1,900	4.9	1,500	3.9										
9.5	5,100	20.1	2,500	10.2	1,800	4.9	1,400	3.7										
10.0	4,700	19.7	2,400	9.8	1,700	4.9	1,500	3.7										
11.0	4,400	19.7	2,200	9.8	1,600	4.9	1,100	3.7										
12.0	4,000	20.1	2,000	9.8	1,400	4.9	1,200	3.7										
16.0	3,000	15.7	1,500	7.9	1,100	4.5	800	3.1										
18.0	2,700	14.2	1,300	7.1	900	3.9	700	2.8										
20.0	2,400	11.8	1,200	5.9	800	3.5	600	2.4										

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 3723: 2 Flute, Square End, Long Length

Standard Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels			
Cutting Speed	66~116 SFM		46~76 SFM		39~76 SFM		57~67 SFM	
Depth of Cut	Dia.		Dia.		aa	ar	aa	ar
	D<1	4D	0.05D	0.05D	4D	0.03D		
	1≤D	4D	0.01D	0.01D	4D	0.05D		
3≤D	4D	0.1D	0.1D	4D	0.1D			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.2	32,000	3.5	22,500	1.2	19,000	1.2	—	—
0.3	32,000	4.3	22,500	1.6	19,000	1.4	—	—
0.4	25,000	4.3	16,000	1.8	14,500	1.4	—	—
0.5	20,000	4.7	13,000	1.8	13,000	1.6	—	—
0.6	16,000	4.7	11,000	1.8	10,000	1.6	—	—
0.7	16,000	4.7	9,400	1.8	6,800	1.6	—	—
0.8	12,000	4.7	8,400	1.8	6,000	1.6	—	—
0.9	12,000	4.7	7,500	1.8	5,400	1.6	—	—
1.0	9,800	4.7	5,700	1.8	5,400	1.6	—	—
1.1	9,500	5.5	5,200	1.8	5,000	1.6	—	—
1.2	8,600	5.1	4,800	1.8	4,500	1.6	—	—
1.3	8,100	5.1	4,500	1.8	4,200	1.6	—	—
1.4	7,500	5.1	4,200	1.8	3,900	1.6	—	—
1.5	7,000	5.1	3,900	1.8	3,600	1.6	—	—
1.6	6,400	4.7	3,700	1.8	3,500	1.6	—	—
1.7	6,200	4.7	3,600	1.8	3,400	1.6	—	—
1.8	5,800	4.7	3,300	1.8	3,100	1.6	—	—
1.9	5,500	4.7	3,200	1.8	3,000	1.6	—	—
2.0	5,200	4.7	3,000	1.8	2,800	1.6	—	—
2.1	4,800	4.7	2,900	1.8	2,800	1.6	—	—
2.2	4,600	5.1	2,700	2.0	2,600	1.6	—	—
2.3	4,500	5.1	2,700	2.0	2,600	1.6	—	—
2.4	4,400	5.1	2,600	2.2	2,500	1.6	—	—
2.5	4,100	5.5	2,500	2.2	2,500	1.6	—	—
2.6	3,900	5.5	2,400	2.2	2,400	1.6	—	—
2.7	3,700	5.9	2,300	2.2	2,300	1.8	—	—
2.8	3,600	5.9	2,200	2.2	2,200	1.8	—	—
2.9	3,500	5.9	2,100	2.4	2,100	1.8	—	—
3.0	3,400	5.9	2,100	2.4	2,100	2.0	1,900	3.0
3.1	3,200	6.3	2,000	2.4	2,000	2.0	1,800	3.0
3.2	3,000	6.3	2,000	2.6	2,000	2.0	1,800	3.1
3.3	2,900	6.3	1,900	2.6	1,900	2.2	1,700	3.1
3.4	2,800	6.3	1,800	2.8	1,800	2.2	1,700	3.1
3.5	2,800	6.3	1,800	2.8	1,800	2.2	1,600	3.1
3.6	2,700	6.3	1,800	2.8	1,800	2.4	1,600	3.3
3.7	2,700	6.7	1,700	2.8	1,700	2.4	1,500	3.3
3.8	2,500	6.7	1,700	2.8	1,700	2.4	1,500	3.3
3.9	2,400	6.7	1,600	3.0	1,600	2.4	1,500	3.3
4.0	2,400	6.7	1,600	3.0	1,600	2.6	1,400	3.5
4.1	2,400	7.1	1,600	3.0	1,600	2.6	1,400	3.5
4.2	2,300	7.5	1,600	3.1	1,600	2.6	1,400	3.5
4.3	2,300	7.5	1,500	3.1	1,500	2.6	1,400	3.5
4.4	2,100	7.5	1,500	3.1	1,500	2.6	1,400	3.7
4.5	2,100	7.9	1,500	3.3	1,500	2.6	1,300	3.7
4.6	2,100	7.9	1,500	3.3	1,500	2.6	1,300	3.7
4.7	2,100	7.9	1,500	3.5	1,500	2.6	1,300	3.7
4.8	2,100	7.9	1,500	3.5	1,500	2.6	1,300	3.7
4.9	2,000	8.3	1,400	3.5	1,400	2.6	1,300	3.7
5.0	2,000	8.3	1,400	3.7	1,400	2.6	1,300	3.9

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

continued on next page





Standard Milling

Hardness	-		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels			
Cutting Speed	66~116 SFM		46~76 SFM		39~76 SFM		57~67 SFM	
Depth of Cut	Dia.		Dia.		Dia.		Dia.	
	aa	ar	aa	ar	aa	ar	aa	ar
	D<1	4D	0.05D	0.3≤D<1	4D	0.03D	1≤D<3	4D
	1≤D	4D	0.01D	3≤D	4D	0.1D		
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5.1	1,900	8.3	1,400	3.7	1,400	2.6	1,200	3.9
5.2	1,900	8.3	1,400	3.7	1,400	2.6	1,200	3.9
5.3	1,800	8.3	1,300	3.7	1,300	2.6	1,200	3.9
5.4	1,800	8.3	1,300	3.7	1,300	2.6	1,200	3.9
5.5	1,800	8.3	1,300	3.7	1,300	2.6	1,100	3.9
5.6	1,700	8.3	1,300	3.7	1,300	2.6	1,100	3.9
5.7	1,700	8.3	1,300	3.7	1,300	2.6	1,100	3.9
5.8	1,700	8.3	1,200	3.7	1,200	2.6	1,100	3.9
5.9	1,600	8.3	1,200	3.7	1,200	2.6	1,000	3.9
6.0	1,600	8.3	1,200	3.7	1,200	2.6	1,000	3.9
8.0	1,100	7.9	900	3.7	900	2.6	800	3.9
10.0	900	7.9	700	3.5	700	2.6	630	3.7
12.0	800	7.9	600	3.5	600	2.6	525	3.7

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.





List 3770: 2 Flute, Corner Radius, Regular Length

Slotting

Hardness	Up to 20 HRC	20 to 30 HRC	30 to 38 HRC	38 to 45 HRC	45 to 55 HRC	55 to 60 HRC																										
Work Material	Mild Steel Carbon Steels	Alloy Steels Tool Steels	Hardened Steels Pre-hardened Steels	Hardened Steels Pre-hardened Steels	Hardened Steels	Hardened Steels																										
Cutting Speed	275 SFM	220 SFM	180 SFM	150 SFM	100 SFM	65 SFM																										
Depth of Cut	<table border="1"> <thead> <tr> <th>Di.</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.3D</td> </tr> <tr> <td>3<D</td> <td>0.5D</td> </tr> </tbody> </table>				Di.	aa	D<1	0.1D	1≤D<3	0.3D	3<D	0.5D			<table border="1"> <thead> <tr> <th>Di.</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.2D</td> </tr> <tr> <td>1≤D</td> <td>0.5D</td> </tr> </tbody> </table>		Di.	aa	D<1	0.2D	1≤D	0.5D	<table border="1"> <thead> <tr> <th>Di.</th> <th>aa</th> </tr> </thead> <tbody> <tr> <td>D<1</td> <td>0.1D</td> </tr> <tr> <td>1≤D<3</td> <td>0.2D</td> </tr> <tr> <td>3<D</td> <td>0.5D</td> </tr> </tbody> </table>		Di.	aa	D<1	0.1D	1≤D<3	0.2D	3<D	0.5D
	Di.	aa																														
D<1	0.1D																															
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1≤D<3	0.2D																															
3<D	0.5D																															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																				
0.2	32,000	3.5	32,000	3.5	32,000	3.0	32,000	1.4	32,000	1.2	25,000	1.0																				
0.3	32,000	4.5	32,000	4.5	32,000	3.1	32,000	2.2	23,000	1.2	16,500	1.0																				
0.4	32,000	4.9	32,000	4.9	32,000	3.5	27,500	2.4	17,500	1.2	12,500	1.0																				
0.5	32,000	4.9	29,500	4.9	25,000	3.5	22,000	2.4	14,000	1.2	10,000	1.0																				
0.6	32,000	4.9	24,500	4.9	21,000	3.5	18,500	2.4	11,500	1.2	8,450	1.0																				
0.8	24,500	4.9	18,500	4.9	15,500	3.5	13,500	2.6	8,750	1.2	6,350	1.0																				
1.0	19,500	5.1	14,500	4.9	12,500	3.5	11,000	2.6	7,000	1.2	5,050	1.0																				
1.5	14,000	5.1	10,500	4.9	8,900	3.5	7,950	2.6	5,050	1.6	3,550	1.0																				
2.0	11,000	5.3	8,400	4.9	7,000	3.5	6,350	2.8	3,950	1.6	2,750	1.0																				
3.0	7,400	7.9	6,350	5.9	5,300	3.9	4,450	3.0	2,750	1.8	2,000	1.2																				
4.0	5,950	9.3	4,900	7.3	4,250	4.9	3,500	3.5	2,200	2.0	1,550	1.2																				
5.0	5,300	12.4	4,300	9.3	3,550	5.1	3,050	3.9	1,900	2.2	1,250	1.2																				
6.0	4,450	12.2	3,600	9.3	2,950	5.1	2,500	3.9	1,550	2.2	1,050	1.0																				
8.0	3,300	11.6	2,700	9.3	2,200	4.9	1,900	3.9	1,150	2.0	795	1.0																				
10.0	2,650	11.0	2,150	9.1	1,750	4.9	1,500	3.7	955	2.0	635	1.0																				
12.0	2,200	11.0	1,800	9.1	1,450	4.9	1,250	3.7	795	1.8	530	0.8																				
14.0	1,900	11.0	1,500	8.5	1,250	4.3	1,050	3.7	680	1.6	455	0.7																				
16.0	1,650	10.2	1,350	7.9	1,100	3.9	955	3.3	595	1.4	395	0.6																				
18.0	1,450	9.1	1,200	7.1	990	3.5	845	3.0	530	1.2	350	0.6																				
20.0	1,300	8.1	1,050	6.1	890	3.1	760	2.6	475	1.2	315	0.5																				
22.0	1,200	7.5	980	5.7	810	2.8	690	2.4	430	1.0	285	0.4																				
24.0	1,100	6.9	900	5.3	740	2.6	635	2.2	395	1.0	265	0.4																				
25.0	1,050	6.5	865	5.1	710	2.6	610	2.2	380	0.8	255	0.4																				
30.0	890	5.5	720	4.1	590	2.0	505	1.8	315	0.8	210	0.4																				

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3771: 4 Flute, Corner Radius, Regular Length

Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steel Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	396 SFM		294 SFM		258 SFM		192 SFM		156 SFM		96 SFM	
Depth of Cut	$a_a=1.2D$ $a_r=0.2D$										$a_a=1D$ $a_r=0.05D$	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	12,870	40.8	9,660	28.8	8,370	25.0	6,450	19.3	5,160	13.3	3,240	5.8
4	9,600	46.1	7,200	31.7	6,240	27.5	4,800	21.1	3,840	15.4	2,400	7.7
5	8,040	51.5	6,000	36.0	5,220	31.3	4,020	22.5	3,180	17.8	1,980	9.5
6	6,450	55.2	4,830	38.4	4,170	30.7	3,210	23.6	2,580	16.4	1,620	9.0
8	4,800	57.6	3,600	38.9	3,120	32.4	2,400	24.0	1,920	16.9	1,200	9.6
10	4,020	56.3	3,000	38.4	2,640	30.6	1,980	22.2	1,620	16.2	1,020	9.4
12	3,240	54.8	2,430	36.9	2,130	29.4	1,620	20.7	1,290	15.0	795	8.3

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC																					
Work Material	Carbon Steels 1045, 1055		Alloy Steels 4140, 4340		Hardened Steels Pre-hardened Steels D2, H13, 17-4PH		Tool Steels, Hardened Steels Pre-hardened Steels, D2, H13		Hardened Steels Heat Resistant Steels																					
Cutting Speed	1,560 SFM		1,380 SFM		960 SFM		600 SFM		130 SFM																					
Depth of Cut	<table border="1"> <thead> <tr> <th>Dia.</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D < 3$</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>$3 \leq D$</td> <td>1.5D</td> <td>0.02D</td> </tr> </tbody> </table>						Dia.	a_a	a_r	$D < 3$	1.5D	0.01D	$3 \leq D$	1.5D	0.02D					<table border="1"> <thead> <tr> <th>Dia.</th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D < 8$</td> <td>1.0D</td> <td>0.01D</td> </tr> <tr> <td>$8 \leq D$</td> <td>1.0D</td> <td>0.02D</td> </tr> </tbody> </table>		Dia.	a_a	a_r	$D < 8$	1.0D	0.01D	$8 \leq D$	1.0D	0.02D
Dia.	a_a	a_r																												
$D < 3$	1.5D	0.01D																												
$3 \leq D$	1.5D	0.02D																												
Dia.	a_a	a_r																												
$D < 8$	1.0D	0.01D																												
$8 \leq D$	1.0D	0.02D																												
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																				
3	24,000	220.8	21,000	184.8	14,760	118.1	9,000	72.0	4,800	32.6																				
4	20,400	212.2	18,000	172.8	13,200	121.4	7,920	69.7	4,200	33.6																				
5	18,840	226.1	16,320	176.3	12,000	124.8	7,200	72.0	3,840	33.8																				
6	17,220	222.2	15,060	176.4	10,980	120.2	6,600	69.6	3,480	32.5																				
8	15,600	218.4	13,800	176.6	9,960	115.5	6,000	67.2	3,120	31.2																				
10	13,200	211.2	12,000	177.6	8,640	117.5	5,160	66.0	2,760	32.0																				
12	12,540	212.5	11,220	170.2	8,040	110.8	4,800	61.4	2,580	29.9																				

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 3794: 4 Flute, Square End, Long Neck, Stub Length

Slotting

Hardness		-			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		173~374 SFM			144~309 SFM			130~309 SFM			101~248 SFM		
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)
1.0	4	36,000	90.6	0.0031	30,000	74.8	0.0028	30,000	65.0	0.0028	22,000	38.6	0.0020
1.0	6	32,500	74.8	0.0031	27,000	63.0	0.0028	26,000	53.1	0.0024	20,000	35.4	0.0016
1.0	8	27,500	57.1	0.0020	23,000	47.2	0.0016	22,000	41.3	0.0016	18,000	23.6	0.0012
1.0	10	23,000	43.3	0.0016	19,000	37.0	0.0012	18,000	29.5	0.0011	15,000	17.7	0.0008
1.0	12	23,000	43.3	0.0008	19,000	37.0	0.0008	18,000	29.5	0.0007	15,000	17.7	0.0004
1.0	16	18,000	18.9	0.0004	15,000	15.7	0.0003	15,000	17.7	0.0003	12,000	11.8	0.0002
1.2	6	27,500	74.8	0.0039	23,000	63.0	0.0031	22,000	53.1	0.0028	17,000	35.4	0.0020
1.2	8	24,000	57.1	0.0031	20,000	47.2	0.0028	19,000	41.3	0.0020	14,000	23.6	0.0016
1.2	10	24,000	43.3	0.0024	20,000	37.0	0.0020	19,000	41.3	0.0016	14,000	23.6	0.0012
1.2	12	20,500	43.3	0.0020	17,000	37.0	0.0016	16,000	29.5	0.0012	11,000	17.7	0.0008
1.2	16	14,500	23.6	0.0004	12,000	19.7	0.0003	11,000	14.6	0.0003	10,000	13.0	0.0002
1.4	6	24,000	76.8	0.0055	20,000	63.0	0.0047	19,000	53.1	0.0043	15,000	35.4	0.0035
1.4	8	21,500	57.1	0.0043	18,000	47.2	0.0035	17,000	41.3	0.0031	13,000	23.6	0.0024
1.4	10	21,500	57.1	0.0028	18,000	47.2	0.0024	17,000	41.3	0.0020	13,000	23.6	0.0016
1.4	12	21,500	57.1	0.0024	18,000	47.2	0.0020	17,000	41.3	0.0016	13,000	23.6	0.0012
1.4	14	18,000	43.3	0.0020	15,000	37.0	0.0016	14,000	29.5	0.0014	11,000	17.7	0.0012
1.4	16	18,000	43.3	0.0016	15,000	37.0	0.0012	14,000	29.5	0.0008	11,000	17.7	0.0008
1.4	22	12,000	20.1	0.0004	10,000	16.9	0.0002	9,000	12.2	0.0002	8,000	10.6	0.0002
1.5	6	21,500	80.7	0.0055	18,000	66.9	0.0047	18,000	53.1	0.0043	14,000	35.4	0.0035
1.5	8	19,000	57.1	0.0047	16,000	47.2	0.0039	15,000	41.3	0.0031	12,000	23.6	0.0028
1.5	10	19,000	57.1	0.0039	16,000	47.2	0.0031	15,000	41.3	0.0028	12,000	23.6	0.0020
1.5	12	19,000	57.1	0.0028	16,000	47.2	0.0024	15,000	41.3	0.0020	12,000	23.6	0.0016
1.5	14	19,000	57.1	0.0024	16,000	47.2	0.0020	15,000	41.3	0.0018	12,000	23.6	0.0014
1.5	16	17,000	43.3	0.0024	14,000	37.0	0.0020	13,000	29.5	0.0016	10,000	17.7	0.0012
1.5	18	17,000	43.3	0.0016	14,000	37.0	0.0012	13,000	29.5	0.0008	10,000	17.7	0.0008
1.5	20	14,500	31.5	0.0008	12,000	26.4	0.0008	11,000	22.4	0.0006	10,000	17.7	0.0004
1.6	6	20,500	80.7	0.0067	17,000	66.9	0.0055	17,000	53.1	0.0051	13,000	35.4	0.0039
1.6	8	18,000	61.0	0.0063	15,000	51.2	0.0051	15,000	41.3	0.0047	11,000	23.6	0.0039
1.6	10	18,000	57.1	0.0051	15,000	47.2	0.0043	15,000	41.3	0.0035	11,000	23.6	0.0028
1.6	12	18,000	57.1	0.0031	15,000	47.2	0.0028	15,000	41.3	0.0024	11,000	23.6	0.0020
1.6	14	18,000	57.1	0.0028	15,000	47.2	0.0024	15,000	41.3	0.0020	11,000	23.6	0.0016
1.6	16	15,500	43.3	0.0024	13,000	37.0	0.0020	13,000	29.5	0.0016	9,000	17.7	0.0014
1.6	18	15,500	43.3	0.0020	13,000	37.0	0.0016	13,000	29.5	0.0012	9,000	17.7	0.0012
1.6	20	15,500	43.3	0.0008	13,000	37.0	0.0008	13,000	29.5	0.0008	9,000	17.7	0.0004
1.6	25	10,500	21.7	0.0004	8,900	18.1	0.0004	8,900	14.2	0.0004	6,100	8.7	0.0003
1.8	6	19,000	88.6	0.0094	16,000	74.8	0.0079	15,000	59.1	0.0071	12,000	41.3	0.0055
1.8	8	19,000	100.4	0.0091	16,000	74.8	0.0075	15,000	59.1	0.0067	12,000	41.3	0.0051
1.8	10	17,000	57.1	0.0055	14,000	47.2	0.0047	14,000	41.3	0.0039	10,000	29.5	0.0031
1.8	12	17,000	57.1	0.0047	14,000	47.2	0.0039	14,000	41.3	0.0031	10,000	29.5	0.0028
1.8	14	17,000	57.1	0.0039	14,000	47.2	0.0031	14,000	41.3	0.0024	10,000	29.5	0.0020
1.8	16	17,000	57.1	0.0031	14,000	47.2	0.0028	14,000	41.3	0.0020	10,000	29.5	0.0016
1.8	18	14,500	43.3	0.0024	12,000	37.0	0.0020	12,000	29.5	0.0018	8,000	23.6	0.0014
1.8	20	14,500	43.3	0.0020	12,000	37.0	0.0016	12,000	29.5	0.0016	8,000	23.6	0.0012
1.8	25	9,600	22.4	0.0004	8,000	18.9	0.0004	7,000	14.6	0.0003	6,000	11.8	0.0003
2.0	6	18,000	92.5	0.0134	15,000	74.8	0.0110	14,000	59.1	0.0102	11,000	41.3	0.0083
2.0	8	18,000	92.5	0.0122	15,000	74.8	0.0102	14,000	59.1	0.0087	11,000	41.3	0.0071
2.0	10	15,500	63.4	0.0114	13,000	51.2	0.0094	12,000	41.3	0.0079	9,000	29.5	0.0063
2.0	12	15,500	59.1	0.0063	13,000	47.2	0.0051	12,000	41.3	0.0043	9,000	29.5	0.0035
2.0	14	15,500	59.1	0.0051	13,000	47.2	0.0043	12,000	41.3	0.0035	9,000	29.5	0.0028
2.0	16	15,500	59.1	0.0039	13,000	47.2	0.0031	12,000	41.3	0.0028	9,000	29.5	0.0024
2.0	18	15,500	59.1	0.0031	13,000	47.2	0.0028	12,000	41.3	0.0024	9,000	29.5	0.0020
2.0	20	13,000	45.3	0.0024	11,000	37.0	0.0020	10,000	29.5	0.0020	7,000	23.6	0.0016
2.0	25	13,000	45.3	0.0016	11,000	37.0	0.0012	10,000	29.5	0.0008	7,000	23.6	0.0008

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.
4. When length of the tool extension from the machine is long, reduce the speed and feed.

continued on next page





Slotting

Hardness		-			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		173~374 SFM			144~309 SFM			130~309 SFM			101~248 SFM		
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)	Speed (RPM)	Feed (in/min)	aa (in)
2.0	30	13,000	45.3	0.0008	11,000	37.0	0.0008	10,000	29.5	0.0004	7,000	23.6	0.0004
2.5	8	14,500	92.5	0.0165	12,000	74.8	0.0138	11,000	59.1	0.0130	9,000	41.3	0.0102
2.5	12	14,500	92.5	0.0110	12,000	74.8	0.0091	11,000	59.1	0.0075	9,000	41.3	0.0059
2.5	16	12,000	59.1	0.0055	10,000	47.2	0.0047	9,000	41.3	0.0039	7,000	29.5	0.0031
2.5	20	12,000	59.1	0.0043	10,000	47.2	0.0035	9,000	41.3	0.0031	7,000	29.5	0.0024
2.5	25	9,600	45.3	0.0039	8,000	37.0	0.0031	8,000	29.5	0.0024	6,000	23.6	0.0020
3.0	8	12,000	92.5	0.0150	10,000	74.8	0.0126	10,000	59.1	0.0118	8,000	41.3	0.0094
3.0	12	12,000	84.6	0.0126	10,000	68.9	0.0106	10,000	59.1	0.0091	8,000	41.3	0.0071
3.0	16	12,000	59.1	0.0094	10,000	47.2	0.0079	9,000	41.3	0.0067	6,000	29.5	0.0051
3.0	20	12,000	59.1	0.0063	10,000	47.2	0.0051	9,000	41.3	0.0043	6,000	29.5	0.0031
3.0	25	12,000	59.1	0.0051	10,000	47.2	0.0043	9,000	41.3	0.0035	6,000	29.5	0.0028
3.0	30	9,600	45.3	0.0043	8,000	37.0	0.0035	7,000	29.5	0.0031	5,000	23.6	0.0024



1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.
4. When length of the tool extension from the machine is long, reduce the speed and feed.






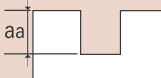
List 4445: 4 Flute, Corner Radius, High Helix, Regular Length

Side Milling

Hardness	Up to 25 HRC		25 to 35 HRC		38 to 45 HRC		40 to 50 HRC		45 to 55 HRC		20 to 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels 304 Stainless		Hardened Steels Pre-hardened Steels		Titanium Alloy Ti-6Al-4V		Heat Resistant Alloys Inconel	
Cutting Speed	220-328 SFM		130-220 SFM		115-210 SFM		98-150 SFM		65-195 SFM		65-130 SFM	
Depth of Cut	$aa=1.5D$ $ar=0.1D$ 						$aa=1.5D$ $ar=0.05D$ 					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	9,000	28.3	5,800	15.7	5,300	11.8	3,700	11.8	4,200	11.8	2,600	4.7
3/16	5,200	35.4	3,500	17.7	3,200	11.8	2,200	11.8	2,500	11.8	1,600	4.7
1/4	4,800	35.4	2,900	17.7	2,650	12.6	2,000	11.8	2,100	12.4	1,200	4.7
5/16	3,600	39.4	2,200	23.6	2,000	15.7	1,500	11.8	1,600	12.6	900	5.9
3/8	2,800	39.4	1,750	23.6	1,600	21.7	1,200	15.5	1,300	12.8	720	5.9
1/2	2,400	33.5	1,460	20.5	1,300	17.7	1,000	12.6	1,100	13.8	600	4.7

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

Slotting

Hardness	Up to 25 HRC		25 to 35 HRC		38 to 45 HRC		40 to 50 HRC		45 to 55 HRC		20 to 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels 304 Stainless		Hardened Steels Pre-hardened Steels		Titanium Alloy Ti-6Al-4V		Heat Resistant Alloys Inconel	
Cutting Speed	130-260 SFM		65-165 SFM		65-165 SFM		50-115 SFM		65-115 SFM		50-80 SFM	
Depth of Cut	$ar=0.5D$ 						$aa=0.2D$ 					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	6,400	12.6	4,200	8.3	3,700	6.3	2,600	4.3	3,000	4.7	2,100	3.1
3/16	3,800	11.8	2,500	8.3	2,200	5.9	1,600	4.3	1,800	4.7	1,250	3.0
1/4	3,200	11.8	2,100	8.3	1,900	5.9	1,300	5.1	1,500	5.5	1,060	2.8
5/16	2,400	13.8	1,600	9.8	1,400	5.9	1,000	5.9	1,100	6.7	800	3.1
3/8	1,900	13.8	1,250	9.8	1,100	5.9	750	5.9	880	6.7	640	3.1
1/2	1,600	12.6	1,060	7.1	900	6.3	660	6.3	730	5.9	500	2.8

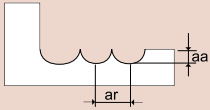
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.



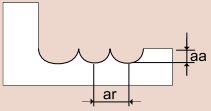


List 4410: Ball End, Regular Length, 2 Flute

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Cutting Speed	825 SFM		660 SFM		490 SFM		410 SFM		330 SFM	
Depth of Cut	$a_a=0.05D$ $a_r=0.1D$ a_a Max = less than 0.024"				$a_a=0.03D$ $a_r=0.1D$ a_a Max = less than 0.020"		$a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.012"			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/32	50,000	50.0	50,000	50.0	50,000	50.0	50,000	50.0	40,339	40.3
1/16	50,000	80.0	40,339	64.5	29,949	47.9	25,059	40.1	20,170	32.3
3/32	33,616	107.6	26,893	86.1	19,966	63.9	16,706	53.5	13,446	43.0
1/8	25,212	100.8	20,170	80.7	14,974	59.9	12,530	50.1	10,085	40.3
3/16	16,808	90.8	13,446	72.6	9,983	53.9	8,353	45.1	6,723	36.3
1/4	12,606	108.4	10,085	86.7	7,487	64.4	6,265	53.9	5,042	43.4
5/16	10,085	100.8	8,068	80.7	5,990	59.9	5,012	50.1	4,034	40.3
3/8	8,404	92.4	6,723	74.0	4,991	54.9	4,177	45.9	3,362	37.0
1/2	6,303	88.2	5,042	70.6	3,744	52.4	3,132	43.9	2,521	35.3

High Speed Light Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Cutting Speed	1275 SFM		985 SFM		820 SFM		650 SFM		490 SFM	
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.012"				$a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.008"		$a_a=0.01D$ $a_r=0.05D$ a_a Max = less than 0.004"			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/32	50,000	50.0	50,000	50.0	50,000	50.0	50,000	50.0	50,000	50.0
1/16	50,000	80.0	50,000	80.0	50,000	80.0	39,728	63.6	29,949	47.9
3/32	50,000	160.0	40,135	128.4	33,412	106.9	26,485	84.8	19,966	63.9
1/8	38,964	155.9	30,102	120.4	25,059	100.2	19,864	79.5	14,974	59.9
3/16	25,976	140.3	20,068	108.4	16,706	90.2	13,243	71.5	9,983	53.9
1/4	19,482	167.5	15,051	129.4	12,530	107.8	9,932	85.4	7,487	64.4
5/16	15,586	155.9	12,041	120.4	10,024	100.2	7,946	79.5	5,990	59.9
3/8	12,988	142.9	10,034	110.4	8,353	91.9	6,621	72.8	4,991	54.9
1/2	9,741	136.4	7,525	105.4	6,265	87.7	4,966	69.5	3,744	52.4





List 4510: Ball End - Regular Length - 2 Flute

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Cutting Speed	825 SFM		660 SFM		490 SFM		410 SFM		330 SFM	
Depth of Cut	$a_a=0.05D$ $a_r=0.1D$ a_a Max = less than 0.024"				$a_a=0.02D$ $a_r=0.1D$ a_a Max = less than 0.020"		$a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.012"			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1.0	50,000	50.0	50,000	50.0	47,544	47.5	39,781	39.8	32,000	32.0
1.5	50,000	80.0	42,692	68.3	32,000	51.2	26,500	42.4	21,000	33.6
2.0	40,024	80.0	32,000	64.0	24,000	48.0	20,000	40.0	16,000	32.0
3.0	26,500	100.7	21,000	79.8	16,000	60.8	13,500	51.3	10,500	39.9
4.0	20,000	92.0	16,000	73.6	12,000	55.2	9,950	45.8	7,950	36.6
5.0	16,000	92.8	12,500	72.5	9,550	55.4	7,950	46.1	6,350	36.8
6.0	13,350	114.8	10,500	90.3	7,950	68.4	6,650	57.2	5,300	45.6
8.0	9,950	99.5	7,950	79.5	5,950	59.5	4,950	49.5	4,000	40.0
10.0	7,950	89.0	6,350	71.1	4,800	53.8	4,000	44.8	3,200	35.8
12.0	6,650	93.1	5,300	74.2	4,000	56.0	3,300	46.2	2,650	37.1
16.0	4,950	74.3	4,000	60.0	3,000	45.0	2,500	37.5	2,000	30.0
20.0	4,000	60.0	3,200	48.0	2,400	36.0	2,000	30.0	1,600	24.0
25.0	3,200	48.0	2,550	38.3	1,900	28.5	1,600	24.0	1,250	18.8

High Speed Light Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Cutting Speed	1275 SFM		985 SFM		820 SFM		650 SFM		490 SFM	
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.012"				$a_a=0.02D$ $a_r=0.05D$ a_a Max = less than 0.008"		$a_a=0.01D$ $a_r=0.05D$ a_a Max = less than 0.004"			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1.0	50,000	50.0	50,000	50.0	50,000	50.0	50,000	50.0	47,500	47.5
1.5	50,000	80.0	50,000	80.0	50,000	80.0	42,500	68.0	32,000	51.2
2.0	50,000	100.0	47,500	95.0	40,000	80.0	32,000	64.0	24,000	48.0
3.0	41,500	157.7	32,000	121.6	26,500	100.7	21,000	79.8	16,000	60.8
4.0	31,000	142.6	24,000	110.4	20,000	92.0	16,000	73.6	12,000	55.2
5.0	25,000	145.0	19,000	110.2	16,000	92.8	13,000	75.4	9,550	55.4
6.0	20,500	176.3	16,000	137.6	13,500	116.1	10,500	90.3	7,950	68.4
8.0	15,500	155.0	12,000	120.0	9,950	99.5	7,950	79.5	5,950	59.5
10.0	12,500	140.0	9,550	107.0	7,950	89.0	6,350	71.1	4,800	53.8
12.0	10,500	147.0	7,950	111.3	6,650	93.1	5,300	74.2	4,000	56.0
16.0	7,750	116.3	5,950	89.3	4,950	74.3	4,000	60.0	3,000	45.0
20.0	6,200	93.0	4,800	72.0	4,000	60.0	3,200	48.0	2,400	36.0
25.0	4,950	74.3	3,800	57.0	3,200	48.0	2,550	38.3	1,900	28.5





List 4440: Regular Length, Multiple Flute

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC		65 to 70 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels							
Depth of Cut				a_a	a_r	$a_a=1.5D$ $a_r=0.05D$ $a_{rMax}=less\ than\ 0.040''$	$a_a=1.5D$ $a_r=0.03D$ $a_{rMax}=less\ than\ 0.020''$	$a_a=1D$ $a_r=0.02D$ $a_{rMax}=less\ than\ 0.020''$				
			$D \leq 1.5$	1.5D	0.02D							
			$1.5 < D \leq 2.5$	1.5D	0.05D							
		$2.5 < D$	1.5D	0.1D								
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/16	28,421	71.0	25,548	63.0	20,170	50.4	15,120	26.0	13,808	21.0	10,085	13.0
3/32	18,912	71.0	16,991	63.0	13,446	50.4	10,080	26.0	9,205	21.0	6,723	13.0
1/8	14,185	71.0	12,744	63.0	10,085	50.4	7,560	26.0	6,904	21.0	5,042	13.0
3/16	9,456	71.0	8,496	63.0	6,723	50.4	5,041	26.0	4,602	21.0	3,362	13.0
1/4	7,092	104.0	6,372	95.0	5,042	75.6	3,780	40.0	3,452	31.0	2,521	20.0
5/16	5,673	104.0	5,100	95.0	4,034	75.6	3,024	40.0	2,761	31.0	2,017	20.0
3/8	4,728	104.0	4,248	95.0	3,362	75.6	2,520	40.0	2,301	31.0	1,681	20.0
1/2	3,546	104.0	3,186	95.0	2,521	75.6	1,890	40.0	1,726	31.0	1,261	20.0
5/8	2,839	104.0	2,550	95.0	2,017	75.6	1,512	40.0	1,382	31.0	1,008	20.0
3/4	2,375	104.0	2,125	95.0	1,681	75.6	1,260	40.0	1,152	31.0	840	20.0

High Speed Light Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC		65 to 70 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels							
Depth of Cut				$a_a=1D$	$a_r=0.03D$	$a_a=1D$ $a_r=0.03D$ $a_{rMax}=less\ than\ 0.020''$	$a_a=1D$ $a_r=0.02D$ $a_{rMax}=less\ than\ 0.008''$	$a_a=1D$ $a_r=0.01D$ $a_{rMax}=less\ than\ 0.008''$				
				$a_r=0.05D$	$a_{rMax}=less\ than\ 0.020''$							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/16	50,000	122.5	50,000	122.5	50,000	122.8	32,144	65.0	30,240	53.0	20,160	32.0
3/32	40,096	147.4	38,400	141.1	33,412	122.8	21,429	65.0	20,160	53.0	13,440	32.0
1/8	30,072	147.4	28,800	141.1	25,059	122.8	16,072	65.0	15,120	53.0	10,080	32.0
3/16	20,048	147.4	19,200	141.1	16,706	122.8	10,714	65.0	10,080	53.0	6,720	32.0
1/4	15,036	221.0	14,400	211.7	12,530	184.2	8,036	96.5	7,560	79.0	5,040	47.0
5/16	12,028	221.0	11,520	211.7	10,024	184.2	6,428	96.5	6,048	79.0	4,032	47.0
3/8	10,024	221.0	9,600	211.7	8,353	184.2	5,357	96.5	5,040	79.0	3,360	47.0
1/2	7,518	221.0	7,200	211.7	6,265	184.2	4,018	96.5	3,780	79.0	2,520	47.0
5/8	6,012	221.0	5,764	211.7	5,012	184.2	3,216	96.5	3,025	79.0	2,017	47.0
3/4	5,010	221.0	4,804	211.7	4,177	184.2	2,680	96.5	2,521	79.0	1,681	47.0





List 4540: Regular Length, Multiple Flute

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC		65 to 70 HRC													
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels																			
Depth of Cut			<table border="1"> <tr> <td></td> <td>aa</td> <td>ar</td> </tr> <tr> <td>$D \leq 1.5$</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>$1.5 < D \leq 2.5$</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>$2.5 < D$</td> <td>1.5D</td> <td>0.1D</td> </tr> </table>			aa	ar	$D \leq 1.5$	1.5D	0.02D	$1.5 < D \leq 2.5$	1.5D	0.05D	$2.5 < D$	1.5D	0.1D	$aa=1.5D$ $ar=0.05D$ $arMax=less\ than\ 0.040''$		$aa=1.5D$ $ar=0.03D$ $arMax=less\ than\ 0.020''$		$aa=1D$ $ar=0.02D$ $arMax=less\ than\ 0.020''$			
				aa	ar																			
$D \leq 1.5$	1.5D	0.02D																						
$1.5 < D \leq 2.5$	1.5D	0.05D																						
$2.5 < D$	1.5D	0.1D																						
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min												
1	45,100	70.9	40,450	63.0	32,000	49.2	24,050	26.4	21,900	21.1	16,000	13.2												
2	22,500	70.9	20,200	63.0	16,000	49.2	12,000	26.4	11,000	21.1	7,950	13.2												
3	15,000	70.9	13,500	63.0	10,500	49.2	7,950	26.4	7,450	21.1	5,300	13.2												
4	11,000	70.9	9,950	63.0	7,950	49.2	5,950	26.4	5,550	21.1	4,000	13.2												
5	8,900	70.9	7,950	63.0	6,350	49.2	4,800	26.4	4,450	21.1	3,200	13.2												
6	7,450	104.3	6,650	94.5	5,300	74.8	4,000	39.4	3,700	31.5	2,650	19.9												
8	5,550	104.3	4,950	94.5	4,000	74.8	3,000	39.4	2,800	31.5	2,000	19.9												
10	4,450	104.3	4,000	94.5	3,200	74.8	2,400	39.4	2,250	31.5	1,600	19.9												
12	3,700	104.3	3,300	94.5	2,650	74.8	2,000	39.4	1,850	31.5	1,350	19.9												

High Speed Light Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC		65 to 70 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels							
Depth of Cut			$aa=1D$ $ar=0.05D$ $arMax=less\ than\ 0.020''$		$aa=1D$ $ar=0.03D$ $arMax=less\ than\ 0.020''$		$aa=1D$ $ar=0.02D$ $arMax=less\ than\ 0.008''$		$aa=1D$ $ar=0.01D$ $arMax=less\ than\ 0.008''$			
			Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM
1	50,000	63.0	50,000	78.7	50,000	78.7	50,000	63.0	47,500	53.1	32,000	28.1
2	47,500	128.0	47,500	149.6	40,000	126.0	25,500	65.0	24,000	53.1	16,000	31.5
3	32,000	135.8	32,000	149.6	26,500	126.0	17,000	65.0	16,000	53.1	10,500	31.5
4	24,000	153.5	24,000	149.6	20,000	126.0	12,500	65.0	12,000	53.1	7,950	31.5
5	19,000	161.4	19,000	149.6	16,000	126.0	10,000	65.0	9,550	53.1	6,350	31.5
6	16,000	226.4	16,000	226.4	13,500	189.0	8,500	96.5	7,950	78.7	5,300	47.2
8	12,000	226.4	12,000	226.4	9,950	189.0	6,350	96.5	5,950	78.7	4,000	47.2
10	9,550	226.4	9,550	226.4	7,950	189.0	5,100	96.5	4,800	78.7	3,200	47.2
12	7,950	226.4	7,950	226.4	6,650	189.0	4,250	96.5	4,000	78.7	2,650	47.2





List 4471: Regular Length, Four Flute, Corner Radius

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC										
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels														
Depth of Cut			<table border="1"> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> <tr> <td>D=1/16</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>D>1/16</td> <td>1.5D</td> <td>0.10D</td> </tr> </table>			aa	ar	D=1/16	1.5D	0.05D	D>1/16	1.5D	0.10D	$a_a=1.5D$ $a_r=0.05D$ $a_r \text{ Max}=\text{less than } 0.04''$		$a_a=1.5D$ $a_r=0.03D$ $a_r \text{ Max}=\text{less than } 0.02''$		$a_a=1.0D$ $a_r=0.02D$ $a_r \text{ Max}=\text{less than } 0.02''$	
				aa	ar														
D=1/16	1.5D	0.05D																	
D>1/16	1.5D	0.10D																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1/16	28,115	78.7	25,243	70.7	20,170	56.5	15,158	36.4	14,180	22.7									
3/32	18,743	75.0	16,828	67.3	13,446	53.8	10,105	30.3	9,453	22.7									
1/8	14,058	73.1	12,621	65.6	10,085	52.4	7,579	27.3	7,090	25.5									
3/16	9,372	60.0	8,414	53.9	6,723	43.0	5,053	22.2	4,727	20.8									
1/4	7,029	101.2	6,311	90.9	5,042	72.6	3,789	37.9	3,545	31.2									
3/8	4,686	105.0	4,207	94.2	3,362	75.3	2,526	39.4	2,363	31.2									
1/2	3,514	99.8	3,155	89.6	2,521	71.6	1,895	38.7	1,772	31.2									

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.

High Speed Light Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut			$a_a=1.0D$ $a_r=0.05D$ $a_r \text{ Max}=\text{less than } 0.02''$		$a_a=1.0D$ $a_r=0.03D$ $a_r \text{ Max}=\text{less than } 0.02''$		$a_a=1.0D$ $a_r=0.02D$ $a_r \text{ Max}=\text{less than } 0.008''$		$a_a=1.0D$ $a_r=0.01D$ $a_r \text{ Max}=\text{less than } 0.008''$	
			Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM
1/16	50,000	140.0	50,000	140.0	50,000	140.0	32,149	64.3	30,254	60.5
3/32	40,135	160.5	40,135	160.5	33,412	133.6	21,433	68.6	20,170	56.5
1/8	30,102	156.5	30,102	156.5	25,059	130.3	16,075	70.7	15,127	54.5
3/16	20,068	128.4	20,068	128.4	16,706	106.9	10,716	72.9	10,085	52.4
1/4	15,051	216.7	15,051	216.7	12,530	180.4	8,037	93.2	7,564	78.7
3/8	10,034	224.8	10,034	224.8	8,353	187.1	5,358	96.4	5,042	78.7
1/2	7,525	213.7	7,525	213.7	6,265	177.9	4,019	93.2	3,782	75.6

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 4571: Regular Length, 4 Flute, Corner Radius

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut					$a_a=1.5D$ $a_r=0.05D$ arMax=less than 0.04"		$a_a=1.5D$ $a_r=0.03D$ arMax=less than 0.02"		$a_a=1.0D$ $a_r=0.02D$ arMax=less than 0.02"	
				a_a						
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
2	22,316	71.4	20,036	64.1	16,010	51.2	12,031	24.1	11,255	22.5
3	14,878	71.4	13,358	64.1	10,673	51.2	8,021	25.7	7,503	21.0
4	11,158	71.4	10,018	64.1	8,005	51.2	6,016	26.5	5,628	20.3
5	8,927	85.7	8,015	76.9	6,404	61.5	4,813	25.0	4,502	21.6
6	7,439	104.1	6,679	93.5	5,337	74.7	4,010	38.5	3,752	31.5
8	5,579	104.9	5,009	94.2	4,002	75.2	3,008	39.7	2,814	31.5
10	4,463	103.5	4,007	93.0	3,202	74.3	2,406	39.5	2,251	31.5
12	3,719	104.1	3,339	93.5	2,668	74.7	2,005	39.3	1,876	32.3

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.

High Speed Light Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut					$a_a=1.0D$ $a_r=0.03D$ arMax=less than 0.02"		$a_a=1.0D$ $a_r=0.02D$ arMax=less than 0.008"		$a_a=1.0D$ $a_r=0.01D$ arMax=less than 0.008"	
				a_a						
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
2	47,786	152.9	47,786	152.9	39,781	127.3	25,518	61.2	24,014	48.0
3	31,858	152.9	31,858	152.9	26,521	127.3	17,012	68.0	16,010	51.2
4	23,893	152.9	23,893	152.9	19,891	127.3	12,759	66.3	12,007	52.8
5	19,115	183.5	19,115	183.5	15,913	152.8	10,207	65.3	9,606	53.8
6	15,929	223.0	15,929	223.0	13,260	185.6	8,506	95.3	8,005	80.0
8	11,947	224.6	11,947	224.6	9,945	187.0	6,380	97.0	6,004	79.2
10	9,557	221.7	9,557	221.7	7,956	184.6	5,104	95.9	4,803	76.8
12	7,964	223.0	7,964	223.0	6,630	185.6	4,253	97.0	4,002	78.4

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 4470: Regular Length, Corner Radius, High Feed

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC																														
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels																																		
Depth of Cut			<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.02"</td><td>0.5D</td></tr> </table>			aa	ar	CR≤1/16	0.2xCR	0.5D	CR>1/16	0.02"	0.5D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.016"</td><td>0.5D</td></tr> </table>			aa	ar	CR≤1/16	0.2xCR	0.5D	CR>1/16	0.016"	0.5D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.1xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.008"</td><td>0.5D</td></tr> </table>							aa	ar	CR≤1/16	0.1xCR	0.5D	CR>1/16	0.008"	0.5D
				aa	ar																																		
CR≤1/16	0.2xCR	0.5D																																					
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CR>1/16	0.008"	0.5D																																					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																													
1/8	12,224	252	8,404	158	6,112	103	3,667	41	3,056	34																													
3/16	8,149	252	5,603	158	4,075	103	2,445	41	2,037	34																													
1/4	6,112	336	4,202	210	3,056	138	1,834	55	1,528	46																													
5/16	4,890	336	3,362	210	2,445	138	1,467	55	1,222	46																													
3/8	4,075	336	2,801	210	2,037	138	1,222	55	1,019	46																													
1/2	3,056	336	2,101	210	1,528	138	917	55	764	46																													

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC																					
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels																									
Depth of Cut			$aa=0.1CR$ $ar=0.3D$		<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.1xCR</td><td>0.3D</td></tr> <tr><td>CR>1/16</td><td>0.008"</td><td>0.3D</td></tr> </table>			aa	ar	CR≤1/16	0.1xCR	0.3D	CR>1/16	0.008"	0.3D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.05xCR</td><td>0.3D</td></tr> <tr><td>CR>1/16</td><td>0.004"</td><td>0.3D</td></tr> </table>							aa	ar	CR≤1/16	0.05xCR	0.3D	CR>1/16	0.004"	0.3D
				aa	ar																									
CR≤1/16	0.1xCR	0.3D																												
CR>1/16	0.008"	0.3D																												
	aa	ar																												
CR≤1/16	0.05xCR	0.3D																												
CR>1/16	0.004"	0.3D																												
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																				
1/8	23,990	495	18,030	338	16,808	284	11,918	134	9,168	103																				
3/16	15,993	495	12,020	338	11,205	284	7,946	134	6,112	103																				
1/4	11,995	660	9,015	451	8,404	378	5,959	179	4,584	138																				
5/16	9,596	660	7,212	451	6,723	378	4,767	179	3,667	138																				
3/8	7,997	660	6,010	451	5,603	378	3,973	179	3,056	138																				
1/2	5,997	660	4,508	451	4,202	378	2,980	179	2,292	138																				

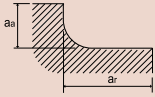
1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





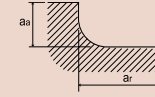
List 4570: Regular Length, Corner Radius, High Feed

Standard Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC																										
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels																														
Depth of Cut	 CR=Corner Radius		<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤2</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>2</td><td>0.02"</td><td>0.5D</td></tr> </table>			aa	ar	CR≤2	0.2xCR	0.5D	CR>2	0.02"	0.5D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤2</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>2</td><td>0.016"</td><td>0.5D</td></tr> </table>			aa	ar	CR≤2	0.2xCR	0.5D	CR>2	0.016"	0.5D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤2</td><td>0.1xCR</td><td>0.5D</td></tr> <tr><td>CR>2</td><td>0.008"</td><td>0.5D</td></tr> </table>			aa	ar	CR≤2	0.1xCR	0.5D	CR>2	0.008"	0.5D
				aa	ar																														
CR≤2	0.2xCR	0.5D																																	
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CR≤2	0.1xCR	0.5D																																	
CR>2	0.008"	0.5D																																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																									
2	19,406	252	13,341	158	9,703	103	5,822	41	4,851	34																									
3	12,937	336	8,894	210	6,469	138	3,881	55	3,234	46																									
4	9,703	336	6,671	210	4,851	138	2,911	55	2,426	46																									
5	7,762	336	5,337	210	3,881	138	2,329	55	1,941	46																									
6	6,469	336	4,447	210	3,234	138	1,941	55	1,617	46																									
7	5,544	336	3,812	210	2,772	138	1,663	55	1,386	46																									
8	4,851	336	3,335	210	2,426	138	1,455	55	1,213	46																									
9	4,312	336	2,965	210	2,156	138	1,294	55	1,078	46																									
10	3,881	336	2,668	210	1,941	138	1,164	55	970	46																									
11	3,528	336	2,426	210	1,764	138	1,058	55	882	46																									
12	3,234	336	2,224	210	1,617	138	970	55	809	46																									
13	2,985	336	2,053	210	1,493	138	896	55	746	46																									

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC																	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels																					
Depth of Cut	 CR=Corner Radius		aa=0.1xCR ar=0.3D		<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤2</td><td>0.1xCR</td><td>0.3D</td></tr> <tr><td>CR>2</td><td>0.008"</td><td>0.3D</td></tr> </table>			aa	ar	CR≤2	0.1xCR	0.3D	CR>2	0.008"	0.3D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤2</td><td>0.05xCR</td><td>0.3D</td></tr> <tr><td>CR>2</td><td>0.004"</td><td>0.3D</td></tr> </table>			aa	ar	CR≤2	0.05xCR	0.3D	CR>2	0.004"	0.3D
				aa	ar																					
CR≤2	0.1xCR	0.3D																								
CR>2	0.008"	0.3D																								
	aa	ar																								
CR≤2	0.05xCR	0.3D																								
CR>2	0.004"	0.3D																								
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																
2	38,083	495	28,623	338	26,683	284	18,920	134	14,554	103																
3	25,389	660	19,082	451	17,788	378	12,614	179	9,703	138																
4	19,042	660	14,312	451	13,341	378	9,460	179	7,277	138																
5	15,233	660	11,449	451	10,673	378	7,568	179	5,822	138																
6	12,694	660	9,541	451	8,894	378	6,307	179	4,851	138																
7	10,881	660	8,178	451	7,624	378	5,406	179	4,158	138																
8	9,521	660	7,156	451	6,671	378	4,730	179	3,639	138																
9	8,463	660	6,361	451	5,929	378	4,205	179	3,234	138																
10	7,617	660	5,725	451	5,337	378	3,784	179	2,911	138																
11	6,924	660	5,204	451	4,851	378	3,440	179	2,646	138																
12	6,347	660	4,771	451	4,447	378	3,153	179	2,426	138																
13	5,859	660	4,404	451	4,105	378	2,911	179	2,239	138																

1. The indicated speeds and feeds are for high speed light milling for use with high speed/high precision machining centers.
2. Do not use flammable fluids because tools with considerable wear can cause sparks.
3. We recommend using air blow. When using cutting fluids, use a high quality fluid with high smoke retardant.





List 4472: Regular Length, Corner Radius, High Feed

Standard Milling

Hardness			Up to 40 HRC	40 to 45 HRC	45 to 55 HRC	55 to 60 HRC	60 to 65 HRC																												
Work Material	Cast Iron		Mild Steels Carbon Steels	Tool Steels Stainless Steel Hardened Steels Prehardened Steels	Hardened Steels																														
Depth of Cut	 CR=Corner Radius			<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.02"</td><td>0.5D</td></tr> </table>		aa	ar	CR≤1/16	0.2xCR	0.5D	CR>1/16	0.02"	0.5D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.016"</td><td>0.5D</td></tr> </table>		aa	ar	CR≤1/16	0.2xCR	0.5D	CR>1/16	0.016"	0.5D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.1xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.008"</td><td>0.5D</td></tr> </table>		aa	ar	CR≤1/16	0.1xCR	0.5D	CR>1/16	0.008"	0.5D		
	aa	ar																																	
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CR>1/16	0.008"	0.5D																																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																							
1/8	10,080	255	7,950	175	7,030	150	5,040	100	3,060	40	2,690	28																							
3/16	6,720	265	5,300	190	4,690	165	3,360	110	2,040	42	1,790	30																							
1/4	5,040	275	3,970	200	3,510	175	2,520	115	1,530	45	1,340	32																							
5/16	4,030	275	3,180	200	2,810	175	2,020	115	1,220	45	1,080	32																							
3/8	3,360	275	2,650	200	2,340	175	1,680	115	1,020	45	900	32																							
1/2	2,520	275	1,990	200	1,760	175	1,260	115	760	45	670	32																							

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.

High Feed Milling

Hardness			Up to 40 HRC	40 to 45 HRC	45 to 55 HRC	55 to 60 HRC	60 to 65 HRC																			
Work Material	Cast Iron		Mild Steels Carbon Steels	Tool Steels Stainless Steel Hardened Steels Prehardened Steels	Hardened Steels																					
Depth of Cut	 CR=Corner Radius			$aa=0.1CR$ $ar=0.3D$	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.1xCR</td><td>0.3D</td></tr> <tr><td>CR>1/16</td><td>0.008"</td><td>0.3D</td></tr> </table>		aa	ar	CR≤1/16	0.1xCR	0.3D	CR>1/16	0.008"	0.3D	<table border="1"> <tr><td></td><td>aa</td><td>ar</td></tr> <tr><td>CR≤1/16</td><td>0.05xCR</td><td>0.3D</td></tr> <tr><td>CR>1/16</td><td>0.004"</td><td>0.3D</td></tr> </table>		aa	ar	CR≤1/16	0.05xCR	0.3D	CR>1/16	0.004"	0.3D		
	aa	ar																								
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	aa	ar																								
CR≤1/16	0.05xCR	0.3D																								
CR>1/16	0.004"	0.3D																								
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min														
1/8	19,860	490	19,860	470	14,970	330	14,970	305	10,080	125	9,780	90														
3/16	13,240	500	13,240	470	9,980	355	13,240	325	6,720	140	6,520	100														
1/4	9,930	545	9,930	500	7,490	375	9,930	340	5,040	150	4,890	150														
5/16	7,950	545	7,950	500	5,990	375	7,950	340	4,030	150	3,910	150														
3/8	6,620	545	6,620	500	4,990	375	6,620	340	3,360	150	3,260	150														
1/2	4,970	545	4,970	500	3,740	375	4,970	340	2,520	150	2,440	150														

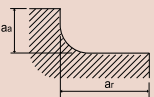
1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.





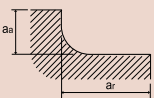
List 4572: Regular Length, Corner Radius, High Feed

Standard Milling

Hardness			Up to 40 HRC	40 to 45 HRC	45 to 55 HRC	55 to 60 HRC	60 to 65 HRC																												
Work Material	Cast Iron	Mild Steels Carbon Steels	Tool Steels Stainless Steel Hardened Steels Prehardened Steels		Hardened Steels																														
Depth of Cut	 CR=Corner Radius		<table border="1"> <tr><td>CR≤1/16</td><td>aa</td><td>ar</td></tr> <tr><td>CR>1/16</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.02"</td><td>0.5D</td></tr> </table>	CR≤1/16	aa	ar	CR>1/16	0.2xCR	0.5D	CR>1/16	0.02"	0.5D	<table border="1"> <tr><td>CR≤1/16</td><td>aa</td><td>ar</td></tr> <tr><td>CR>1/16</td><td>0.2xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.016"</td><td>0.5D</td></tr> </table>	CR≤1/16	aa	ar	CR>1/16	0.2xCR	0.5D	CR>1/16	0.016"	0.5D	<table border="1"> <tr><td>CR≤1/16</td><td>aa</td><td>ar</td></tr> <tr><td>CR>1/16</td><td>0.1xCR</td><td>0.5D</td></tr> <tr><td>CR>1/16</td><td>0.008"</td><td>0.5D</td></tr> </table>				CR≤1/16	aa	ar	CR>1/16	0.1xCR	0.5D	CR>1/16	0.008"	0.5D
CR≤1/16	aa	ar																																	
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Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																							
2	16,000	207	12,500	150	11,000	132	7,950	85	4,750	34	4,270	24																							
3	10,500	246	8,500	177	7,450	154	5,300	102	3,200	39	2,850	28																							
4	7,950	260	6,350	189	5,550	165	4,000	108	2,400	41	2,150	30																							
6	5,300	276	4,250	201	3,700	175	2,650	112	1,600	45	1,400	32																							
8	4,000	276	3,200	201	2,800	175	2,000	112	1,200	45	1,050	32																							
10	3,200	276	2,550	201	2,250	175	1,600	112	955	45	860	32																							
12	2,650	276	2,100	201	1,850	175	1,350	112	795	45	715	32																							

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.

High Feed Milling

Hardness			Up to 40 HRC	40 to 45 HRC	45 to 55 HRC	55 to 60 HRC	60 to 65 HRC																				
Work Material	Cast Iron	Mild Steels Carbon Steels	Tool Steels Stainless Steel Hardened Steels Prehardened Steels		Hardened Steels																						
Depth of Cut	 CR=Corner Radius		aa=0.1CR ar=0.3D		<table border="1"> <tr><td>CR≤1/16</td><td>aa</td><td>ar</td></tr> <tr><td>CR>1/16</td><td>0.1xCR</td><td>0.3D</td></tr> <tr><td>CR>1/16</td><td>0.008"</td><td>0.3D</td></tr> </table>	CR≤1/16	aa	ar	CR>1/16	0.1xCR	0.3D	CR>1/16	0.008"	0.3D	<table border="1"> <tr><td>CR≤1/16</td><td>aa</td><td>ar</td></tr> <tr><td>CR>1/16</td><td>0.05xCR</td><td>0.3D</td></tr> <tr><td>CR>1/16</td><td>0.004"</td><td>0.3D</td></tr> </table>				CR≤1/16	aa	ar	CR>1/16	0.05xCR	0.3D	CR>1/16	0.004"	0.3D
CR≤1/16	aa	ar																									
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Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min															
2	31,850	413	32,000	376	24,000	281	24,000	254	16,000	112	14,400	81															
3	21,000	492	21,000	472	16,000	331	16,000	309	10,500	130	9,450	93															
4	16,000	512	16,000	472	12,000	354	12,000	323	7,950	140	7,150	100															
6	10,600	551	10,600	500	7,950	376	7,950	339	5,300	150	5,300	150															
8	7,950	551	7,950	500	5,950	376	5,950	339	4,000	150	4,000	150															
10	6,350	551	6,350	500	4,750	376	4,750	339	3,200	150	3,200	150															
12	5,300	551	5,300	500	4,000	376	4,000	339	2,650	150	2,650	150															

1. Use a rigid and precise machine and holder.
2. These milling conditions are based on milling with circular interpolation at corners; for milling without circular interpolation (such as right angle cornering), reduce the speed to 50-70% and the cutting depth to 50-80% of the above conditions.
3. We recommend using air blow or MQL (mist).
4. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
5. When entering into the part, reduce the feed to 30-60% of the above conditions, with a ramping angle < 2°.
6. These milling conditions are for a tool overhang less than 4xD; for longer overhangs, reduce the speed, feed and cutting depth to prevent chattering.





List 4592: Corner Radius, Stub Length, 2 Flute, Long Neck, Rib Processing

Standard Milling

Hardness									Up to 45 HRC		45 to 55 HRC		55 to 65 HRC	
Work Material									Hardened Steels, Pre-hardened Steels, SDK61, NAK55, NAK80, HPM1		Hardened Steels, Pre-hardened Steels, SDK 61, STAVAX, HPM38		Hardened Steels	
Depth of Cut									% of DOC's suggested on the left					
		aa (in)							aa=120% ar=120%		aa=100% ar=100%		aa=60% ar=80%	
		Dia.	L1	R0.05	R0.1	R0.2	R0.3	R0.5	R1	ar (in)	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.4	1	0.00028	—	—	—	—	—	0.0047	31,900	17.9	26,400	14.8	19,800	11.1
0.4	1.5	0.00028	—	—	—	—	—	0.0047	31,900	17.9	26,400	14.8	19,800	11.1
0.4	2	0.00020	0.00031	—	—	—	—	0.0040	31,900	12.8	26,400	10.6	19,800	7.9
0.4	3	0.00008	0.00012	—	—	—	—	0.0030	27,500	4.4	23,100	3.7	18,700	3.0
0.4	4	0.00004	0.00008	—	—	—	—	0.0014	22,000	1.8	22,000	1.8	18,700	1.5
0.5	1	0.00028	0.00039	—	—	—	—	0.0059	31,900	17.9	26,400	14.8	18,700	10.5
0.5	2	0.00028	0.00039	—	—	—	—	0.0059	31,900	17.9	26,400	14.8	18,700	10.5
0.5	3	0.00012	0.00020	—	—	—	—	0.0041	29,700	7.1	24,200	5.8	17,600	4.2
0.5	4	0.00008	0.00012	—	—	—	—	0.0004	27,500	4.4	23,100	3.7	17,050	2.7
0.5	5	0.00004	0.00008	—	—	—	—	0.0018	24,200	1.9	22,550	1.8	16,500	1.3
0.5	6	0.00004	0.00004	—	—	—	—	0.0012	22,000	1.8	22,000	1.8	16,500	1.3
0.6	2	—	0.00047	—	—	—	—	0.0071	29,700	27.9	25,300	23.8	17,600	16.5
0.6	4	—	0.00020	—	—	—	—	0.0048	27,500	11.0	22,000	8.8	16,500	6.6
0.6	6	—	0.00008	—	—	—	—	0.0021	22,000	3.5	20,900	3.3	15,400	2.5
0.8	4	—	0.00063	0.0013	—	—	—	0.0094	27,500	71.5	22,000	57.2	15,400	40.0
0.8	6	—	0.00028	0.0006	—	—	—	0.0094	23,100	27.7	19,800	23.8	14,850	17.8
0.8	8	—	—	0.0003	—	—	—	0.0085	19,800	11.9	18,700	11.2	14,300	8.6
1.0	4	0.00039	0.00079	0.0016	0.0020	—	—	0.0118	24,200	77.4	22,000	70.4	13,200	42.2
1.0	6	0.00020	0.00039	0.0008	0.0010	—	—	0.0083	22,000	35.2	18,700	29.9	13,200	21.1
1.0	8	0.00012	0.00024	0.0005	0.0006	—	—	0.0071	17,600	17.6	16,500	16.5	12,650	12.7
1.0	10	0.00008	0.00016	0.0003	0.0004	—	—	0.0035	16,500	9.9	15,400	9.2	12,100	7.3
1.0	12	0.00004	0.00012	0.0002	0.0003	—	—	0.0024	16,500	6.6	14,300	5.7	12,100	4.8
1.0	16	—	—	0.0002	—	—	—	0.0012	13,200	5.3	13,200	5.3	11,550	4.6
1.0	20	—	—	0.0001	—	—	—	0.0009	11,000	2.2	11,000	2.2	11,000	2.2
1.2	6	—	—	0.0013	0.0016	—	—	0.0142	18,700	48.6	15,400	40.0	11,000	28.6
1.2	8	—	—	0.0007	0.0009	—	—	0.0099	15,400	21.6	13,200	18.5	11,000	15.4
1.2	10	—	—	0.0004	0.0006	—	—	0.0085	15,400	12.3	13,200	10.6	9,900	7.9
1.5	6	—	—	0.0016	0.0024	—	—	0.0177	15,400	49.3	13,200	42.2	8,800	28.2
1.5	8	—	—	0.0010	0.0015	—	—	0.0150	13,200	26.4	11,000	22.0	7,700	15.4
1.5	10	—	—	0.0007	0.0011	—	—	0.0115	13,200	18.5	11,000	15.4	7,700	10.8
1.5	12	—	—	0.0005	0.0007	—	—	0.0106	13,200	13.2	11,000	11.0	7,150	7.2
1.5	16	—	—	0.0003	0.0004	—	—	0.0044	11,000	6.6	9,900	5.9	6,600	4.0
2.0	8	—	0.00079	0.0016	0.0024	0.0030	—	0.0236	12,100	38.7	9,900	31.7	6,600	21.1
2.0	10	—	0.00063	0.0013	0.0019	0.0024	—	0.0201	9,900	25.7	7,700	20.0	6,600	17.2
2.0	12	—	0.00039	0.0008	0.0012	0.0015	—	0.0165	9,900	15.8	7,700	12.3	6,600	10.6
2.0	16	—	0.00024	0.0005	0.0007	0.0009	—	0.0142	9,900	9.9	7,700	7.7	6,050	6.1
2.0	20	—	0.00016	0.0003	0.0005	0.0006	—	0.0071	7,700	4.6	7,150	4.3	5,500	3.3
2.0	25	—	0.00008	0.0002	0.0003	0.0004	—	0.0047	7,700	3.1	6,600	2.6	4,950	2.0
2.5	10	—	—	0.0016	—	0.0030	—	0.0295	9,900	31.7	8,800	28.2	5,500	17.6
2.5	20	—	—	0.0008	—	0.0015	—	0.0177	7,700	12.3	6,600	10.6	4,950	7.9
2.5	30	—	—	0.0002	—	0.0004	—	0.0059	6,600	2.6	5,500	2.2	4,400	1.8
3.0	8	—	—	0.0016	—	—	—	0.0354	8,800	28.2	7,700	24.6	5,500	17.6
3.0	12	—	—	0.0016	0.0024	0.0030	—	0.0354	8,800	28.2	7,700	24.6	5,500	17.6
3.0	16	—	—	0.0011	0.0017	0.0020	—	0.0283	6,600	14.5	6,600	14.5	5,500	12.1
3.0	20	—	—	0.0007	0.0011	0.0013	—	0.0241	6,600	9.2	6,600	9.2	5,500	7.7
3.0	25	—	—	0.0005	0.0007	0.0009	—	0.0213	6,600	6.6	6,600	6.6	4,950	5.0
3.0	30	—	—	0.0003	0.0005	0.0006	—	0.0106	5,500	3.3	5,500	3.3	4,400	2.6
3.0	35	—	—	0.0002	0.0004	0.0004	—	0.0071	5,500	2.2	4,950	2.0	4,400	1.8
4.0	16	—	—	0.0016	0.0024	0.0030	0.0047	0.0472	6,600	21.1	4,950	15.8	4,400	14.1
4.0	20	—	—	0.0013	0.0019	0.0024	0.0079	0.0402	5,500	14.3	4,400	11.4	4,400	11.4
4.0	25	—	—	0.0008	0.0012	0.0015	0.0024	0.0321	5,500	8.8	4,400	7.0	4,400	7.0
4.0	30	—	—	0.0006	0.0008	0.0010	0.0016	0.0293	5,500	6.6	4,400	5.3	4,400	5.3
4.0	40	—	—	0.0003	0.0005	0.0006	0.0009	0.0142	4,400	2.6	4,400	2.6	4,400	2.6
4.0	50	—	—	0.0002	0.0003	0.0004	0.0006	0.0085	4,400	1.8	4,400	1.8	3,850	1.5





List 4590: Ball End, Stub Length, 2 Flute, Long Neck, Rib Processing

Standard Milling (up to 38HRC)

Hardness		Up to 20 HRC				20 to 30 HRC				30 to 38 HRC			
Work Material		Mild Steels, Carbon Steels, Cast Iron				Alloy Steels, Tool Steels				Hardened Steels, Pre-hardened Steels			
Depth of Cut													
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)
0.1	0.3	50,000	2.8	0.0001	0.0001	50,000	2.8	0.0001	0.0001	50,000	2.8	0.0001	0.0001
0.1	0.5	50,000	2.0	0.0001	0.0001	50,000	2.0	0.0001	0.0001	50,000	2.0	0.0001	0.0001
0.2	0.5	50,000	15.7	0.0002	0.0002	50,000	15.7	0.0002	0.0002	50,000	15.0	0.0002	0.0002
0.2	1	50,000	14.2	0.0002	0.0002	50,000	14.2	0.0002	0.0002	50,000	13.4	0.0002	0.0002
0.2	1.5	45,000	11.8	0.0002	0.0002	45,000	11.8	0.0002	0.0002	45,000	11.0	0.0002	0.0002
0.2	3	32,000	5.9	0.0002	0.0002	32,000	5.9	0.0002	0.0002	32,000	5.5	0.0002	0.0002
0.3	1	50,000	23.6	0.0002	0.0004	50,000	23.6	0.0002	0.0004	50,000	22.4	0.0002	0.0002
0.3	3	38,000	9.8	0.0002	0.0002	38,000	9.8	0.0002	0.0002	38,000	9.1	0.0002	0.0002
0.3	5	29,000	3.9	0.0002	0.0002	29,000	3.9	0.0002	0.0002	29,000	3.7	0.0002	0.0002
0.4	1	50,000	35.4	0.0004	0.0008	50,000	35.4	0.0004	0.0008	50,000	33.5	0.0004	0.0004
0.4	3	43,000	19.7	0.0002	0.0004	43,000	19.7	0.0002	0.0004	43,000	18.5	0.0002	0.0002
0.4	6	30,000	7.9	0.0002	0.0002	30,000	7.9	0.0002	0.0002	30,000	7.5	0.0002	0.0002
0.5	1	50,000	43.3	0.0006	0.0012	50,000	43.3	0.0006	0.0012	50,000	41.3	0.0006	0.0006
0.5	5	30,000	15.7	0.0002	0.0004	30,000	15.7	0.0002	0.0004	30,000	15.0	0.0002	0.0002
0.5	10	20,000	3.9	0.0002	0.0002	20,000	3.9	0.0002	0.0002	20,000	3.7	0.0002	0.0002
0.6	1	50,000	53.1	0.0012	0.0020	50,000	53.1	0.0012	0.0020	50,000	47.2	0.0012	0.0012
0.6	5	30,000	26.8	0.0004	0.0008	30,000	26.8	0.0004	0.0008	30,000	21.0	0.0004	0.0004
0.6	12	18,000	4.7	0.0002	0.0002	18,000	4.7	0.0002	0.0002	18,000	4.3	0.0002	0.0002
0.8	2	50,000	78.7	0.0016	0.0031	50,000	78.7	0.0016	0.0031	50,000	74.8	0.0016	0.0016
0.8	6	30,000	31.5	0.0012	0.0020	30,000	31.5	0.0012	0.0020	30,000	29.9	0.0012	0.0012
0.8	12	17,000	9.8	0.0002	0.0002	17,000	9.8	0.0002	0.0002	17,000	9.1	0.0002	0.0002
1.0	2	50,000	145.7	0.0020	0.0039	50,000	145.7	0.0020	0.0039	50,000	145.7	0.0020	0.0020
1.0	5	36,000	90.6	0.0020	0.0039	36,000	90.6	0.0020	0.0039	36,000	82.7	0.0020	0.0020
1.0	10	22,000	43.3	0.0004	0.0008	22,000	43.3	0.0004	0.0008	22,000	39.4	0.0004	0.0004
1.0	20	13,000	11.8	0.0002	0.0002	13,000	11.8	0.0002	0.0002	13,000	11.2	0.0002	0.0002
1.2	2	50,000	149.6	0.0024	0.0047	50,000	149.6	0.0024	0.0047	50,000	141.7	0.0024	0.0024
1.2	5	36,000	82.7	0.0024	0.0047	36,000	82.7	0.0024	0.0047	36,000	78.7	0.0024	0.0024
1.2	10	20,000	47.2	0.0020	0.0039	20,000	47.2	0.0020	0.0039	20,000	43.3	0.0020	0.0020
1.2	20	14,000	12.6	0.0002	0.0002	14,000	12.6	0.0002	0.0002	14,000	11.8	0.0002	0.0002
1.5	3	50,000	189.0	0.0030	0.0059	50,000	189.0	0.0030	0.0059	50,000	189.0	0.0030	0.0030
1.5	6	30,000	114.2	0.0030	0.0059	30,000	114.2	0.0030	0.0059	30,000	106.3	0.0030	0.0030
1.5	10	24,000	78.7	0.0020	0.0059	24,000	78.7	0.0030	0.0059	24,000	74.8	0.0030	0.0030
1.5	16	16,000	31.5	0.0020	0.0039	16,000	31.5	0.0020	0.0039	16,000	29.9	0.0020	0.0020
1.5	20	13,000	14.2	0.0008	0.0020	13,000	14.2	0.0008	0.0020	13,000	13.4	0.0008	0.0008
1.5	30	12,000	7.9	0.0002	0.0004	12,000	7.9	0.0002	0.0004	12,000	7.5	0.0002	0.0002
2.0	4	50,000	220.5	0.0039	0.0079	50,000	220.5	0.0039	0.0079	50,000	220.5	0.0039	0.0039
2.0	8	25,000	102.4	0.0039	0.0079	25,000	102.4	0.0039	0.0079	25,000	94.5	0.0039	0.0039
2.0	16	14,000	66.9	0.0039	0.0039	14,000	66.9	0.0039	0.0039	14,000	74.8	0.0039	0.0039
2.0	20	12,000	47.2	0.0020	0.0039	12,000	47.2	0.0020	0.0039	12,000	43.3	0.0020	0.0020
2.0	30	10,000	19.7	0.0008	0.0020	10,000	19.7	0.0008	0.0020	10,000	18.5	0.0008	0.0008
2.0	40	7,000	5.9	0.0008	0.0012	7,000	5.9	0.0008	0.0012	7,000	5.5	0.0008	0.0008
3.0	6	41,500	244.1	0.0059	0.0118	41,500	244.1	0.0059	0.0118	41,500	244.1	0.0059	0.0059
3.0	12	20,000	118.1	0.0059	0.0118	20,000	118.1	0.0059	0.0118	20,000	110.2	0.0059	0.0059
3.0	16	16,000	78.7	0.0039	0.0079	16,000	78.7	0.0039	0.0079	16,000	74.8	0.0039	0.0039
3.0	20	14,000	70.9	0.0039	0.0079	14,000	70.9	0.0039	0.0079	14,000	66.9	0.0039	0.0039
3.0	30	10,000	31.5	0.0012	0.0020	10,000	31.5	0.0012	0.0020	10,000	29.9	0.0012	0.0012
3.0	40	7,000	19.7	0.0008	0.0012	7,000	19.7	0.0008	0.0012	7,000	18.5	0.0008	0.0008
3.5	15	18,000	118.1	0.0039	0.0118	18,000	118.1	0.0039	0.0118	18,000	110.2	0.0039	0.0039
3.5	25	12,000	78.7	0.0039	0.0039	12,000	78.7	0.0039	0.0039	12,000	74.8	0.0039	0.0039
3.5	35	10,000	39.4	0.0020	0.0020	10,000	39.4	0.0020	0.0020	10,000	37.4	0.0020	0.0020
3.5	45	7,000	23.6	0.0012	0.0012	7,000	23.6	0.0012	0.0012	7,000	22.4	0.0012	0.0012
4.0	8	31,000	224.4	0.0079	0.0197	31,000	224.4	0.0079	0.0197	31,000	224.4	0.0079	0.0079
4.0	16	18,000	126.0	0.0079	0.0197	18,000	126.0	0.0079	0.0197	18,000	118.1	0.0079	0.0079

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Standard Milling (Up to 38HRC)

Hardness		Up to 20 HRC				20 to 30 HRC				30 to 38 HRC			
Work Material		Mild Steels, Carbon Steels, Cast Iron				Alloy Steels, Tool Steels				Hardened Steels, Pre-hardened Steels			
Depth of Cut													
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)
4.0	20	16,000	110.2	0.0079	0.0157	16,000	110.2	0.0079	0.0157	16,000	102.4	0.0079	0.0079
4.0	30	14,000	94.5	0.0039	0.0079	14,000	94.5	0.0039	0.0079	14,000	86.6	0.0039	0.0039
4.0	40	10,000	51.2	0.0020	0.0039	10,000	51.2	0.0020	0.0039	10,000	47.2	0.0020	0.0020
4.0	50	7,000	27.6	0.0008	0.0020	7,000	27.6	0.0008	0.0020	7,000	26.0	0.0008	0.0008
5.0	10	25,000	212.6	0.0098	0.0197	25,000	212.6	0.0098	0.0197	25,000	212.6	0.0098	0.0197
5.0	20	16,000	137.8	0.0098	0.0197	16,000	137.8	0.0098	0.0197	16,000	129.9	0.0098	0.0197
5.0	30	14,000	98.4	0.0039	0.0118	14,000	98.4	0.0039	0.0118	14,000	90.6	0.0039	0.0118
5.0	40	10,000	47.2	0.0039	0.0079	10,000	47.2	0.0039	0.0079	10,000	43.3	0.0039	0.0079
5.0	50	8,000	31.5	0.0039	0.0039	8,000	31.5	0.0039	0.0039	8,000	29.9	0.0039	0.0039
6.0	12	20,000	204.7	0.0118	0.0197	20,000	204.7	0.0118	0.0197	20,000	204.7	0.0118	0.0197
6.0	20	16,000	165.4	0.0118	0.0197	16,000	165.4	0.0118	0.0197	16,000	153.5	0.0118	0.0197
6.0	30	10,000	102.4	0.0118	0.0197	10,000	102.4	0.0118	0.0197	10,000	94.5	0.0118	0.0197
6.0	40	9,000	78.7	0.0079	0.0118	9,000	78.7	0.0079	0.0118	9,000	74.8	0.0079	0.0118
6.0	50	7,000	63.0	0.0079	0.0118	7,000	63.0	0.0079	0.0118	7,000	59.1	0.0079	0.0118

Standard Milling (38 to 60HRC)

Hardness		38 to 45 HRC				45 to 55 HRC				55 to 60 HRC			
Work Material		Stainless Steels, Hardened Steels Pre-hardened Steels				Hardened Steels				Hardened Steels			
Depth of Cut													
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)
0.1	0.3	50,000	2.8	0.0001	0.0001	50,000	2.4	0.0001	0.0001	-	-	-	-
0.1	0.5	50,000	2.0	0.0001	0.0001	50,000	1.6	0.0001	0.0001	-	-	-	-
0.2	0.5	50,000	15.0	0.0002	0.0002	50,000	10.2	0.0002	0.0002	50,000	7.9	0.0002	0.0002
0.2	1	50,000	13.4	0.0002	0.0002	50,000	9.1	0.0002	0.0002	43,000	7.1	0.0002	0.0002
0.2	1.5	45,000	11.0	0.0002	0.0002	45,000	7.5	0.0002	0.0002	41,000	5.1	0.0002	0.0002
0.2	3	32,000	5.5	0.0002	0.0002	31,000	3.5	0.0002	0.0002	31,000	2.8	0.0002	0.0002
0.3	1	50,000	22.4	0.0002	0.0002	50,000	15.4	0.0002	0.0002	50,000	12.2	0.0002	0.0004
0.3	3	38,000	9.1	0.0002	0.0002	37,000	5.9	0.0002	0.0002	33,000	3.9	0.0002	0.0002
0.3	5	29,000	3.7	0.0002	0.0002	28,000	2.4	0.0002	0.0002	28,000	2.0	0.0002	0.0002
0.4	1	50,000	33.5	0.0004	0.0004	50,000	20.5	0.0004	0.0004	50,000	17.3	0.0003	0.0006
0.4	3	43,000	18.5	0.0002	0.0002	43,000	11.0	0.0002	0.0002	38,000	8.7	0.0002	0.0004
0.4	6	30,000	7.5	0.0002	0.0002	29,000	4.7	0.0002	0.0002	26,000	3.9	0.0002	0.0002
0.5	1	50,000	41.3	0.0006	0.0006	50,000	28.7	0.0006	0.0006	50,000	22.8	0.0004	0.0008
0.5	5	30,000	15.0	0.0002	0.0002	29,000	9.8	0.0002	0.0002	26,000	6.7	0.0002	0.0004
0.5	10	20,000	3.7	0.0002	0.0002	20,000	3.9	0.0002	0.0002	20,000	3.5	0.0002	0.0002
0.6	1	50,000	47.2	0.0012	0.0012	50,000	33.1	0.0012	0.0012	50,000	26.4	0.0004	0.0008

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List 4590: Ball End, Stub Length, 2 Flute, Long Neck, Rib Processing (Continued)

Standard Milling (38 to 60HRC)

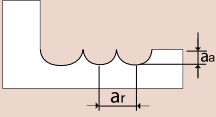
Hardness		38 to 45 HRC				45 to 55 HRC				55 to 60 HRC			
Work Material		Stainless Steels, Hardened Steels Pre-hardened Steels				Hardened Steels				Hardened Steels			
Depth of Cut													
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)
0.6	5	30,000	25.2	0.0004	0.0004	30,000	17.3	0.0004	0.0004	27,000	12.2	0.0004	0.0008
0.6	12	18,000	4.3	0.0002	0.0002	17,000	3.1	0.0002	0.0002	17,000	2.8	0.0002	0.0002
0.8	2	50,000	74.8	0.0016	0.0016	50,000	63.0	0.0016	0.0016	50,000	47.2	0.0006	0.0012
0.8	6	30,000	29.9	0.0012	0.0012	30,000	25.6	0.0012	0.0012	27,000	18.1	0.0006	0.0012
0.8	12	17,000	9.1	0.0002	0.0002	16,000	6.3	0.0002	0.0002	16,000	4.3	0.0002	0.0002
1.0	2	50,000	145.7	0.0020	0.0020	50,000	145.7	0.0020	0.0020	50,000	118.1	0.0008	0.0020
1.0	5	36,000	82.7	0.0020	0.0020	36,000	63.0	0.0020	0.0020	36,000	47.2	0.0008	0.0020
1.0	10	22,000	39.4	0.0004	0.0004	21,000	29.9	0.0004	0.0004	18,000	20.5	0.0004	0.0008
1.0	20	13,000	11.2	0.0002	0.0002	12,000	7.1	0.0002	0.0002	12,000	5.5	0.0002	0.0002
1.2	2	50,000	141.7	0.0024	0.0024	50,000	141.7	0.0024	0.0024	50,000	118.1	0.0008	0.0020
1.2	5	36,000	78.7	0.0024	0.0024	32,000	63.0	0.0024	0.0024	30,000	47.2	0.0008	0.0020
1.2	10	20,000	43.3	0.0020	0.0020	18,000	31.5	0.0020	0.0020	16,000	22.0	0.0008	0.0020
1.2	20	13,000	11.8	0.0002	0.0002	12,000	7.1	0.0002	0.0002	10,000	4.7	0.0002	0.0002
1.5	3	50,000	189.0	0.0030	0.0030	50,000	189.0	0.0030	0.0030	50,000	153.5	0.0012	0.0024
1.5	6	30,000	106.3	0.0030	0.0030	30,000	86.6	0.0030	0.0030	27,000	59.1	0.0012	0.0024
1.5	10	24,000	74.8	0.0030	0.0030	24,000	59.1	0.0030	0.0030	21,000	39.4	0.0012	0.0024
1.5	16	14,000	29.9	0.0020	0.0020	13,000	22.0	0.0020	0.0020	10,000	13.4	0.0012	0.0020
1.5	20	12,000	13.4	0.0008	0.0008	11,000	9.4	0.0008	0.0008	9,000	5.9	0.0008	0.0020
1.5	30	11,000	7.5	0.0002	0.0002	10,000	4.7	0.0002	0.0002	9,000	3.5	0.0002	0.0004
2.0	4	50,000	220.5	0.0039	0.0039	47,000	208.7	0.0039	0.0039	40,000	141.7	0.0020	0.0039
2.0	8	25,000	94.5	0.0039	0.0039	24,000	90.6	0.0039	0.0039	20,000	59.1	0.0020	0.0039
2.0	16	14,000	74.8	0.0039	0.0039	13,000	55.1	0.0039	0.0039	11,000	37.4	0.0020	0.0039
2.0	20	11,000	43.3	0.0020	0.0020	10,000	35.0	0.0020	0.0020	9,000	25.2	0.0020	0.0039
2.0	30	9,000	18.5	0.0008	0.0008	9,000	14.2	0.0008	0.0008	7,500	9.4	0.0008	0.0020
2.0	40	6,000	5.5	0.0008	0.0008	6,000	3.9	0.0008	0.0008	6,000	3.5	0.0008	0.0012
3.0	6	41,500	244.1	0.0059	0.0059	32,000	189.0	0.0059	0.0059	26,500	129.9	0.0024	0.0059
3.0	12	20,000	110.2	0.0059	0.0059	18,000	98.4	0.0059	0.0059	16,000	66.9	0.0024	0.0059
3.0	16	16,000	74.8	0.0039	0.0039	13,000	59.1	0.0039	0.0039	11,000	43.3	0.0024	0.0059
3.0	20	14,000	66.9	0.0039	0.0039	11,000	39.4	0.0039	0.0039	10,000	39.4	0.0024	0.0059
3.0	30	9,000	29.9	0.0012	0.0012	7,000	23.2	0.0012	0.0012	6,000	15.7	0.0012	0.0020
3.0	40	6,500	18.5	0.0008	0.0008	5,000	14.2	0.0008	0.0008	4,000	9.1	0.0008	0.0012
3.5	15	18,000	110.2	0.0039	0.0039	14,000	78.7	0.0039	0.0039	12,000	51.2	0.0028	0.0059
3.5	25	12,000	74.8	0.0039	0.0039	9,000	51.2	0.0039	0.0039	8,000	36.2	0.0028	0.0059
3.5	35	9,000	37.4	0.0020	0.0020	7,000	27.6	0.0020	0.0020	5,000	15.7	0.0020	0.0020
3.5	45	6,500	22.4	0.0012	0.0012	5,000	16.5	0.0012	0.0012	4,000	10.2	0.0012	0.0012
4.0	8	31,000	224.4	0.0079	0.0079	24,000	173.2	0.0079	0.0079	20,000	126.0	0.0031	0.0079
4.0	16	18,000	118.1	0.0079	0.0079	14,000	98.4	0.0079	0.0079	10,000	51.2	0.0031	0.0079
4.0	20	16,000	102.4	0.0079	0.0079	14,000	90.6	0.0079	0.0079	8,000	39.4	0.0031	0.0079
4.0	30	14,000	86.6	0.0039	0.0039	12,000	74.8	0.0039	0.0039	5,000	24.8	0.0031	0.0079
4.0	40	9,000	47.2	0.0020	0.0020	8,000	39.4	0.0020	0.0020	4,000	15.7	0.0020	0.0039
4.0	50	6,500	26.0	0.0008	0.0008	6,000	23.6	0.0008	0.0008	3,600	11.0	0.0008	0.0020
5.0	10	25,000	212.6	0.0098	0.0197	19,000	157.5	0.0098	0.0197	16,000	110.2	0.0039	0.0098
5.0	20	16,000	129.9	0.0098	0.0197	13,000	106.3	0.0098	0.0197	8,000	51.2	0.0039	0.0098
5.0	30	14,000	90.6	0.0039	0.0118	11,000	70.9	0.0039	0.0118	4,000	20.5	0.0039	0.0098
5.0	40	10,000	43.3	0.0039	0.0079	9,000	39.0	0.0039	0.0079	3,000	10.2	0.0039	0.0079
5.0	50	7,500	29.9	0.0039	0.0039	7,000	24.0	0.0039	0.0039	2,800	7.5	0.0039	0.0039
6.0	12	20,000	204.7	0.0118	0.0197	16,000	133.9	0.0118	0.0197	13,500	98.4	0.0039	0.0079
6.0	20	16,000	153.5	0.0118	0.0197	12,000	118.1	0.0118	0.0197	8,000	63.0	0.0039	0.0079
6.0	30	10,000	94.5	0.0118	0.0197	9,000	82.7	0.0118	0.0197	4,000	29.1	0.0039	0.0079
6.0	40	9,000	74.8	0.0079	0.0118	9,000	70.9	0.0079	0.0118	3,000	18.9	0.0039	0.0079
6.0	50	7,000	59.1	0.0079	0.0118	7,000	55.1	0.0079	0.0118	2,500	15.7	0.0039	0.0079





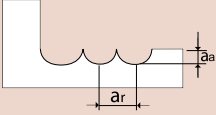
List 4430: True 4 Flute, Ball End, Regular Length

Standard Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	690 SFM		540 SFM		500 SFM		410 SFM		390 SFM		320 SFM	
Depth of Cut	$a_a=0.05D$ $a_r=0.1D$ 				$a_a=0.03D$ $a_r=0.1D$				$a_a=0.02D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	10,500	182	8,190	140	7,699	126	6,313	93	5,871	80	4,873	67
5/16	8,400	165	6,500	127	6,110	108	5,010	77	4,659	66	4,100	55
3/8	7,000	160	5,460	123	5,132	105	4,209	74	3,914	64	3,444	51
1/2	5,200	130	4,050	100	3,807	85	3,122	60	2,903	52	2,555	52

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	1080 SFM		870 SFM		820 SFM		670 SFM		625 SFM		550 SFM	
Depth of Cut	$a_a=0.05D$ $a_r=0.05D$ 				$a_a=0.03D$ $a_r=0.05D$				$a_a=0.02D$ $a_r=0.05D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	17,000	295	13,260	227	12,464	205	10,221	151	9,505	130	7,889	108
5/16	13,590	276	10,600	212	9,964	180	8,171	128	7,599	110	6,687	91
3/8	11,300	256	8,814	197	8,285	167	6,794	119	6,318	102	5,560	82
1/2	8,520	215	6,646	165	6,247	140	5,122	100	4,764	86	4,192	86

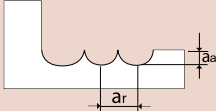
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





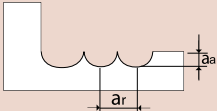
List 4530: True 4 Flute, Ball End, Regular Length

Standard Milling

Hardness	Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	740 SFM		570 SFM		540 SFM		440 SFM		410 SFM		340 SFM	
Depth of Cut	$a_a=0.05D$ $a_r=0.1D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
6	11,900	207	9,280	154	8,750	139	7,160	103	6,630	85	5,480	70
8	8,950	180	6,960	141	6,570	119	5,370	87	4,970	75	4,380	62
10	7,160	163	5,570	126	5,250	106	4,300	76	3,980	65	3,500	53
12	5,970	150	4,640	117	4,380	99	3,580	70	3,320	60	2,920	44

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Feed Milling

Hardness	Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	1,100 SFM		1,050 SFM		1,010 SFM		850 SFM		690 SFM		630 SFM	
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
6	18,000	314	17,000	283	16,400	261	13,800	198	11,100	143	10,100	122
8	13,500	273	12,700	257	12,300	224	10,300	167	8,360	126	7,560	107
10	10,800	245	10,200	231	9,870	199	8,280	146	6,680	109	6,050	91
12	9,020	227	8,490	214	8,220	187	6,900	135	5,570	101	5,040	76

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.





List 4513: Ball Nose, Regular Length, 2 Flute, Sphere Type

Profiling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Tool		Hardened Steels Pre-hardened Steels		Stainless Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	720 SFM		640 SFM		580 SFM		470 SFM		520 SFM		440 SFM	
Depth of Cut	$a_a=0.05D$ $a_r=0.1D$									$a_a=0.02D$ $a_r=0.1D$		
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min				Speed RPM	Feed in/min	Speed RPM
1	32,000	33.9	32,000	33.9	32,000	33.9	32,000	33.9	32,000	33.9	32,000	29.8
2	31,500	88.6	24,000	53.1	24,000	53.1	23,500	51.2	24,000	53.1	22,000	47.2
4	17,500	98.4	15,500	70.9	14,000	61.0	11,500	49.2	12,500	53.1	11,000	45.3
6	11,500	84.6	10,500	72.8	9,500	66.9	7,950	55.1	8,450	59.1	7,400	51.2
8	8,750	70.9	7,950	55.1	7,150	49.2	5,950	41.3	6,350	43.3	5,550	39.2
10	7,000	59.1	6,350	43.3	5,700	39.4	4,750	33.7	5,050	35.6	4,450	31.5

1. Use a rigid and precise machine and holder.
2. Use a suitable cutting fluid with high smoke retardant.





List 4581: 4 Flute, Ball End, Tapered

Slotting

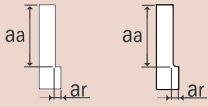
Hardness	Up to 20 HRC			20 to 30 HRC			30 to 38 HRC			38 to 45 HRC			45 to 55 HRC					
Work Material	Mild Steels Carbon Steels Cast Iron			Alloy Steels Tool Steels			Hardened Steels Pre-hardened Steels			Stainless Steels Hardened Steels			Hardened Steels					
Cutting Speed	400 SFM			330 SFM			300 SFM			240 SFM			160 SFM					
Depth of Cut																		
Mill Dia.	Speed RPM	Feed in/min	aa	Speed RPM	Feed in/min	aa	Speed RPM	Feed in/min	aa	Speed RPM	Feed in/min	aa	Speed RPM	Feed in/min	aa			
0.5	50,000	40.0	0.0004	50,000	40.0	0.0004	50,000	40.0	0.0004	46,573	37.3	0.0004	31049	12.4	0.0002			
0.6	50,000	85.0	0.0009	50,000	85.0	0.0009	48,514	82.5	0.0009	38,811	66.0	0.0009	25874	23.3	0.0005			
0.7	50,000	130.0	0.0013	45,742	118.9	0.0013	41,583	108.1	0.0013	33,267	86.5	0.0013	22178	31.0	0.0007			
0.8	48,514	169.8	0.0018	40,024	140.1	0.0018	36,386	127.3	0.0018	29,108	101.9	0.0018	19406	36.9	0.0010			
0.9	43,124	189.7	0.0022	35,577	156.5	0.0022	32,343	142.3	0.0022	25,874	113.8	0.0022	17249	41.4	0.0012			
1.0	38,811	205.7	0.0027	32,019	169.7	0.0027	29,108	154.3	0.0027	23,287	123.4	0.0027	15524	45.0	0.0015			
1.2	32,343	200.5	0.0031	26,683	165.4	0.0031	24,257	150.4	0.0031	19,406	120.3	0.0031	12937	44.0	0.0017			
1.5	25,874	183.7	0.0036	21,346	151.6	0.0036	19,406	137.8	0.0036	15,524	110.2	0.0036	10350	40.4	0.0020			
1.6	24,257	194.1	0.0040	20,012	160.1	0.0040	18,193	145.5	0.0040	14,554	116.4	0.0040	9703	42.7	0.0022			
1.8	21,562	191.9	0.0045	17,788	158.3	0.0045	16,171	143.9	0.0045	12,937	115.1	0.0045	8625	42.3	0.0025			
2.0	19,406	190.2	0.0049	16,010	156.9	0.0049	14,554	142.6	0.0049	11,643	114.1	0.0049	7762	41.9	0.0027			
2.5	15,524	166.1	0.0054	12,808	137.0	0.0054	11,643	124.6	0.0054	9,315	99.7	0.0054	6210	36.6	0.0030			
3.0	12,937	150.1	0.0058	10,673	123.8	0.0058	9,703	112.6	0.0058	7,762	90.0	0.0058	5175	33.1	0.0032			

1. To achieve flute depth, sequential use of each neck length is most effective.
2. When corner processing, reduce the feed rate by approximately half.
3. Use cutting fluid.



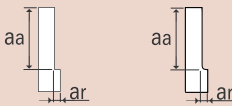
List 4541: 6 Flute, Corner Radius, Regular Length

Standard Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Tool		Hardened Steels Pre-hardened Steels		Stainless Steels Pre-hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	330 SFM		240 SFM		220 SFM		200 SFM		100 SFM		65 SFM		55 SFM	
Depth of Cut	Dia		aa		ar				Dia		aa		ar	
	D≤1.5		1.5D		0.02D				D≤1.5		1.5D		0.02D	
	1.5<D≤2.5		1.5D		0.05D				1.5<D		1.5D		0.05D	
												aa=0.05D ar=0.1D		
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	20,000	23.6	20,000	22.0	20,000	11.0	18,000	7.1	9,500	2.8	6,350	1.6	-	-
2	15,500	39.0	11,500	28.9	10,500	17.3	9,500	11.2	4,750	4.7	3,150	2.8	2,700	1.6
3	10,500	53.1	7,950	39.4	7,000	24.6	6,350	15.9	3,150	6.5	2,100	3.7	1,800	2.4
4	7,950	57.1	5,950	41.3	5,250	24.6	4,750	15.6	2,350	7.7	1,550	3.7	1,350	2.4
5	6,350	59.1	4,750	43.3	4,200	24.6	3,800	15.6	1,900	7.7	1,250	3.7	1,050	2.2
6	5,300	98.4	3,950	68.9	3,500	45.3	3,150	35.6	1,550	10.6	1,050	5.7	900	3.1
8	3,950	90.6	2,950	66.9	2,600	45.3	2,350	36.0	1,150	10.6	795	5.5	675	2.8
10	3,150	78.7	2,350	57.1	2,100	41.3	1,900	33.7	955	11.0	635	5.1	540	2.6
12	2,650	72.8	1,950	51.2	1,750	38.0	1,550	28.7	795	10.8	530	4.7	450	2.4
14	2,250	63.0	1,700	45.3	1,500	34.1	1,350	25.2	680	9.6	455	4.1	385	2.0
16	1,950	57.1	1,450	39.4	1,300	30.7	1,150	21.5	595	8.3	395	3.7	335	1.8
18	1,750	51.2	1,300	36.8	1,150	27.2	1,050	19.5	530	7.5	350	3.1	300	1.6
20	1,550	45.3	1,150	32.5	1,050	26.8	955	17.7	475	6.7	315	3.1	270	1.4
25	1,250	45.3	955	28.5	840	26.4	760	18.5	380	6.9	255	3.1	215	1.4
30	1,050	39.0	795	23.6	700	21.9	635	15.6	315	5.7	210	2.6	180	1.2

1. Use a rigid and precise machine and holder. 2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

High Feed Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC			
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Tool		Hardened Steels Pre-hardened Steels		Stainless Steels Pre-hardened Steels		Hardened Steels		Hardened Steels			
Cutting Speed	1,450 SFM		1,300 SFM		960 SFM		800 SFM		500 SFM		400 SFM			
Depth of Cut	Dia		aa		ar				Dia		aa		ar	
	D≤12		1D		0.01D				D≤12		1D		0.02D	
	12<D		1D		0.02D				12<D		1D		0.02D	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min		
3	47,500	246.1	42,000	210.6	31,500	104.3	26,500	65.0	15,500	32.7	12,500	23.2		
4	35,500	246.1	31,500	226.4	23,500	131.9	19,500	65.0	11,500	37.8	9,500	23.4		
5	28,500	263.8	25,000	236.2	19,000	141.7	15,500	65.0	9,500	39.2	7,600	23.4		
6	23,500	173.2	21,000	147.6	15,500	110.2	13,000	78.7	7,950	47.2	6,350	37.8		
8	17,500	169.3	15,500	147.6	11,500	110.2	9,900	80.7	5,950	49.2	4,750	37.6		
10	14,000	167.3	12,500	147.6	9,500	110.2	7,950	82.7	4,750	49.2	3,800	37.6		
12	11,500	155.5	10,500	137.8	7,950	102.4	6,600	76.8	3,950	45.3	3,150	34.4		
14	10,000	147.6	9,050	131.9	6,800	98.4	5,650	68.9	3,400	41.3	2,700	31.3		
16	8,950	137.8	7,950	122.0	5,950	90.6	4,950	63.0	2,950	38.2	2,350	29.1		
18	7,950	122.0	7,050	108.3	5,300	80.7	4,400	57.1	2,650	34.8	2,100	27.2		
20	7,150	110.2	6,350	98.4	4,750	72.8	3,950	53.1	2,350	30.9	1,900	24.6		
25	5,700	92.5	5,050	82.7	3,800	59.1	3,150	43.3	1,900	26.6	1,500	20.7		
30	4,750	76.8	4,200	68.9	3,150	49.2	2,650	37.0	1,550	21.7	1,250	17.1		

1. Use a rigid and precise machine and holder. 2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.



List 9010: MAX Ball, Stub Length, 2 Flute

List 9110: MAX Ball, Stub Length, 2 Flute

List 9011: MAX Ball, Long Shank, 2 Flute

List 9111: MAX Ball, Long Shank, 2 Flute

High Speed Light Milling

Hardness	Up to 45 HRC		Up to 50 HRC		Up to 55 HRC		Up to 60 HRC		Up to 65 HRC																								
Work Material	Hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels																								
Cutting Speed	1,650 SFM		1,250 SFM		900 SFM		740 SFM		410 SFM																								
Depth of Cut			<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤2</td> <td>0.6D</td> <td>0.1D</td> </tr> <tr> <td>D≤4</td> <td>0.1D</td> <td>0.15D</td> </tr> <tr> <td>D≤10</td> <td>0.2D</td> <td>0.2D</td> </tr> </tbody> </table>					aa	ar	D≤2	0.6D	0.1D	D≤4	0.1D	0.15D	D≤10	0.2D	0.2D	<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤4</td> <td>0.05D</td> <td>0.1D</td> </tr> <tr> <td>D≤10</td> <td>0.10D</td> <td>0.15D</td> </tr> </tbody> </table>					aa	ar	D≤4	0.05D	0.1D	D≤10	0.10D	0.15D	D≤10 aa=0.02D ar=0.1D	
				aa	ar																												
D≤2	0.6D	0.1D																															
D≤4	0.1D	0.15D																															
D≤10	0.2D	0.2D																															
	aa	ar																															
D≤4	0.05D	0.1D																															
D≤10	0.10D	0.15D																															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																							
1	Max.	100	Max.	85	Max.	76	Max.	60	40,000	30																							
2	Max.	175	Max.	150	Max.	130	35,000	105	20,000	63																							
3	Max.	175	Max.	150	Max.	130	25,000	105	15,000	57																							
4	40,000	175	30,000	150	22,000	130	18,000	105	10,000	53																							
6	25,000	157	20,000	133	15,000	118	12,000	94	6,600	47																							
8	20,000	138	15,000	117	11,000	104	9,000	83	5,000	41																							
10	15,000	125	12,000	106	8,750	94	7,200	75	4,000	38																							

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

High Speed Light Milling

Hardness	Up to 45 HRC		Up to 50 HRC		Up to 55 HRC		Up to 60 HRC		Up to 65 HRC																								
Work Material	Hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels																								
Cutting Speed	1,600 SFM		1,300 SFM		1,000 SFM		790 SFM		430 SFM																								
Depth of Cut			<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤1/16</td> <td>0.6D</td> <td>0.1D</td> </tr> <tr> <td>D≤1/8</td> <td>0.1D</td> <td>0.15D</td> </tr> <tr> <td>D≤3/8</td> <td>0.2D</td> <td>0.2D</td> </tr> </tbody> </table>					aa	ar	D≤1/16	0.6D	0.1D	D≤1/8	0.1D	0.15D	D≤3/8	0.2D	0.2D	<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤1/8</td> <td>0.05D</td> <td>0.1D</td> </tr> <tr> <td>D≤3/8</td> <td>0.10D</td> <td>0.15D</td> </tr> </tbody> </table>					aa	ar	D≤1/8	0.05D	0.1D	D≤3/8	0.10D	0.15D	D≤3/8 aa=0.02D ar=0.1D	
				aa	ar																												
D≤1/16	0.6D	0.1D																															
D≤1/8	0.1D	0.15D																															
D≤3/8	0.2D	0.2D																															
	aa	ar																															
D≤1/8	0.05D	0.1D																															
D≤3/8	0.10D	0.15D																															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																							
1/32	Max.	100	Max.	85	Max.	76	Max.	60	40,000	30																							
1/16	Max.	150	Max.	140	Max.	120	35,000	95	20,000	57																							
1/8	Max.	175	Max.	150	Max.	130	25,000	105	15,000	63																							
3/16	30,000	163	25,000	143	17,000	125	16,000	100	9,000	50																							
1/4	25,000	157	20,000	133	15,000	118	12,000	94	6,600	47																							
5/16	20,000	138	15,000	117	11,000	104	9,000	83	5,000	41																							
3/8	15,000	125	12,000	106	8,750	94	7,200	75	4,000	38																							

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.



List 9181: 2 Flute, Corner Radius, CBN, Stub Length

Standard Milling

Hardness			Up to 50 HRC		50 to 60 HRC		60 to 68 HRC	
Work Material	Standard Depth of Cut		Hardened Steels					
Cutting Speed			258~598 SFM		258~495 SFM		196~397 SFM	
Depth of Cut (mm)			aa=100%	ar=100%	aa=80%	ar=80%	aa=50%	ar=50%
Mill Dia.	aa	ar	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.5	0.02	0.2	50,000	39.4	50,000	39.4	38,000	0.0
1.0	0.02	0.2	50,000	59.1	48,000	57.1	38,500	45.3
1.5	0.03	0.4	38,500	61.0	32,000	51.2	25,500	39.4
2.0	0.04	0.4	29,000	47.2	24,000	39.4	19,000	27.6
3.0	0.05	0.6	19,000	30.3	16,000	25.2	12,500	19.7

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.

List 9182: 2 Flute, Corner Radius, Long Neck, CBN, Stub Length

Standard Milling

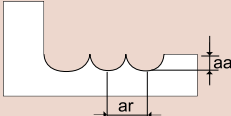
Hardness			Up to 50 HRC		50 to 60 HRC		60 to 68 HRC	
Work Material	Standard Depth of Cut		Hardened Steels					
Cutting Speed			155~361 SFM		155~309 SFM		119~240 SFM	
Depth of Cut (mm)			aa=100%	ar=100%	aa=60%	ar=60%	aa=40%	ar=40%
Mill Dia.	aa	ar	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.5	0.02	0.1	30,000	23.6	30,000	23.6	23,000	18.5
1.0	0.02	0.1	30,000	35.4	30,000	34.3	23,000	27.2
1.5	0.03	0.2	23,000	36.6	19,000	30.7	15,500	23.6
2.0	0.03	0.2	17,500	28.3	14,500	23.6	11,500	16.5
3.0	0.05	0.3	11,500	18.1	9,600	15.0	7,600	11.8

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.



List 9191: CBN, Ball End, Long Length, 2 Flute

Standard Milling

Hardness	30 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 68 HRC	
Work Material	Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut	$a_a=0.015D$ $a_r=0.04D$						$a_a=0.01D$ $a_r=0.03D$	
Mill Dia. (mm)	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.4	50,000	78.7	50,000	78.7	50,000	78.7	50,000	78.7
0.6	50,000	78.7	50,000	78.7	50,000	78.7	50,000	78.7
1.0	50,000	118.1	50,000	118.1	50,000	118.1	50,000	118.1
2.0	50,000	157.5	50,000	157.5	40,000	126.0	32,000	98.4
3.0	32,000	100.4	32,000	100.4	26,500	82.7	21,500	66.9

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.



List 9192: 2 Flute, Ball End, Super Long Neck, CBN, Stub Length

Standard Milling

Hardness	30 to 45 HRC	45 to 55 HRC	55 to 60 HRC	60 to 68 HRC				
Work Material	Hardened Steels Pre-hardened Steels	Hardened Steels						
Depth of Cut	$a_a=0.015D$ $a_r=0.04D$			$a_a=0.01D$ $a_r=0.03D$				
Mill Dia. (mm)	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.4	50,000	78.7	50,000	78.7	50,000	78.7	50,000	78.7
0.6	50,000	78.7	50,000	78.7	50,000	78.7	50,000	78.7
1.0	50,000	118.1	50,000	118.1	50,000	118.1	50,000	118.1
2.0	50,000	157.5	50,000	157.5	40,000	126.0	32,000	98.4
3.0	32,000	100.4	32,000	100.4	26,500	82.7	21,500	66.9

1. Use a rigid and precise machine and holder.
2. We suggest using air blow or MQL (mist).
3. When using low speed machines, use the maximum speed and adjust feed rate.
4. During heavy load operations such as corner processing, reduce the speed and feed.
5. The run out of the end mill should be within 10 microns (.0004") after chucking.



List 9140: MAX-HARD Regular Length - Multiple Flute

List 9144: Regular Length - Multiple Flute - Corner Radius

Side Milling

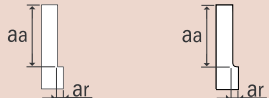
Hardness	Up to 20 HRC	20 to 30 HRC	30 to 38 HRC	38 to 45 HRC	45 to 55 HRC	55 to 60 HRC	60 to 65 HRC																							
Work Material	Mild Steels Carbon Steels Cast Iron	Alloy Steels Tool Steels	Hardened Steels Pre-hardened Steels	Stainless Steels Hardened Steels	Hardened Steels	Hardened Steels	Hardened Steels																							
Cutting Speed	480 SFM	240 SFM	215 SFM	195 SFM	100 SFM	65 SFM	55 SFM																							
Depth of Cut	<table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤3</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>D>3≤5</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>D>5</td> <td>1.5D</td> <td>0.1D</td> </tr> </tbody> </table>				Dia	aa	ar	D≤3	1.5D	0.02D	D>3≤5	1.5D	0.05D	D>5	1.5D	0.1D			<table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D≤3</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>D>3</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table>		Dia	aa	ar	D≤3	1.5D	0.02D	D>3	1.5D	0.05D	aa=1D ar=0.2D
	Dia	aa	ar																											
D≤3	1.5D	0.02D																												
D>3≤5	1.5D	0.05D																												
D>5	1.5D	0.1D																												
Dia	aa	ar																												
D≤3	1.5D	0.02D																												
D>3	1.5D	0.05D																												
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																
1	20,000	23.6	20,000	22.0	20,000	11.0	18,000	7.1	9,500	2.8	6,350	1.6	-	-																
2	15,500	39.0	11,500	28.9	10,500	17.3	9,500	11.2	4,750	4.7	3,150	2.8	2,700	1.6																
3	10,500	53.1	7,950	39.4	7,000	24.6	6,350	15.9	3,150	6.5	2,100	3.7	1,800	2.4																
4	7,950	57.1	5,950	41.3	5,250	24.6	4,750	15.6	2,350	7.7	1,550	3.7	1,350	2.4																
5	6,350	59.1	4,750	43.3	4,200	24.6	3,800	15.6	1,900	7.7	1,250	3.7	1,050	2.2																
6	5,300	98.4	3,950	68.9	3,500	45.3	3,150	35.6	1,550	10.6	1,050	5.7	900	3.1																
8	3,950	90.6	2,950	66.9	2,600	45.3	2,350	36.0	1,150	10.6	795	5.5	675	2.8																
10	3,150	78.7	2,350	57.1	2,100	41.3	1,900	33.7	955	11.0	635	5.1	540	2.6																
12	2,650	72.8	1,950	51.2	1,750	38.0	1,550	28.7	795	10.8	530	4.7	450	2.4																
14	2,250	63.0	1,700	45.3	1,500	34.1	1,350	25.2	680	9.6	455	4.1	385	2.0																
16	1,950	57.1	1,450	39.4	1,300	30.7	1,150	21.5	595	8.3	395	3.7	335	1.8																
18	1,750	51.2	1,300	36.8	1,150	27.2	1,050	19.5	530	7.5	350	3.1	300	1.6																
20	1,550	45.3	1,150	32.5	1,050	26.8	955	17.7	475	6.7	315	3.1	270	1.4																
25	1,250	45.3	955	28.5	840	26.4	760	18.5	380	6.9	255	3.1	215	1.4																
30	1,050	39.0	795	23.6	700	21.9	635	15.6	315	5.7	210	2.6	180	1.2																

1. Use a rigid and precise machine and holder.
2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

continued on next page →



High Speed Light Milling

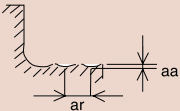
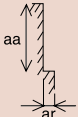
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	1,450 SFM		1,280 SFM		980 SFM		820 SFM		480 SFM		390 SFM	
Depth of Cut	$a_a=1D$ $a_r=0.01D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	47,500	246.1	42,000	210.6	31,500	104.3	26,500	65.0	15,500	32.7	12,500	23.2
4	35,500	246.1	31,500	226.4	23,500	131.9	19,500	65.0	11,500	37.8	9,500	23.4
5	28,500	263.8	25,000	236.2	19,000	141.7	15,500	65.0	9,500	39.2	7,600	23.4
6	23,500	173.2	21,000	147.6	15,500	110.2	13,000	78.7	7,950	47.2	6,350	37.8
8	17,500	169.3	15,500	147.6	11,500	110.2	9,900	80.7	5,950	49.2	4,750	37.6
10	14,000	167.3	12,500	147.6	9,500	110.2	7,950	82.7	4,750	49.2	3,800	37.6
12	11,500	155.5	10,500	137.8	7,950	102.4	6,600	76.8	3,950	45.3	3,150	34.4
14	10,000	147.6	9,050	131.9	6,800	98.4	5,650	68.9	3,400	41.3	2,700	31.3
16	8,950	137.8	7,950	122.0	5,950	90.6	4,950	63.0	2,950	38.2	2,350	29.1
18	7,950	122.0	7,050	108.3	5,300	80.7	4,400	57.1	2,650	34.8	2,100	27.2
20	7,150	110.2	6,350	98.4	4,750	72.8	3,950	53.1	2,350	30.9	1,900	24.6
25	5,700	92.5	5,050	82.7	3,800	59.1	3,150	43.3	1,900	26.6	1,500	20.7
30	4,750	76.8	4,200	68.9	3,150	49.2	2,650	37.0	1,550	21.7	1,250	17.1

1. The indicated speeds and feeds are for high speed light milling with high speed/high precision machining centers.
2. Because tools can cause sparks, do not use flammable fluids.
3. Use an air blow. When using cutting fluids, use a high quality fluid with smoke retardant.



- List 7020:** Stub Length, 2 Flute
- List 7120:** Regular Length, 2 Flute
- List 7040:** Inch, Stub Length, 4 Flute
- List 7041:** Long Length, 4 Flute
- List 7042:** Stub Length, 4 Flute, Long Shank
- List 7072:** Inch, Stub Length, 4 Flute, Long Shank, Corner Radius
- List 7010:** Long Length, 2 Flute
- List 7110:** Ball End, Regular Length, 2 Flute
- List 7030:** Ball End, Regular Length, 4 Flute
- List 7031:** Ball End, Long Length, 4 Flute
- List 7032:** Inch, Ball End, Stub Length, 4 Flute, Long Shank
- List 7173:** Metric, Ball End, Stub Length, 4 Flute, Long Shank
- List 7132:** Metric, Stub Length, 4 Flute, Long Shank, Corner Radius
- List 7140:** Metric, Stub Length, 4 Flute

Standard

Work Material	Graphite		Green Ceramic Thermoset Plastic		Fiber Filler Plastics		
Cutting Speed	160-300 SFM		80-140 SFM		130-800 SFM		
Depth of Cut	Please take light depth of cut when you run for High End Speed/Feed.						
		aa	ar				
	D < 1/8	0.02D	0.05D		Dia	aa	ar
	D > 1/8	0.1D	0.2D		D < 1/8	0.5D	0.05D
					D > 1/8	1D	0.1D
Mill Dia.	Speed RPM	Feed in/tooth	Speed RPM	Feed in/tooth	Speed RPM	Feed in/tooth	
1/32	40,000	0.0005-0.0010	20,000	0.0005-0.0010	20,000	0.0004-0.0008	
1/16	40,000	0.0010-0.0020	20,000	0.0010-0.0020	12,000	0.0010-0.0020	
3/32	40,000	0.0010-0.0020	20,000	0.0010-0.0020	11,000	0.0010-0.0020	
1/8	40,000	0.0010-0.0020	16,000	0.0010-0.0020	10,500	0.0010-0.0020	
3/16	40,000	0.0010-0.0020	15,000	0.0010-0.0020	10,000	0.0010-0.0020	
1/4	36,000	0.0020-0.0040	12,500	0.0020-0.0040	9,000	0.0015-0.0030	
5/16	32,000	0.0020-0.0040	12,000	0.0020-0.0040	8,000	0.0020-0.0040	
3/8	28,000	0.0030-0.0050	11,500	0.0030-0.0050	7,000	0.0030-0.0050	
1/2	24,000	0.0030-0.0050	11,000	0.0030-0.0050	6,000	0.0030-0.0050	

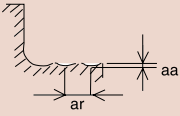
Note 1: Please reduce speed and feed by 20% when L/D > 3D.

Note 2: Please reduce speed and feed by 30% when slotting > 0.5D.

continued on next page



Standard

Work Material	Aluminum Alloys		MMC*		Copper Alloys																
Cutting Speed	160-800 SFM		100-750 SFM		328-649 SFM																
Depth of Cut	Please take light depth of cut when you run for High End Speed/Feed.																				
	<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 1/8</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>D > 1/8</td> <td>0.1D</td> <td>0.2D</td> </tr> </tbody> </table>		aa	ar	D < 1/8	0.02D	0.05D	D > 1/8	0.1D	0.2D		<table border="1"> <thead> <tr> <th>Dia</th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 1/8</td> <td>0.5D</td> <td>0.05D</td> </tr> <tr> <td>D > 1/8</td> <td>1D</td> <td>0.1D</td> </tr> </tbody> </table>	Dia	aa	ar	D < 1/8	0.5D	0.05D	D > 1/8	1D	0.1D
	aa	ar																			
D < 1/8	0.02D	0.05D																			
D > 1/8	0.1D	0.2D																			
Dia	aa	ar																			
D < 1/8	0.5D	0.05D																			
D > 1/8	1D	0.1D																			
Mill Dia.	Speed RPM	Feed in/tooth	Speed RPM	Feed in/tooth	Speed RPM	Feed in/tooth															
1/32	40,000	0.0004-0.0008	20,000	0.0004-0.0008	40,000	0.0004-0.0008															
1/16	32,000	0.0010-0.0020	20,000	0.0010-0.0020	32,000	0.0010-0.0020															
3/32	25,000	0.0010-0.0020	20,000	0.0010-0.0020	25,000	0.0010-0.0020															
1/8	24,000	0.0010-0.0020	16,000	0.0010-0.0020	10,500	0.0010-0.0020															
3/16	16,000	0.0010-0.0020	15,000	0.0010-0.0020	16,000	0.0010-0.0020															
1/4	12,000	0.0015-0.0030	12,000	0.0015-0.0030	12,000	0.0015-0.0030															
5/16	9,500	0.0020-0.0040	9,500	0.0020-0.0040	9,500	0.0020-0.0040															
3/8	8,000	0.0030-0.0050	8,000	0.0030-0.0050	8,000	0.0030-0.0050															
1/2	6,000	0.0030-0.0050	6,000	0.0030-0.0050	6,000	0.0030-0.0050															

*Metal Matrix Composite (AlSiC)



List 7230: Ball End - Long Length - 2 & 4 Flute

List 7231: Ball End - Regular Length - 2 & 4 Flute - Long Reach

Die Mold Series

Work Material	Graphite											
Cutting Speed	160-300 SFM											
Depth of Cut	Please take light depth of cut when you run for High End Speed/Feed.											
		<table border="1"> <tr> <td></td> <td>aa</td> <td>ar</td> </tr> <tr> <td>D<1/8</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>D>1/8</td> <td>0.1D</td> <td>0.2D</td> </tr> </table>		aa	ar	D<1/8	0.02D	0.05D	D>1/8	0.1D	0.2D	
	aa	ar										
D<1/8	0.02D	0.05D										
D>1/8	0.1D	0.2D										
Mill Dia.	Style	Speed RPM	Feed in/tooth									
1/64	Stub	40,000	0.0002-0.0005									
1/64	Long	20,000	0.0001-0.0003									
1/32	Stub	40,000	0.0005-0.0010									
1/32	Long	18,000	0.0003-0.0007									
1/16	Stub	40,000	0.0010-0.0020									
1/16	Long	16,000	0.0006-0.0012									
3/32	Stub	40,000	0.0010-0.0020									
3/32	Long	14,000	0.0006-0.0012									
1/8	Stub	40,000	0.0010-0.0020									
1/8	Long	13,000	0.0006-0.0012									
3/16	Stub	40,000	0.0010-0.0020									
3/16	Long	11,500	0.0006-0.0012									
1/4	Stub	36,000	0.0020-0.0040									
1/4	Long	10,000	0.0012-0.0024									

Note 1: Please reduce speed and feed by 20% when L/D>3D.

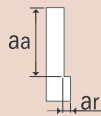
Note 2: Please reduce speed and feed by 30% when slotting > 0.5D.



List 2050: Regular Length - 4 Flute

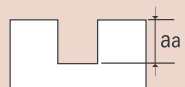
List 2052: Regular Length - 4 Flute - Corner Radius

Side Milling

Hardness	-		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		-	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Pre-hardened Steels Tool Steels		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels		Stainless Steels Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Depth of Cut	$a_a=1.5D$ $a_r=0.2D$ 						$a_a=1.5D$ $a_r=0.1D$		$a_a=1.5D$ $a_r=0.05D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	11,900	41.2	9,075	30.0	7,640	23.2	7,275	23.0	7,030	20.4	3,600	8.2
3/16	8,395	54.0	6,500	43.7	5,540	30.0	5,215	32.1	5,075	27.9	2,590	10.1
1/4	6,420	60.0	4,965	44.6	4,220	33.2	3,970	31.0	3,850	26.0	1,985	9.3
5/16	5,135	62.0	4,000	43.8	3,385	32.3	3,180	32.2	3,080	26.9	1,590	8.8
3/8	4,280	59.5	3,330	43.0	2,820	29.8	2,650	29.2	2,570	26.2	1,325	9.0
7/16	3,670	59.4	2,855	42.4	2,420	29.5	2,270	28.8	2,200	25.5	1,135	9.0
1/2	3,200	51.8	2,500	37.2	2,115	26.6	1,985	25.1	1,925	22.3	995	7.9
5/8	2,565	47.5	2,000	37.0	1,695	24.9	1,590	21.8	1,540	19.8	795	8.6
3/4	2,140	40.5	1,665	30.9	1,410	24.2	1,325	21.5	1,285	18.6	660	8.2
1	1,605	33.7	1,250	26.6	1,060	20.2	995	18.9	965	15.2	495	7.0

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

Slotting

Hardness	-		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		-	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Pre-hardened Steels Tool Steels		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels		Stainless Steels Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Depth of Cut	$a_a=1D$ 						$a_a=0.5D$		$a_a=0.2D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	9,932	26.8	8,098	25.1	7,487	20.2	7,029	17.6	6,876	17.2	2,414	5.1
3/16	6,621	31.1	5,399	31.3	4,991	22.5	4,686	22.0	4,584	21.5	1,609	6.0
1/4	4,966	28.3	4,049	23.9	3,744	21.7	3,514	21.8	3,438	21.0	1,207	5.7
5/16	3,973	24.2	3,239	22.0	2,995	21.9	2,812	20.8	2,750	20.4	966	6.3
3/8	3,311	24.5	2,699	22.9	2,496	19.7	2,343	19.2	2,292	18.6	805	5.9
7/16	2,838	22.7	2,314	24.3	2,139	18.2	2,008	17.7	1,965	17.5	690	5.8
1/2	2,483	21.1	2,025	17.8	1,872	17.6	1,757	16.7	1,719	16.5	604	5.6
5/8	1,986	22.2	1,620	17.2	1,497	14.7	1,406	14.6	1,375	14.6	483	4.4
3/4	1,655	19.9	1,350	15.4	1,248	14.4	1,171	13.7	1,146	13.4	402	4.5
1	1,242	17.8	1,012	14.7	936	12.4	879	11.2	860	9.3	302	4.2

1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.
4. When length of the tool extension from the machine is long, reduce the speed and feed.

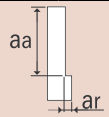
List 3815 & 3915: 4 Flute, Low Helix, Corner Chamfer

List 3820 & 3920: 4 Flute, High Helix, Corner Chamfer

List 3825: Long Neck, 4 Flute, Low Helix, Corner Chamfer

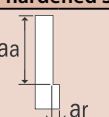
List 3830: Long Neck, 4 Flute, High Helix, Corner Chamfer

Side Milling

Hardness				Up to 30 HRC		Up to 45 HRC							
Work Material		Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels		Hardened Steel Pre-hardened Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V	
Depth of Cut		$a_a \leq 1.5D$ $a_r \leq 0.3D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	
-	6	4,770	24.0	6,370	27.9	4,770	15.7	4,240	12.9	3,710	11.4	2,650	7.0
1/4	-	4,510	26.8	6,020	34.6	4,510	18.1	4,005	15.2	3,500	13.9	2,510	8.2
5/16	-	3,610	36.1	4,825	38.4	3,610	21.4	3,210	18.6	2,810	15.1	2,010	9.3
-	8	3,580	37.0	4,770	42.9	3,580	24.0	3,180	20.1	2,790	17.7	1,990	10.6
3/8	-	3,005	37.3	4,015	43.1	3,005	24.3	2,670	20.1	2,340	17.7	1,670	10.6
-	10	2,860	37.4	3,820	43.3	2,860	24.4	2,550	20.1	2,230	17.7	1,590	10.6
-	12	2,390	33.8	3,180	38.9	2,390	22.0	2,120	18.1	1,860	16.1	1,330	9.8
1/2	-	2,250	33.5	3,010	38.6	2,250	21.8	2,005	18.0	1,750	15.9	1,260	9.7
-	14	2,045	33.2	2,730	38.3	2,045	21.6	1,820	17.9	1,560	15.7	1,140	9.6
5/8	-	1,800	32.8	2,410	38.0	1,800	21.4	1,610	17.8	1,400	15.5	1,010	9.5
-	16	1,790	32.2	2,390	37.7	1,790	21.2	1,590	17.7	1,390	15.3	990	9.4
-	18	1,590	31.4	2,130	36.9	1,590	21.0	1,420	17.3	1,240	14.9	890	9.1
3/4	-	1,500	30.9	2,010	36.1	1,500	19.8	1,340	16.9	1,170	14.5	840	8.8
-	20	1,430	30.3	1,910	35.0	1,430	19.6	1,280	16.5	1,110	14.1	800	8.6
-	25	1,145	25.6	1,530	28.8	1,145	16.8	1,020	15.3	890	13.3	640	7.7
1	-	1,127	25.2	1,505	28.2	1,127	16.3	1,000	15.0	875	12.8	630	7.4

1. Use a rigid and precise machine and holder. 2. Please adjust the speed and feed when cutting depth is large or when machines with low rigidity are used. 3. Please use a suitable fluid with high smoke retardant properties. 4. During Dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

Slotting

Hardness				Up to 30 HRC		Up to 45 HRC							
Work Material		Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels		Hardened Steel Pre-hardened Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V	
Depth of Cut		$a_a \leq 1D$ $a_r \text{ Max} = 0.472$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	
-	6	3,710	16.9	5,840	22.8	4,240	12.5	3,710	10.2	3,180	8.6	2,120	5.1
1/4	-	3,500	17.4	5,520	23.4	4,005	12.8	3,500	10.6	3,010	8.9	2,005	5.2
5/16	-	2,805	17.9	4,420	24.7	3,210	13.4	2,805	10.9	2,415	9.4	1,605	5.4
-	8	2,790	18.5	4,380	25.5	3,180	13.7	2,790	11.4	2,390	9.8	1,590	5.5
3/8	-	2,340	19.4	3,680	26.5	2,670	14.3	2,340	11.8	2,010	10.2	1,335	5.7
-	10	2,230	20.0	3,500	27.5	2,550	14.9	2,230	12.2	1,910	10.6	1,270	5.9
-	12	1,860	18.5	2,920	25.1	2,120	13.7	1,860	11.4	1,590	9.4	1,060	5.5
1/2	-	1,750	18.4	2,760	25.0	2,005	13.6	1,750	11.3	1,505	9.4	1,000	5.5
-	14	1,590	18.3	2,505	24.9	1,820	13.5	1,590	11.2	1,370	9.4	910	5.5
5/8	-	1,400	18.2	2,210	24.8	1,600	13.4	1,400	11.1	1,205	9.4	805	5.5
-	16	1,390	18.1	2,190	24.8	1,590	13.3	1,390	11.0	1,190	9.4	800	5.5
-	18	1,240	17.9	1,950	24.5	1,415	13.2	1,240	10.8	1,065	9.2	710	5.4
3/4	-	1,170	17.6	1,840	24.3	1,335	13.0	1,170	10.7	1,005	9.1	670	5.2
-	20	1,110	17.3	1,750	24.0	1,270	12.9	1,110	10.6	950	9.0	640	5.1
-	25	890	16.8	1,400	23.3	1,020	12.1	890	9.8	765	8.2	510	4.7
1	-	875	16.6	1,380	22.6	1,000	11.7	875	9.6	755	7.9	500	4.6

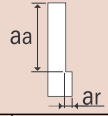
1. Use a rigid and precise machine and holder. 2. Please adjust the speed and feed when cutting depth is large or when machines with low rigidity are used. 3. Please use a suitable fluid with high smoke retardant properties. 4. During Dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.



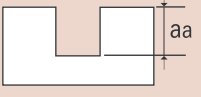


List 2015: Regular Length, 4 Flute, Roughing

Side Milling

Hardness	35 to 45 HRC		45 to 55 HRC		Less than 40 HRC		More than 40 HRC		-	
Work Material	Stainless Steel		Stainless Steel		Titanium		Titanium		Inconel, Waspaloy, Hastelloy	
Cutting Speed	450 to 490 SFM		310 to 350 SFM		210 to 240 SFM		150 to 165 SFM		80 to 90 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.4D$ 		$a_a=1.5D$ $a_r=0.33D$				$a_a=1.5D$ $a_r=0.25D$		$a_a=1.0D$ $a_r=0.20D$	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	7,181	28.7	5,040	16.1	3,440	22.0	2,408	12.5	1,300	3.1
3/8	4,788	30.6	3,360	17.5	2,294	19.3	1,605	11.6	867	3.5
1/2	3,590	30.2	2,520	16.1	1,720	17.8	1,204	11.1	650	3.1
5/8	2,873	29.9	2,016	16.9	1,376	19.8	963	11.9	520	3.3
3/4	2,394	32.6	1,680	17.5	1,147	18.4	802	12.5	433	3.5
1	1,795	25.8	1,260	14.6	860	14.8	602	9.6	325	2.9

Slotting

Hardness	35 to 45 HRC		45 to 55 HRC		Less than 40 HRC		More than 40 HRC		-	
Work Material	Stainless Steel		Stainless Steel		Titanium		Titanium		Inconel, Waspaloy, Hastelloy	
Cutting Speed	450 to 490 SFM		310 to 350 SFM		210 to 240 SFM		150 to 165 SFM		80 to 90 SFM	
Depth of Cut	$a_a=0.5D$ 				$a_a=0.3D$		$a_a=0.25D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	7,181	23.0	5,040	12.9	3,440	17.6	2,408	10.0	1,300	2.5
3/8	4,788	24.5	3,360	14.0	2,294	15.4	1,605	9.3	867	2.8
1/2	3,590	24.2	2,520	12.9	1,720	14.3	1,204	8.9	650	2.5
5/8	2,873	23.9	2,016	13.5	1,376	15.9	963	9.5	520	2.7
3/4	2,394	26.0	1,680	14.0	1,147	14.7	802	10.0	433	2.8
1	1,795	20.7	1,260	11.7	860	11.8	602	7.7	325	2.5



EXOCARB® AERO UVX-Ti

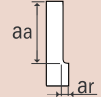
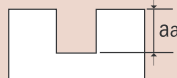
Variable Lead End Mill for Titanium Alloy

List 2100: 5 Flute, Square End

List 2106: 5 Flute, Corner Radius

List 2102: 5 Flute, Regular Length, Reduced Neck, Square End

List 2108: 5 Flute, Regular Length, Reduced Neck, Corner Radius

	Side Milling		Slotting	
Cutting Speed	200-265 SFM		100-165 SFM	
Depth of Cut	$a_a \leq 1.8D$ $a_r = 0.2D$ 		$a_a \leq 1D$ 	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/2	1,800	31.9	1,270	12.6
5/8	1,410	25.0	1,000	9.9
3/4	1,050	22.5	840	9.9
1	890	19.5	630	7.4

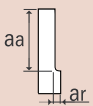

1. Use a rigid and precise machine and holder.
2. The above cutting conditions are to be used as general guidelines. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
3. Water soluble coolant is highly recommended.





List 2104: 5 Flute, Regular Length, Reduced Neck, Square End

List 2110: 5 Flute, Regular Length, Reduced Neck, Corner Radius

	Side Milling		Slotting	
Cutting Speed	200-265 SFM		100-165 SFM	
Depth of Cut	$a_a \leq 1.8D$ $a_r = 0.2D$ 		$a_a \leq 1D$ 	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
12	1,900	33.7	1,350	13.4
16	1,400	24.8	990	9.8
20	1,100	23.6	800	9.4
25	900	19.7	640	7.6

1. Use a rigid and precise machine and holder.
2. The above cutting conditions are to be used as general guidelines. Please adjust the speed, feed and cutting depth according to actual cutting conditions.
3. Water soluble coolant is highly recommended.



EXOCARB® AERO HFC-Ti

High Feed Radius End Mill for Titanium Alloy

List 2080: 6 & 8 Flute, Inch

List 2081: 6 & 8 Flute, Metric

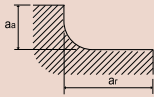
Contour Milling

Work Material		Titanium Alloy Ti-6AL-4V					
Cutting Speed		165 - 330 SFM					
Depth of Cut		$aa \leq 0.035D$ $ar \leq 0.39D$					
Mill Dia.		Speed RPM	Feed in/min	Ramping Angle	R (rt)	Z	
in	mm						
5/8	-	1,500	164	2°	0.031	0.016	
-	16	1,490	175		0.033	0.018	
3/4	-	1,250	132		0.037	0.021	
-	20	1,190	140		0.039	0.022	
-	25	850	189		0.047	0.029	
1	-	935	192		0.049	0.030	

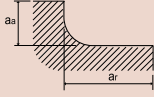
1. During machining, please program the milling paths according to the recommended simulated R (rt) respective to the individual end mill diameter.
2. Using water soluble coolant is highly recommended.



List 2863: 2 Flute, Stub Length, Corner Radius

Work Material	Aluminum Alloy					
Cutting Speed	3,280 SFM - 9,840 SFM					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>0.6D</td> <td>1D</td> </tr> </table> 	a_a	a_r	0.6D	1D	
a_a	a_r					
0.6D	1D					
Mill Dia.	Speed RPM	Feed in/min				
1/2	≤33000	≤360 IPM				
5/8	≤33000	≤470 IPM				
3/4	≤33000	≤590 IPM				
1	≤33000	≤590 IPM				

List 2963: 2 Flute, Stub Length, Corner Radius

Work Material	Aluminum Alloy					
Cutting Speed	3,280 SFM - 9,840 SFM					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>0.6D</td> <td>1D</td> </tr> </table> 	a_a	a_r	0.6D	1D	
a_a	a_r					
0.6D	1D					
Mill Dia.	Speed RPM	Feed in/min				
12	≤33000	≤360 IPM				
16	≤33000	≤470 IPM				
20	≤33000	≤590 IPM				
25	≤33000	≤590 IPM				



List 2873: 3 Flute, Stub Length

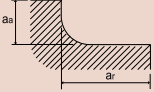
Work Material	Aluminum Alloy					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table>	a_a	a_r	0.4D	1D	
a_a	a_r					
0.4D	1D					
Mill Dia.	Speed RPM	Feed in/min				
5/8	≤33000	≤790 IPM				
3/4	≤33000	≤1010 IPM				
1	≤33000	≤1280 IPM				

List 2973: 3 Flute, Stub Length

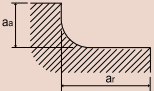
Work Material	Aluminum Alloy					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table>	a_a	a_r	0.4D	1D	
a_a	a_r					
0.4D	1D					
Mill Dia.	Speed RPM	Feed in/min				
20	≤33000	≤1010 IPM				
25	≤33000	≤1280 IPM				



List 2874: 3 Flute, Stub Length, Coolant-Through

Work Material	Aluminum Alloy					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table>	a_a	a_r	0.4D	1D	
a_a	a_r					
0.4D	1D					
Mill Dia.	Speed RPM	Feed in/min				
3/4	≤33000	≤1010 IPM				
1	≤33000	≤1280 IPM				

List 2974: 3 Flute, Stub Length, Coolant-Through

Work Material	Aluminum Alloy					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>0.4D</td> <td>1D</td> </tr> </table>	a_a	a_r	0.4D	1D	
a_a	a_r					
0.4D	1D					
Mill Dia.	Speed RPM	Feed in/min				
20	≤33000	≤1010 IPM				
25	≤33000	≤1280 IPM				



List 2843: 3 Flute, Long Length

Work Material	Aluminum Alloy																
Cutting Speed	3,280 SFM - 9,840 SFM																
Depth of Cut	<table border="1"> <thead> <tr> <th>Dia.</th> <th>a_a (in)</th> <th>a_r (in)</th> </tr> </thead> <tbody> <tr> <td>1/2</td> <td>≤1.77</td> <td>≤0.005</td> </tr> <tr> <td>5/8</td> <td>≤1.77</td> <td>≤0.007</td> </tr> <tr> <td>3/4</td> <td>≤1.77</td> <td>≤0.011</td> </tr> <tr> <td>1</td> <td>≤1.77</td> <td>≤0.011</td> </tr> </tbody> </table>	Dia.	a _a (in)	a _r (in)	1/2	≤1.77	≤0.005	5/8	≤1.77	≤0.007	3/4	≤1.77	≤0.011	1	≤1.77	≤0.011	
	Dia.	a _a (in)	a _r (in)														
	1/2	≤1.77	≤0.005														
	5/8	≤1.77	≤0.007														
	3/4	≤1.77	≤0.011														
1	≤1.77	≤0.011															
Mill Dia.	Speed RPM	Feed in/min															
1/2	≤14000	≤157 IPM															
5/8	≤14000	≤197 IPM															
3/4	≤14000	≤236 IPM															
1	≤14000	≤236 IPM															

List 2943: 3 Flute, Long Length

Work Material	Aluminum Alloy																
Cutting Speed	3,280 SFM - 9,840 SFM																
Depth of Cut	<table border="1"> <thead> <tr> <th>Dia.</th> <th>a_a (in)</th> <th>a_r (in)</th> </tr> </thead> <tbody> <tr> <td>12</td> <td>≤1.77</td> <td>≤0.005</td> </tr> <tr> <td>16</td> <td>≤1.77</td> <td>≤0.007</td> </tr> <tr> <td>20</td> <td>≤1.77</td> <td>≤0.011</td> </tr> <tr> <td>25</td> <td>≤1.77</td> <td>≤0.011</td> </tr> </tbody> </table>	Dia.	a _a (in)	a _r (in)	12	≤1.77	≤0.005	16	≤1.77	≤0.007	20	≤1.77	≤0.011	25	≤1.77	≤0.011	
	Dia.	a _a (in)	a _r (in)														
	12	≤1.77	≤0.005														
	16	≤1.77	≤0.007														
	20	≤1.77	≤0.011														
25	≤1.77	≤0.011															
Mill Dia.	Speed RPM	Feed in/min															
12	≤14000	≤157 IPM															
16	≤14000	≤197 IPM															
20	≤14000	≤236 IPM															
25	≤14000	≤236 IPM															





List 2853: 3 Flute, Extra Long Length

Work Material	Aluminum Alloy					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>≤95mm</td> <td>≤0.2mm</td> </tr> </table>	a_a	a_r	≤95mm	≤0.2mm	
a_a	a_r					
≤95mm	≤0.2mm					
Mill Dia.	Speed RPM	Feed in/min				
3/4	≤14000	≤236 IPM				

List 2953: 3 Flute, Extra Long Length

Work Material	Aluminum Alloy					
Depth of Cut	<table border="1"> <tr> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>≤95mm</td> <td>≤0.2mm</td> </tr> </table>	a_a	a_r	≤95mm	≤0.2mm	
a_a	a_r					
≤95mm	≤0.2mm					
Mill Dia.	Speed RPM	Feed in/min				
20	≤14000	≤236 IPM				



List 2021: Stub Length - 2 Flute - Square & Corner Radius

Slotting

Work Material	Aluminum Alloys A6061, A7075		Aluminum Alloy Casting Si<13%	
Cutting Speed	1,190 SFM		1,080 SFM	
Depth of Cut	Up to 1D Depth of Cut			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	36,600	145	33,000	130
3/16	24,400	195	22,000	175
1/4	18,300	200	16,500	180
3/8	12,200	195	11,000	175
7/16	10,400	210	9,350	190
1/2	9,100	225	8,200	200
5/8	7,300	205	6,600	185
3/4	6,100	195	5,500	175
1	4,500	180	4,050	160

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.

List 2022: Regular Length - 2 Flute - Square & Corner Radius

List 2023: Regular Length - 2 Flute - Reduced Neck

List 2024: Long Length - 2 Flute - Reduced Neck

Slotting

Work Material	Aluminum Alloys A6061, A7075		Aluminum Alloy Casting Si<13%	
Cutting Speed	990 SFM		890 SFM	
Depth of Cut	Up to 0.6D Depth of Cut			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	30,500	120	27,500	110
3/16	20,300	160	18,300	145
1/4	15,200	170	13,700	150
3/8	10,100	160	9,100	145
7/16	8,700	175	7,800	160
1/2	7,600	190	6,800	170
5/8	6,100	170	5,500	150
3/4	5,100	160	4,600	145
1	3,800	150	3,400	135

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.





List 2041: Stub Length - 3 Flute - Square & Corner Radius

Slotting

Work Material	Aluminum Alloys A6061, A7075		
Depth of Cut	Up to 0.5 x D Depth of Cut		
Mill Dia. (inch)	Speed RPM	IPT	Feed in/min
1/8	36,600	0.0014	153.7
3/16	24,400	0.0028	205.0
1/4	18,300	0.0039	211.4
3/8	12,200	0.0056	205.0
7/16	10,400	0.0070	218.4
1/2	9,100	0.0088	238.9
5/8	7,300	0.0098	214.6
3/4	6,100	0.0112	205.0
1	4,500	0.0140	189.0





List 2042: Regular Length - 3 Flute - Square & Corner Radius

List 2043: Regular Length - 3 Flute - Reduced Neck - Square & Corner Radius

List 2048: Regular Length - 3 Flute - Reduced Neck - Square & Corner Radius

Slotting

Work Material	Aluminum Alloys A6061, A7075		
Depth of Cut	Up to 0.5 x D Depth of Cut		
Mill Dia.	Speed RPM	IPT	Feed in/min
1/8	30,500	0.0014	128.1
3/16	20,300	0.0028	170.5
1/4	15,200	0.0039	175.6
3/8	10,100	0.0056	169.7
7/16	8,700	0.0070	182.7
1/2	7,600	0.0088	199.5
5/8	6,100	0.0098	179.3
3/4	5,100	0.0112	171.4
1	3,800	0.0140	159.6





List 2010: Ball End, Regular Length, 2 Flute

Slotting

Work Material	Aluminum Alloy A6061, A7075		Aluminum Alloy Casting	
Cutting Speed	990 SFM		900 SFM	
Depth of Cut	Up to 0.6D Depth of Cut			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	30,254	168.3	27,504	143.7
3/16	20,170	171.9	18,336	147.4
1/4	15,127	174.3	13,752	151.0
5/16	12,102	178.2	11,002	154.1
3/8	10,085	181.9	9,168	157.5
7/16	8,644	185.0	7,858	160.5
1/2	7,564	188.1	6,876	164.6
5/8	6,051	180.4	5,501	156.0
3/4	5,042	177.3	4,584	153.2
1	3,782	173.2	3,438	149.9

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.

Profiling

Work Material	Aluminum Alloy A6061, A7075		Aluminum Alloy Casting	
Cutting Speed	1190 SFM		1100 SFM	
Depth of Cut	Aa = 0.1D Ar = 0.2D			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	36,366	202.3	33,616	175.6
3/16	24,244	206.7	22,411	180.1
1/4	18,183	209.5	16,808	184.6
5/16	14,547	214.2	13,446	188.4
3/8	12,122	218.6	11,205	192.5
7/16	10,390	222.4	9,605	196.2
1/2	9,092	226.1	8,404	201.1
5/8	7,273	216.9	6,723	190.7
3/4	6,061	213.1	5,603	187.2
1	4,546	208.2	4,202	183.2

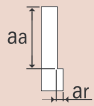
1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.





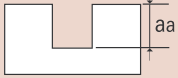
List 8120: Regular Length - 2 Flute

Side Milling

Work Material	Aluminum Alloys		Copper Alloys	
Cutting Speed	650 SFM		245 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$			
Mill Dia.				
1	32,000	8.7	23,500	8.7
2	32,000	16.5	11,500	8.5
3	21,000	27.6	7,950	9.8
4	15,500	28.5	5,950	11.0
5	12,500	29.9	4,750	11.6
6	10,500	32.7	3,950	12.2
8	7,950	35.0	2,950	13.8
10	6,350	39.2	2,350	14.4
12	5,300	41.3	1,950	15.4
14	4,500	41.3	1,700	15.6
16	3,950	41.3	1,450	15.4
18	3,500	41.3	1,300	15.4
20	3,150	41.3	1,150	15.2

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.

Slotting

Work Material	Aluminum Alloys		Copper Alloys	
Cutting Speed	490 SFM		245 SFM	
Depth of Cut	$a_a=1D$			
Mill Dia.				
1	32,000	8.7	23,500	8.7
2	23,500	12.2	11,500	8.5
3	15,500	20.3	7,950	9.8
4	11,500	21.3	5,950	11.0
5	9,500	22.6	4,750	11.6
6	7,950	24.8	3,950	12.2
8	5,950	26.2	2,950	13.8
10	4,750	29.3	2,350	14.4
12	3,950	31.1	1,950	15.4
14	3,400	31.3	1,700	15.6
16	2,950	31.3	1,450	15.4
18	2,650	31.3	1,300	15.4
20	2,350	30.9	1,150	15.2

1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.






List 2061: BNC, Nick Router

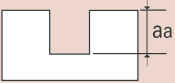
List 2066: HBC, Compression Router, 30° Helix

List 2064: HBC 45, Compression Router, 45° Helix

Side Milling

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	400-800 SFM	
Depth of Cut	aa: Up to 1.5D ar: Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR
1/8	12,000 - 24,000	0.0011 - 0.0022
3/16	8,000 - 16,000	0.0021 - 0.0042
1/4	6,000 - 12,000	0.0033 - 0.0067
5/16	5,000 - 10,000	0.0047 - 0.0093
3/8	4,000 - 8,000	0.0067 - 0.0133
1/2	3,000 - 6,000	0.0111 - 0.0222

Slotting

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	300-600 SFM	
Depth of Cut	aa: Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR
1/8	10,000 - 18,000	0.0016 - 0.0020
3/16	6,700 - 12,000	0.0020 - 0.0024
1/4	5,000 - 9,000	0.004 - 0.005
5/16	4,000 - 7,200	0.006 - 0.008
3/8	3,300 - 6,000	0.009 - 0.012
1/2	2,500 - 4,500	0.012 - 0.020

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.

Feed Reduction

Material Thickness	Feed Reduction
≤0.25Dc	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%

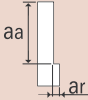
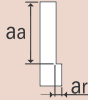






List 2068: HBC 60, Compression Router, 60° Helix

List 668: HBC 60, Compression Router, 60° Helix, Bright

Side Milling

Work Material	Carbon & Glass Fiber Reinforced Plastics		Honeycomb Structures & Aramid Fiber Reinforced Plastics	
Cutting Speed	400-800 SFM		1000-2600 SFM	
Depth of Cut	a_a : Up to 1.5D a_r : Up to 1D 		a_a : Up to 1.5D a_r : Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR	Speed RPM	Feed IPR
1/4	6,000 - 12,000	0.0033 - 0.0067	15,000 - 40,000	0.0003 - 0.0007
3/8	4,000 - 8,000	0.0067 - 0.0133	10,000 - 25,000	0.0006 - 0.0009
1/2	3,000 - 6,000	0.0111 - 0.0222	8,000 - 20,000	0.0011 - 0.0014

Slotting

Work Material	Carbon & Glass Fiber Reinforced Plastics		Honeycomb Structures & Aramid Fiber Reinforced Plastics	
Cutting Speed	300-600 SFM		750-1900 SFM	
Depth of Cut	a_a : Up to 1D 		a_a : Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR	Speed RPM	Feed IPR
1/4	5,000 - 9,000	0.0021 - 0.0043	12,000 - 30,000	0.0002 - 0.0005
3/8	3,000 - 6,000	0.0044 - 0.0089	8,000 - 20,000	0.0007 - 0.0011
1/2	2,000 - 5,000	0.0071 - 0.0143	6,000 - 15,000	0.0013 - 0.0017

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.
6. Kevlar laminate machinability can vary greatly by fiber and resin. If hole quality is not achieved with the feed rates provided above, reducing the feed rates may produce better quality surfaces.

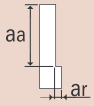
Feed Reduction

Material Thickness	Feed Reduction
≤0.25Dc	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%




List 2680: REC, Rougher Router

Side Milling

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	400-800 SFM	
Depth of Cut	a_a : Up to 1.5D a_r : Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR
1/4	6,000 - 12,000	0.0067 - 0.0200
3/8	4,000 - 8,000	0.0200 - 0.0400
1/2	3,000 - 6,000	0.0333 - 0.0667

Slotting

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	300-600 SFM	
Depth of Cut	a_a : Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR
1/4	5,000 - 9,000	0.0064 - 0.0129
3/8	3,000 - 6,000	0.0133 - 0.0267
1/2	2,000 - 5,000	0.0214 - 0.0429

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.

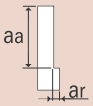
Feed Reduction

Material Thickness	Feed Reduction
$\leq 0.25D_c$	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%



List 2650: MFR, Finishing Router

Side Milling

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	400-800 SFM	
Depth of Cut	a_a : Up to 1.0D $a_r \leq 0.2D$ 	
Drill Diameter (Inch)	Speed RPM	Feed IPR
1/4	5,000 - 9,000	0.009 - 0.016
3/8	3,300 - 6,000	0.019 - 0.047
1/2	2,500 - 4,000	0.028 - 0.055

1. The conditions listed above are based on approximately 1xDc thickness of part with rigid work holding.
2. Conventional cut is recommended at part side for good surface finish.
3. Milling speed can be increased by 20-50% with the use of appropriate cutting oil.
4. Please provide appropriate measures against dust (Such as vacuum dust collection).
5. Depending on the workpiece thickness and form as well as work holding, vibration may occur. When it occurs, please adjust RPM and feed rate.

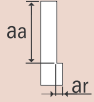
Feed Reduction

Material Thickness	Feed Reduction
$\leq 0.25D_c$	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%

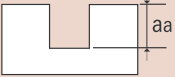


List 641R: HFR, Hand Router

Side Milling

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	400-800 SFM	
Depth of Cut	a_a : Up to 1.5D a_r : Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR
3/16	8,000 - 18,000	0.0015 - 0.0027
1/4	6,000 - 12,000	0.0033 - 0.0067
3/8	4,000 - 8,000	0.0067 - 0.0117
1/2	3,000 - 6,000	0.0111 - 0.0222

Slotting

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	300-600 SFM	
Depth of Cut	a_a : Up to 1D 	
Drill Diameter (Inch)	Speed RPM	Feed IPR
3/16	7,000 - 13,000	0.0010 - 0.0020
1/4	5,000 - 9,000	0.0021 - 0.0043
3/8	3,000 - 6,000	0.0044 - 0.0078
1/2	2,000 - 5,000	0.0071 - 0.0143

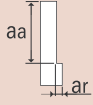


List VG441: 4 Flute


List VG434: 4 Flute - Corner Radius

List VG436: 4 Flute - Corner Chamfer

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	400-600 SFM		300-500 SFM		200-350 SFM		150-250 SFM		250-400 SFM		150-250 SFM		100-200 SFM	
Depth of Cut	Aa=1.5D Ar=0.5D				Aa=1.5D Ar=0.5D		Aa=1.5D Ar=0.5D		Aa=1.5D Ar=0.5D		Aa=1.5D Ar=0.5D		Aa=1.25D Ar=0.3D	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	13,750	44.0	10,695	25.7	8,400	18.6	6,875	15.2	6,110	14.5	6,110	12.9	3,665	9.5
3/16	9,170	46.8	7,130	28.8	5,600	20.6	4,585	16.9	4,075	16.3	4,075	13.7	2,445	10.9
1/4	6,875	46.8	5,350	31.1	4,200	20.3	3,440	16.7	3,050	16.8	3,050	13.9	1,835	11.2
5/16	5,500	48.1	4,210	31.8	3,350	21.4	2,750	17.6	2,450	17.8	2,450	15.1	1,465	11.7
3/8	4,585	47.1	3,565	30.5	2,800	20.6	2,290	16.9	2,040	16.3	2,040	14.6	1,220	11.1
7/16	3,930	45.4	3,055	30.2	2,400	20.1	1,965	16.5	1,750	16.3	1,750	14.0	1,050	11.1
1/2	3,440	45.4	2,675	29.2	2,100	19.5	1,720	15.9	1,525	15.7	1,525	13.9	915	10.8
5/8	2,750	40.6	2,140	27.7	1,700	19.0	1,375	15.4	1,225	14.7	1,225	12.5	730	9.9
3/4	2,290	37.3	1,785	25.3	1,400	16.8	1,150	13.8	1,025	13.5	1,025	11.8	610	9.3
1	1,720	33.0	1,340	22.8	1,050	14.9	860	12.2	765	12.2	765	10.6	460	8.4

Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	325-400 SFM		250-400 SFM		175-275 SFM		125-200 SFM		200-325 SFM		125-200 SFM		75-150 SFM	
Depth of Cut	Aa=1D				Aa=0.75D		Aa=0.75D		Aa=0.75D		Aa=0.75D		Aa=0.25D	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	11,240	35.8	8,860	21.3	6,900	15.4	5,500	10.7	4,890	11.6	5,050	10.6	2,750	7.3
3/16	7,495	38.5	5,910	23.9	4,600	17.5	3,670	11.5	3,260	12.8	3,350	11.5	1,835	8.1
1/4	5,620	37.9	4,430	25.5	3,450	17.2	2,750	12.2	2,445	14.0	2,550	11.8	1,375	8.1
5/16	4,500	39.4	3,545	26.8	2,750	18.3	2,200	12.9	1,955	14.2	2,000	11.8	1,100	9.0
3/8	3,750	38.2	2,955	25.5	2,300	17.5	1,835	12.2	1,630	12.8	1,700	11.6	915	8.3
7/16	3,210	37.1	2,530	24.7	1,950	16.7	1,575	11.8	1,395	12.8	1,450	11.8	785	8.3
1/2	2,810	37.2	2,215	24.2	1,700	16.1	1,375	11.5	1,225	12.8	1,300	12.1	690	8.1
5/8	2,250	33.1	1,775	22.5	1,400	15.9	1,100	11.0	975	11.6	1,000	10.0	550	7.6
3/4	1,875	31.1	1,480	20.9	1,150	14.4	920	10.0	815	10.5	850	9.4	460	6.9
1	1,405	26.7	1,110	18.7	875	12.6	685	8.6	610	9.8	650	9.0	345	6.5

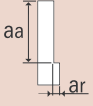





List VG446: 4 Flute - Reduced Neck

List VG464: 4 Flute - Extended Length

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	400-500 SFM		300-400 SFM		200-350 SFM		200-250 SFM		175-225 SFM		150-250 SFM		100-135 SFM	
Depth of Cut	Aa=1D Ar=0.4D						Aa=0.75D Ar=0.35D		Aa=0.75D Ar=0.15D		Aa=0.75D Ar=0.35D		Aa=0.75D Ar=0.15D	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min			Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	6,875	46.8	5,350	31.1	4,200	20.3	3,440	16.7	3,050	16.8	3,050	13.9	1,835	11.2
3/8	4,585	47.1	3,565	30.5	2,800	20.6	2,290	16.9	2,040	16.3	2,040	14.6	1,220	11.1
1/2	3,440	45.4	2,675	29.2	2,100	19.5	1,720	15.9	1,525	15.7	1,525	13.9	915	10.8
5/8	2,750	40.6	2,140	27.7	1,700	19.0	1,375	15.4	1,225	14.7	1,225	12.5	730	9.9
3/4	2,290	37.3	1,785	25.3	1,400	16.8	1,150	13.8	1,025	13.5	1,025	11.8	610	9.3
1	1,720	33.0	1,340	22.8	1,050	14.9	860	12.2	765	12.2	765	10.6	460	8.4

Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	325-400 SFM		250-325 SFM		175-275 SFM		160-200 SFM		140-180 SFM		125-200 SFM		75-100 SFM	
Depth of Cut	Aa=0.6D						Aa=0.4D		Aa=0.25D		Aa=0.4D		Aa=0.15D	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min			Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	5,620	37.9	4,430	25.5	3,450	17.2	2,750	12.2	2,445	14.0	2,550	11.8	1,375	8.1
3/8	3,750	38.2	2,955	25.5	2,300	17.5	1,835	12.2	1,630	12.8	1,700	11.6	915	8.3
1/2	2,810	37.2	2,215	24.2	1,700	16.1	1,375	11.5	1,225	12.8	1,300	12.1	690	8.1
5/8	2,250	33.1	1,775	22.5	1,400	15.9	1,100	11.0	975	11.6	1,000	10.0	550	7.6
3/4	1,875	31.1	1,480	20.9	1,150	14.4	920	10.0	815	10.5	850	9.4	460	6.9
1	1,405	26.7	1,110	18.7	875	12.6	685	8.6	610	9.8	650	9.0	345	6.5





List VG441BN: 4 Flute - Ball Nose

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	400-500 SFM		300-400 SFM		200-350 SFM		200-250 SFM		175-225 SFM		150-250 SFM		100-135 SFM	
Depth of Cut	Aa=1.5D Ar=0.5D				Aa=1.25D Ar=0.4D		Aa=1.25D Ar=0.2D		Aa=1.25D Ar=0.4D		Aa=1D Ar=0.2D			
Mill Dia.	Speed RPM	Feed in/min			Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	13,750	44.0	10,695	25.7	8,400	18.6	6,875	15.2	6,110	14.5	6,110	12.9	3,665	9.5
3/16	9,170	46.8	7,130	28.8	5,600	20.6	4,585	16.9	4,075	16.3	4,075	13.7	2,445	10.9
1/4	6,875	46.8	5,350	31.1	4,200	20.3	3,440	16.7	3,050	16.8	3,050	13.9	1,835	11.2
5/16	5,500	48.1	4,210	31.8	3,350	21.4	2,750	17.6	2,450	17.8	2,450	15.1	1,465	11.7
3/8	4,585	47.1	3,565	30.5	2,800	20.6	2,290	16.9	2,040	16.3	2,040	14.6	1,220	11.1
7/16	3,930	45.4	3,055	30.2	2,400	20.1	1,965	16.5	1,750	16.3	1,750	14.0	1,050	11.1
1/2	3,440	45.4	2,675	29.2	2,100	19.5	1,720	15.9	1,525	15.7	1,525	13.9	915	10.8
5/8	2,750	40.6	2,140	27.7	1,700	19.0	1,375	15.4	1,225	14.7	1,225	12.5	730	9.9
3/4	2,290	37.3	1,785	25.3	1,400	16.8	1,150	13.8	1,025	13.5	1,025	11.8	610	9.3
1	1,720	33.0	1,340	22.8	1,050	14.9	860	12.2	765	12.2	765	10.6	460	8.4
1 1/4	1,375	26.4	1,070	18.2	850	12.1	690	9.8	610	9.7	610	8.3	365	6.7

Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	325-400 SFM		250-325 SFM		175-275 SFM		160-200 SFM		140-180 SFM		125-200 SFM		75-100 SFM	
Depth of Cut	Aa=1D				Aa=0.75D		Aa=0.5D		Aa=0.5D		Aa=0.5D		Aa=0.2D	
Mill Dia.	Speed RPM	Feed in/min			Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	11,240	35.8	8,860	21.3	6,900	15.4	5,500	10.7	4,890	11.6	5,050	10.6	2,750	7.3
3/16	7,495	38.5	5,910	23.9	4,600	17.5	3,670	11.5	3,260	12.8	3,350	11.5	1,835	8.1
1/4	5,620	37.9	4,430	25.5	3,450	17.2	2,750	12.2	2,445	14.0	2,550	11.8	1,375	8.1
5/16	4,500	39.4	3,545	26.8	2,750	18.3	2,200	12.9	1,955	14.2	2,000	11.8	1,100	9.0
3/8	3,750	38.2	2,955	25.5	2,300	17.5	1,835	12.2	1,630	12.8	1,700	11.6	915	8.3
7/16	3,210	37.1	2,530	24.7	1,950	16.7	1,575	11.8	1,395	12.8	1,450	11.8	785	8.3
1/2	2,810	37.2	2,215	24.2	1,700	16.1	1,375	11.5	1,225	12.8	1,300	12.1	690	8.1
5/8	2,250	33.1	1,775	22.5	1,400	15.9	1,100	11.0	975	11.6	1,000	10.0	550	7.6
3/4	1,875	31.1	1,480	20.9	1,150	14.4	920	10.0	815	10.5	850	9.4	460	6.9
1	1,405	26.7	1,110	18.7	875	12.6	685	8.6	610	9.8	650	9.0	345	6.5
1 1/4	1,115	21.2	885	14.9	700	10.1	550	6.9	490	7.8	500	6.9	275	5.1

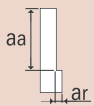




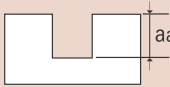
List VG541: 5 Flute

List VG534: 5 Flute - Corner Radius

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	400-600 SFM		300-500 SFM		200-350 SFM		150-250 SFM		250-400 SFM		150-250 SFM		100-200 SFM	
Depth of Cut	Aa=1.25D Ar=0.5D						Aa=1.25D Ar=0.5D		Aa=1.25D Ar=0.5D		Aa=1.25D Ar=0.5D		Aa=1D Ar=0.3D	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	13,750	55.0	10,695	32.2	8,400	23.2	6,875	19.0	6,110	18.2	6,110	16.1	3,665	11.8
3/16	9,170	58.5	7,130	36.1	5,600	25.8	4,585	21.1	4,075	20.4	4,075	17.2	2,445	13.6
1/4	6,875	58.4	5,350	38.9	4,200	25.4	3,440	20.8	3,050	21.1	3,050	17.4	1,835	14.1
5/16	5,500	60.2	4,210	39.7	3,350	26.8	2,750	22.0	2,450	22.2	2,450	18.9	1,465	14.7
3/8	4,585	58.8	3,565	38.1	2,800	25.8	2,290	21.1	2,040	20.4	2,040	18.3	1,220	13.9
7/16	3,930	56.8	3,055	37.8	2,400	25.1	1,965	20.6	1,750	20.4	1,750	17.5	1,050	13.8
1/2	3,440	56.8	2,675	36.5	2,100	24.3	1,720	19.9	1,525	19.6	1,525	17.4	915	13.4
5/8	2,750	50.7	2,140	34.6	1,700	23.8	1,375	19.3	1,225	18.4	1,225	15.6	730	12.4
3/4	2,290	46.7	1,785	31.6	1,400	21.0	1,150	17.3	1,025	16.8	1,025	14.8	610	11.6
1	1,720	41.3	1,340	28.5	1,050	18.7	860	15.3	765	15.3	765	13.2	460	10.5

Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		< 40 HRC		< 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		400 Stainless Steels Alloy Steels Tool Steels		300 Stainless Steels Hardened Steels Pre-hardened Steels		PH Stainless Steels Hardened Steels		Hardened Steels		Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
Cutting Speed	325-475 SFM		250-400 SFM		175-275 SFM		125-200 SFM		200-325 SFM		125-200 SFM		75-150 SFM	
Depth of Cut	Aa=1D						Aa=0.75D		Aa=0.75D		Aa=0.75D		Aa=0.25D	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	11,240	44.8	8,860	26.6	6,900	19.3	5,500	13.4	4,890	14.6	5,050	13.3	2,750	9.1
3/16	7,495	48.2	5,910	29.9	4,600	21.9	3,670	14.3	3,260	16.0	3,350	14.3	1,835	10.2
1/4	5,620	47.5	4,430	31.9	3,450	21.6	2,750	15.3	2,445	17.5	2,550	14.8	1,375	10.2
5/16	4,500	49.2	3,545	33.4	2,750	22.9	2,200	16.1	1,955	17.8	2,000	14.8	1,100	11.2
3/8	3,750	47.8	2,955	31.9	2,300	21.9	1,835	15.3	1,630	16.0	1,700	14.5	915	10.4
7/16	3,210	46.4	2,530	30.8	1,950	20.9	1,575	14.8	1,395	16.0	1,450	14.7	785	10.3
1/2	2,810	46.5	2,215	30.2	1,700	20.1	1,375	14.3	1,225	16.0	1,300	15.1	690	10.2
5/8	2,250	41.4	1,775	28.2	1,400	19.8	1,100	13.8	975	14.5	1,000	12.5	550	9.6
3/4	1,875	38.8	1,480	26.1	1,150	18.0	920	12.5	815	13.1	850	11.8	460	8.7
1	1,405	33.4	1,110	23.4	875	15.8	685	10.7	610	12.2	650	11.3	345	8.0





List HP421

Slotting (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC																											
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels																											
Cutting Speed	360 SFM		330 SFM		260 SFM		220 SFM		180 SFM		120 SFM		80 SFM																											
Depth of Cut			<table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1/16</td><td>0.1D</td></tr> <tr><td>1/16<D<1/8</td><td>0.3D</td></tr> <tr><td>1/8<D</td><td>0.5D</td></tr> </table>		Dia	aa	D<1/16	0.1D	1/16<D<1/8	0.3D	1/8<D	0.5D							<table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1/16</td><td>0.02D</td></tr> <tr><td>1/16<D<1/8</td><td>0.02D</td></tr> <tr><td>1/8<D</td><td>0.05D</td></tr> </table>		Dia	aa	D<1/16	0.02D	1/16<D<1/8	0.02D	1/8<D	0.05D			<table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1/16</td><td>0.01D</td></tr> <tr><td>1/16<D<1/8</td><td>0.02D</td></tr> <tr><td>1/8<D</td><td>0.05D</td></tr> </table>		Dia	aa	D<1/16	0.01D	1/16<D<1/8	0.02D	1/8<D	0.05D
	Dia	aa																																						
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Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																										
1/16	19,145	6.9	17,405	6.2	13,095	5.9	11,115	4.2	9,915	3.2	6,245	1.7	4,430	1.2																										
3/32	12,710	8.3	11,550	7.6	9,135	6.3	7,620	4.3	6,750	3.4	4,185	2.0	2,950	1.2																										
1/8	9,450	10.7	8,570	9.8	7,310	7.4	6,135	4.9	5,135	3.7	3,180	2.2	2,300	1.4																										
5/32	7,910	12.2	7,190	11.1	5,930	8.6	5,145	5.8	4,230	4.2	2,655	2.4	1,870	1.4																										
3/16	7,190	15.4	6,540	14.0	5,325	10.5	4,455	6.0	3,785	4.5	2,360	2.6	1,590	1.4																										
1/4	5,600	16.0	5,090	14.5	4,125	11.1	3,375	6.0	2,870	4.7	1,775	2.6	1,205	1.2																										
5/16	4,395	15.3	4,000	13.9	3,270	11.1	2,660	5.9	2,295	4.7	1,390	2.4	960	1.2																										
3/8	3,695	14.7	3,360	13.3	2,735	11.0	2,225	5.9	1,910	4.5	1,200	2.4	800	1.2																										
7/16	3,160	14.5	2,870	13.2	2,345	10.9	1,895	5.9	1,630	4.4	1,035	2.3	690	1.0																										
1/2	2,760	14.5	2,510	13.2	2,030	10.6	1,655	5.6	1,415	4.4	900	2.1	600	0.9																										
5/8	2,195	12.6	1,995	12.3	1,625	9.5	1,330	4.7	1,150	4.0	720	1.7	470	0.7																										
3/4	1,760	11.1	1,605	10.0	1,305	7.6	1,095	3.8	935	3.2	580	1.4	380	0.6																										
1	1,360	8.5	1,240	7.7	1,020	6.0	840	3.0	720	2.6	440	0.9	300	0.5																										

For side milling, increase feeds 20% to 50%.

Slotting (Metric)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC																											
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels																											
Cutting Speed	360 SFM		330 SFM		260 SFM		220 SFM		180 SFM		120 SFM		80 SFM																											
Depth of Cut			<table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1</td><td>0.1D</td></tr> <tr><td>1<D<3</td><td>0.3D</td></tr> <tr><td>3<D</td><td>0.5D</td></tr> </table>		Dia	aa	D<1	0.1D	1<D<3	0.3D	3<D	0.5D							<table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1</td><td>0.02D</td></tr> <tr><td>1<D<3</td><td>0.05D</td></tr> <tr><td>3<D</td><td>0.05D</td></tr> </table>		Dia	aa	D<1	0.02D	1<D<3	0.05D	3<D	0.05D			<table border="1"> <tr><th>Dia</th><th>aa</th></tr> <tr><td>D<1</td><td>0.01D</td></tr> <tr><td>1<D<3</td><td>0.02D</td></tr> <tr><td>3<D</td><td>0.05D</td></tr> </table>		Dia	aa	D<1	0.01D	1<D<3	0.02D	3<D	0.05D
	Dia	aa																																						
D<1	0.1D																																							
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3<D	0.05D																																							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																										
1	30,888	8.0	28,080	7.4	20,880	7.0	18,000	5.0	15,840	3.7	10,080	1.7	7,272	1.4																										
2	17,424	8.4	15,840	7.6	12,096	7.0	10,080	5.0	9,144	4.0	5,688	2.3	3,960	1.4																										
3	11,750	12.5	10,656	11.4	9,144	8.5	7,632	5.6	6,408	4.3	3,960	2.6	2,880	1.7																										
4	9,425	14.7	8,568	13.5	7,056	10.5	6,134	7.0	5,040	5.0	3,168	2.9	2,232	1.7																										
5	8,395	19.7	7,632	17.9	6,192	13.4	5,112	7.4	4,392	5.6	2,736	3.2	1,814	1.7																										
6	7,049	19.3	6,408	17.6	5,184	13.4	4,248	7.4	3,600	5.6	2,232	3.2	1,512	1.4																										
8	5,227	18.4	4,752	16.7	3,888	13.4	3,168	7.0	2,736	5.6	1,656	2.9	1,145	1.4																										
10	4,198	17.4	3,816	15.8	3,096	13.1	2,520	7.0	2,160	5.3	1,375	2.9	914	1.4																										
12	3,485	17.4	3,168	15.8	2,592	13.1	2,088	7.0	1,800	5.3	1,145	2.6	763	1.1																										
14	3,010	17.4	2,736	15.8	2,160	12.2	1,814	6.2	1,512	5.3	979	2.3	655	1.0																										
16	2,614	15.0	2,376	14.7	1,944	11.4	1,584	5.6	1,375	4.8	857	2.0	569	0.9																										
18	2,297	14.4	2,088	13.1	1,728	10.2	1,426	5.0	1,217	4.3	763	1.7	504	0.9																										
20	2,059	12.9	1,872	11.7	1,512	8.8	1,282	4.5	1,094	3.7	684	1.7	454	0.7																										
22	1,901	11.9	1,728	10.8	1,382	8.2	1,166	4.0	994	3.5	619	1.4	410	0.6																										
25	1,663	10.3	1,512	9.4	1,246	7.4	1,022	3.7	878	3.2	547	1.1	367	0.6																										

For side milling, increase feeds 20% to 50%.

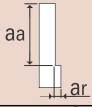
For High Speed milling parameters, see pg 1082.



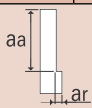


List HP441

Side Milling (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC												
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels												
Cutting Speed	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 SFM												
Depth of Cut	<table border="1" style="display: inline-table; margin-right: 20px;"> <tr> <td></td> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>$D < 1/8$</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>$1/8 < D$</td> <td>1.5D</td> <td>0.1D</td> </tr> </table> 													a_a	a_r	$D < 1/8$	1.5D	0.05D	$1/8 < D$	1.5D	0.1D	$a_a = 1D$ $a_r = 0.02D$			
		a_a	a_r																						
$D < 1/8$	1.5D	0.05D																							
$1/8 < D$	1.5D	0.1D																							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min											
1/16	20,825	15.4	18,070	12.5	15,670	11.2	10,870	4.7	9,915	4.2	6,740	2.6	5,400	1.6											
3/32	16,305	21.5	13,720	18.1	11,550	14.5	8,075	5.4	6,885	4.9	4,185	2.9	2,950	2											
1/8	12,060	28.4	10,205	24	8,700	16.9	7,125	5.9	5,475	5.2	3,180	2.9	2,290	2.2											
5/32	9,630	29.9	8,060	25	7,890	17.5	5,170	6.3	4,475	5.3	2,655	3.3	1,815	2.2											
3/16	8,075	33.7	6,740	28.3	5,930	19.4	4,455	6.5	3,935	5.7	2,360	3.5	1,565	2											
1/4	7,060	34.4	5,090	28.9	4,235	20	3,375	6.9	3,030	6.1	1,775	3.3	1,205	1.9											
5/16	4,820	33.6	4,000	27.8	3,330	19.8	2,660	6.9	2,360	6.1	1,390	3.2	960	1.7											
3/8	4,005	33.6	3,360	27.8	2,795	19.8	2,225	6.9	1,970	6.1	1,200	3.8	800	1.7											
7/16	3,440	33.6	2,870	27.8	2,405	19.8	1,895	6.9	1,690	6.1	1,035	3.4	690	1.5											
1/2	3,010	32.7	2,510	27.5	2,090	19.7	1,655	6.9	1,475	6	900	2.7	600	1.3											
5/8	2,355	31.4	1,995	26.1	1,630	19.6	1,325	6.1	1,200	5.4	720	2.3	470	0.9											
3/4	1,920	29.7	1,605	24.9	1,350	15.7	1,095	5	975	4.5	580	1.7	380	0.9											
1	1,485	23.3	1,240	19.5	1,050	14	840	3.9	750	3.5	440	1.4	300	0.7											

Side Milling (Metric)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC												
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels												
Cutting Speed	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 SFM												
Depth of Cut	<table border="1" style="display: inline-table; margin-right: 20px;"> <tr> <td></td> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>$D < 1/8$</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>$1/8 < D$</td> <td>1.5D</td> <td>0.1D</td> </tr> </table> 													a_a	a_r	$D < 1/8$	1.5D	0.05D	$1/8 < D$	1.5D	0.1D	$a_a = 1D$ $a_r = 0.02D$			
		a_a	a_r																						
$D < 1/8$	1.5D	0.05D																							
$1/8 < D$	1.5D	0.1D																							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min											
1	38,100	20.8	32,004	17.5	27,120	15.6	17,280	6.1	15,720	5.6	9,840	3.3	6,888	2.1											
2	22,416	20.9	18,828	17.5	15,948	15.6	10,188	6.1	9,240	5.6	5,772	3.4	4,050	2.3											
3	14,472	34.1	12,246	28.9	10,440	20.3	8,550	7.1	6,570	6.2	3,816	3.5	2,748	2.6											
4	11,556	35.9	9,672	30.0	9,468	21.0	6,204	7.6	5,370	6.4	3,186	4.0	2,178	2.6											
5	9,126	41.9	7,428	35.1	6,234	24.1	4,968	8.0	4,416	7.0	2,646	4.3	1,746	2.3											
6	8,472	41.3	6,108	34.6	5,082	24.0	4,050	8.2	3,636	7.4	2,130	4.0	1,446	2.3											
8	5,784	40.3	4,800	33.4	3,996	23.7	3,192	8.2	2,832	7.4	1,668	3.9	1,152	2.0											
10	4,416	40.3	3,708	33.4	3,078	23.7	2,448	8.2	2,172	7.4	1,332	4.6	882	2.0											
12	3,612	39.3	3,012	33.1	2,508	23.6	1,986	8.2	1,770	7.2	1,080	3.2	720	1.6											
14	3,240	37.5	2,736	32.6	2,232	23.5	1,800	8.2	1,584	7.0	978	2.9	654	1.4											
16	2,826	37.6	2,394	31.3	1,956	23.5	1,590	7.4	1,440	6.5	864	2.7	564	1.1											
18	2,520	37.1	2,088	30.7	1,728	22.9	1,422	6.5	1,266	5.9	762	2.3	504	1.1											
20	2,304	35.7	1,926	29.8	1,620	18.9	1,314	6.0	1,170	5.4	696	2.1	456	1.0											
22	1,992	31.4	1,704	26.9	1,422	19.1	1,152	5.2	1,020	4.7	612	1.7	402	0.9											
25	1,782	28.0	1,488	23.4	1,260	16.8	1,008	4.6	900	4.2	528	1.7	360	0.9											

For High Speed see milling parameters, pg 1082.

continued on next page





List HP421, HP441 (Continued)

High Speed Light Milling (Fractional)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC																								
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels																								
Cutting Speed	1,310 SFM		1,150 SFM		820 SFM		490 SFM		260 SFM																								
Depth of Cut	<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 8</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>8 < D < 16</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>16 < D</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table>						aa	ar	D < 8	1.5D	0.01D	8 < D < 16	1.5D	0.02D	16 < D	1.5D	0.05D			<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 8</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>8 < D</td> <td>1D</td> <td>0.02D</td> </tr> </tbody> </table>						aa	ar	D < 8	1D	0.01D	8 < D	1D	0.02D
	aa	ar																															
D < 8	1.5D	0.01D																															
8 < D < 16	1.5D	0.02D																															
16 < D	1.5D	0.05D																															
	aa	ar																															
D < 8	1D	0.01D																															
8 < D	1D	0.02D																															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																							
1/16	78,600	46.5	70,300	52.8	56,200	41.3	33,700	22.4	17,950	13.4																							
3/32	55,550	60.2	48,600	60.6	34,700	45.3	20,800	24.4	11,050	14.2																							
1/8	40,550	79.9	35,500	70.5	25,300	49.6	15,200	26	8,050	14.6																							
5/32	32,100	83.1	28,100	72.4	20,100	52.8	12,000	26.8	6,400	16.1																							
3/16	26,950	112.6	23,550	81.1	16,850	54.3	10,100	28.7	5,350	17.3																							
1/4	20,000	96.5	17,600	84.3	12,450	58.7	7,600	31.1	4,000	16.5																							
5/16	15,650	96.5	13,650	82.7	9,950	57.1	6,000	31.1	3,150	16.5																							
3/8	13,200	97.6	11,550	82.7	8,400	57.1	5,000	31.1	2,650	16.5																							
7/16	11,350	97.2	10,000	82.7	7,150	57.1	4,300	31.1	2,250	16.1																							
1/2	9,950	94.9	8,750	81.1	6,250	55.5	3,750	30.3	1,950	15.7																							
5/8	8,000	88.6	7,000	76.8	4,950	53.1	2,950	28	1,550	14.6																							
3/4	6,650	85.4	5,800	73.6	4,150	51.2	2,450	26.8	1,300	14.2																							
1	4,950	65.7	4,400	58.3	3,100	40.6	1,850	21.7	950	10.6																							

Reduce feeds 50% for Series HP421 High Speed Light Milling.

High Speed Light Milling (Metric)

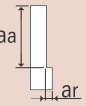
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC																								
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels																								
Cutting Speed	1,310 SFM		1,150 SFM		820 SFM		490 SFM		260 SFM																								
Depth of Cut	<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 8</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>8 < D < 16</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>16 < D</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table>						aa	ar	D < 8	1.5D	0.01D	8 < D < 16	1.5D	0.02D	16 < D	1.5D	0.05D			<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 8</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>8 < D</td> <td>1D</td> <td>0.02D</td> </tr> </tbody> </table>						aa	ar	D < 8	1D	0.01D	8 < D	1D	0.02D
	aa	ar																															
D < 8	1.5D	0.01D																															
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16 < D	1.5D	0.05D																															
	aa	ar																															
D < 8	1D	0.01D																															
8 < D	1D	0.02D																															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																							
1	100,000	43.7	100,000	49.6	79,600	39.4	47,750	21.3	25,450	13.0																							
2	63,650	48.8	55,700	55.1	39,800	43.3	23,850	23.6	12,700	14.2																							
3	42,450	79.5	37,150	70.1	26,500	49.2	15,900	26.0	8,450	14.2																							
4	31,800	83.5	27,850	72.8	19,900	53.1	11,900	27.2	6,350	16.5																							
5	25,450	122.0	22,250	83.9	15,900	55.1	9,550	29.5	5,050	17.7																							
6	21,000	96.5	18,500	84.6	13,000	59.1	7,950	31.3	4,200	16.5																							
8	15,500	96.5	13,500	82.7	9,900	57.1	5,950	31.3	3,150	16.7																							
10	12,500	98.4	11,000	82.7	7,950	57.1	4,750	31.5	2,500	16.5																							
12	10,500	96.5	9,250	82.7	6,600	57.1	3,950	31.1	2,100	16.1																							
14	9,050	92.5	7,950	78.7	5,650	53.1	3,400	29.1	1,800	15.4																							
16	7,950	88.6	6,950	76.8	4,950	53.1	2,950	28.1	1,550	14.8																							
18	7,050	88.6	6,150	74.8	4,400	51.2	2,650	27.8	1,400	14.8																							
20	6,350	82.7	5,550	72.8	3,950	51.2	2,350	26.2	1,250	14.0																							
22	5,750	76.8	5,050	66.9	3,600	47.2	2,150	25.0	1,150	12.8																							
24	5,300	70.9	4,600	61.0	3,300	43.3	1,950	22.6	1,050	11.6																							
25	5,050	66.9	4,450	59.1	3,150	41.3	1,900	22.0	1,000	11.0																							

Reduce feeds 50% for Series HP421 High Speed Light Milling.

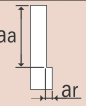


List HP460

Side Milling (Fractional)

Hardness	–		Up to 20 HRC		20 to 35 HRC		35 to 45 HRC		45 to 55 HRC	
Work Material	Aluminum		Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	550 SFM		180 SFM		120 SFM		78 SFM		60 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 						$a_a=1.5D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	8,280	26	2,880	12.7	1,920	8	1,272	3.6	960	1.4
5/16	6,240	26	2,160	12.7	1,440	8	960	3.6	720	1.4
3/8	5,040	28.3	1,680	16.1	1,140	8	768	3.6	576	1.4
1/2	4,200	28.3	1,440	17	960	8.5	636	3.6	480	1.4
5/8	3,120	28.3	1,080	18.8	720	8.5	480	3.6	360	1.4
3/4	2,520	28.3	864	19.3	576	9.5	384	3.6	288	1.4
1	2,040	28.3	696	16.6	456	8.5	300	3.6	228	1.4

Side Milling (Metric)

Hardness	–		Up to 20 HRC		20 to 35 HRC		35 to 45 HRC		45 to 55 HRC	
Work Material	Aluminum		Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	550 SFM		180 SFM		120 SFM		78 SFM		60 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 						$a_a=1.5D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	16,320	12.8	5,760	6.1	3,840	4.0	2,640	1.8	1,920	0.7
4	12,480	17.5	4,320	8.5	2,880	5.7	1,920	2.4	1,440	0.9
5	9,960	20.8	3,480	10.4	2,400	7.3	1,560	3.9	1,200	1.2
6	8,280	26.0	2,880	12.8	1,920	8.0	1,272	3.5	960	1.4
8	6,240	26.0	2,160	12.8	1,440	8.0	960	3.5	720	1.4
10	5,040	28.3	1,680	16.1	1,140	8.0	768	3.5	576	1.4
12	4,200	28.3	1,440	17.0	960	8.5	636	3.5	480	1.4
16	3,120	28.3	1,080	18.9	720	8.5	480	3.5	360	1.4
20	2,520	28.3	864	19.4	576	9.4	384	3.5	288	1.4
25	2,040	28.3	696	16.5	456	8.5	300	3.5	228	1.4

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List HP460: (continued)

Slotting (Fractional)

Hardness	Up to 20 HRC		20 to 35 HRC		35 to 45 HRC		45 to 55 HRC							
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels							
Cutting Speed	150 SFM		102 SFM		66 SFM		52 SFM							
Depth of Cut	<table border="1"> <tr><td></td><td>aa</td></tr> <tr><td>D<1/2</td><td>1.0D</td></tr> <tr><td>1/2≤D</td><td>0.5D</td></tr> </table>			aa	D<1/2	1.0D	1/2≤D	0.5D			aa=0.5D			
	aa													
D<1/2	1.0D													
1/2≤D	0.5D													
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min						
1/4	2,448	9.5	1,632	5.6	1,080	2.4	816	1						
5/16	1,836	9.5	1,224	5.6	816	2.4	612	1						
3/8	1,428	10.9	972	5.6	648	2.4	492	1						
1/2	1,224	11.8	816	6.1	540	2.4	408	1						
5/8	912	12.7	612	6.1	408	2.4	312	1						
3/4	744	13.2	492	6.6	324	2.4	240	1						
1	600	11.3	384	6.1	252	2.4	192	1						

Slotting (Metric)


Hardness	Up to 20 HRC		20 to 35 HRC		35 to 45 HRC		45 to 55 HRC							
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels							
Cutting Speed	150 SFM		102 SFM		66 SFM		52 SFM							
Depth of Cut	<table border="1"> <tr><td></td><td>aa</td></tr> <tr><td>D<1/2</td><td>1.0D</td></tr> <tr><td>1/2≤D</td><td>0.5D</td></tr> </table>			aa	D<1/2	1.0D	1/2≤D	0.5D			aa=0.5D			
	aa													
D<1/2	1.0D													
1/2≤D	0.5D													
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min						
3	4,920	4.7	3,600	2.8	2,280	1.2	1,680	0.5						
4	3,720	6.1	2,760	3.8	1,680	1.7	1,320	0.6						
5	3,000	8.0	2,160	4.7	1,320	2.0	1,080	0.7						
6	2,448	9.4	1,632	5.7	1,080	2.4	816	0.9						
8	1,836	9.4	1,224	5.7	816	2.4	612	0.9						
10	1,428	10.9	972	5.7	648	2.4	492	0.9						
12	1,224	11.8	816	6.1	540	2.4	408	0.9						
16	912	12.8	612	6.1	408	2.4	312	0.9						
20	744	13.2	492	6.6	324	2.4	240	0.9						
25	600	11.3	384	6.1	252	2.4	192	0.9						






List HP450

Side Milling (Fractional)

Hardness	Up to 25 HRC		25 to 45 HRC		45 to 55 HRC		55 to 65 HRC		30 to 40 HRC		25 to 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Tool Steels		Hardened Steels Tool Steels		Titanium Alloy		Nickel Base High-Temp Alloy	
Cutting Speed	312-540 SFM		156-312 SFM		96-156 SFM		60-96 SFM		156-276 SFM		48-80 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 				$a_a=1.5D$ $a_r=0.05D$							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	11,400	70.8	6,360	19.2	3,240	7.2	2,280	4.8	5,040	33.6	1,680	2.4
5/32	8,640	70.8	4,800	19.2	2,640	9.6	1,800	4.8	3,840	36	1,260	2.4
3/16	6,840	61.2	3,840	19.2	2,160	10.8	1,560	4.8	3,000	36	984	3.6
1/4	6,360	122.4	3,480	39.6	1,920	14.4	1,320	7.2	2,520	42	840	4.8
5/16	4,800	112.8	2,640	39.6	1,440	14.4	996	7.2	1,920	42	624	4.8
3/8	3,840	99.6	2,160	39.6	1,152	13.2	804	7.2	1,560	37.2	480	4.8
1/2	3,480	99.6	1,920	36	960	13.2	672	6	1,260	36	408	3.6
5/8	2,640	75.6	1,440	27.6	720	10.8	528	4.8	960	33.6	312	3.6
3/4	2,160	61.2	1,140	21.6	576	7.2	420	3.6	780	28.8	240	3.6
1	1,500	56.4	900	22.8	450	8.4	300	3.6	720	24	216	2.4

Side Milling (Metric)

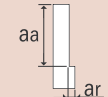
Hardness	Up to 25 HRC		25 to 45 HRC		45 to 55 HRC		55 to 65 HRC		30 to 40 HRC		25 to 45 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Tool Steels		Hardened Steels Tool Steels		Titanium Alloy		Nickel Base High-Temp Alloy	
Cutting Speed	312-540 SFM		156-312 SFM		96-156 SFM		60-96 SFM		156-276 SFM		48-80 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 				$a_a=1.5D$ $a_r=0.05D$							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	11,400	70.9	6,360	18.9	3,240	7.6	2,280	4.7	5,040	33.1	1,680	2.1
4	8,640	70.9	4,800	18.9	2,640	9.4	1,800	4.7	3,840	35.4	1,260	2.6
5	6,840	61.4	3,840	18.9	2,160	10.4	1,560	4.7	3,000	35.4	984	3.3
6	6,360	122.8	3,480	40.2	1,920	14.2	1,320	7.6	2,520	42.5	840	4.3
8	4,800	113.4	2,640	40.2	1,440	14.2	996	7.1	1,920	42.5	624	4.3
10	3,840	99.2	2,160	40.2	1,152	13.2	804	7.1	1,560	37.8	480	4.3
12	3,480	99.2	1,920	36.4	960	13.2	672	6.1	1,260	35.4	408	3.8
16	2,640	75.6	1,440	27.4	720	10.4	528	4.7	960	33.1	312	3.3
20	2,160	61.4	1,140	21.7	576	7.6	420	4.0	780	28.3	240	3.3
25	1,500	56.7	900	22.4	450	8.5	300	3.8	720	23.6	216	2.8



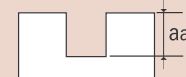


List HP451

Side Milling (Fractional)

Hardness	–		–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Aluminum Alloy		Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys	
Cutting Speed	361 SFM		279 SFM		328 SFM		262 SFM		197 SFM		131 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	11,030	54.3	8,520	34.5	10,030	74.0	8,020	64.1	6,010	19.7	4,010	11.8
1/4	5,800	51.2	4,500	34.5	5,300	66.9	4,200	59.1	3,200	15.7	2,100	10.2
5/16	4,400	47.2	3,400	27.6	4,000	63.0	3,200	55.1	2,400	24.4	1,600	16.1
3/8	3,500	43.3	2,700	26.8	3,200	55.1	2,500	51.2	1,900	23.6	1,300	16.1
1/2	2,900	39.4	2,300	26.0	2,700	55.1	2,100	47.2	1,600	20.1	1,050	13.8
5/8	2,200	35.4	1,700	21.7	2,000	43.3	1,600	37.4	1,200	15.4	800	13.0
3/4	1,750	31.5	1,350	17.7	1,800	35.4	1,250	29.5	950	12.6	650	10.2

Slotting (Fractional)

Hardness	–		–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Aluminum Alloy		Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys	
Cutting Speed	361 SFM		138 SFM		295 SFM		243 SFM		163 SFM		111 SFM	
Depth of Cut	$a_a=1.0D$ 						$a_a=0.5D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	11,030	45.0	4,260	16.7	9,020	31.1	7,450	22.0	4,920	14.0	3,000	8.4
1/4	5,800	39.4	2,250	14.6	4,770	28.7	3,900	24.8	2,620	13.4	1,570	9.1
5/16	4,400	37.4	1,700	13.0	3,600	26.0	2,970	22.8	1,960	13.4	1,200	9.1
3/8	3,500	35.4	1,350	11.8	2,880	23.6	2,320	18.5	1,550	12.2	970	8.3
1/2	2,900	31.5	1,150	11.4	2,430	22.8	1,950	17.7	1,310	11.4	780	7.9
5/8	2,200	27.6	850	18.9	1,800	18.9	1,480	26.8	980	8.7	600	7.1
3/4	1,750	23.6	675	16.5	1,620	16.5	1,160	12.6	770	7.1	480	5.5

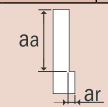
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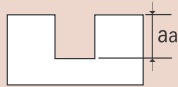


List HP451, HP453, HP456

Side Milling (Metric)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Aluminum Alloy		Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys	
Cutting Speed	433 SFM		334 SFM		393 SFM		315 SFM		236 SFM		157 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
4	10,560	52.0	8,160	33.1	9,600	70.9	7,680	61.4	5,760	18.9	3,840	11.3
6	6,960	61.4	5,400	37.8	6,360	80.3	5,040	70.9	3,840	18.9	2,520	12.3
8	5,280	56.7	4,080	33.1	4,800	75.6	3,840	66.1	2,880	29.3	1,920	19.4
10	4,200	52.0	3,240	32.1	3,840	66.1	3,000	61.4	2,280	28.3	1,560	19.4
12	3,480	47.2	2,760	31.2	3,240	66.1	2,520	56.7	1,920	24.1	1,260	16.5
16	2,640	42.5	2,040	26.0	2,400	52.0	1,920	44.9	1,440	18.4	960	15.6
20	2,100	37.8	1,620	21.3	2,160	42.5	1,500	35.4	1,140	15.1	780	12.3

Slotting (Metric)

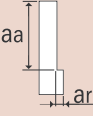
Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Aluminum Alloy		Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys	
Cutting Speed	433 SFM		160 SFM		355 SFM		297 SFM		198 SFM		118 SFM	
Depth of Cut	$a_a=1.0D$ 						$a_a=0.5D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
4	8,160	42.5	3,840	15.1	8,640	29.8	7,200	21.3	4,800	13.7	2,880	8.0
6	6,960	47.2	2,520	17.5	5,760	34.5	4,800	29.8	3,240	16.1	1,920	10.9
8	5,280	44.9	1,920	15.6	4,320	31.2	3,600	27.4	2,400	16.1	1,440	10.9
10	4,200	42.5	1,560	14.2	3,480	28.3	2,880	22.2	1,920	14.6	1,140	9.9
12	3,480	37.8	1,272	13.7	2,880	27.4	2,400	21.3	1,560	13.7	960	9.4
16	2,640	33.1	960	22.7	2,160	22.7	1,800	32.1	1,200	10.4	720	8.5
20	2,100	28.3	780	19.8	1,680	19.8	1,440	15.1	960	8.5	576	6.6





List HP400

Side Milling (Fractional)

Hardness	-		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		
Work Material	Cast Iron		Medium Steels Mild Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels		
Cutting Speed	320-460 SFM		262-393 SFM		230-328 SFM		164-262 SFM		115-213 SFM		
Depth of Cut	$a_a=1.5D$ $a_r=0.4D$							$a_a=1.5D$ $a_r=0.3D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	
1/4	6,350	29.9	5,300	25.2	4,500	14.2	3,450	11.0	2,650	8.3	
5/16	4,750	29.9	4,000	25.2	3,400	16.1	2,600	12.2	2,000	9.4	
3/8	3,800	29.9	3,200	25.2	2,700	16.9	2,050	13.0	1,600	10.2	
1/2	3,200	30.3	2,650	25.2	2,250	17.7	1,700	13.4	1,350	10.6	
5/8	2,400	30.3	2,000	25.2	1,700	18.9	1,300	14.2	1,000	11.0	
3/4	1,900	29.9	1,600	24.0	1,350	18.5	1,050	13.8	800	10.2	
1	1,500	29.9	1,150	24.0	1,000	18.5	800	13.8	600	10.2	

continued on next page





Slotting (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Cast Iron		Medium Steels Mild Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels	
Cutting Speed	262-393 SFM		230-328 SFM		180-279 SFM		130-230 SFM		95-195 SFM	
Depth of Cut	$aa=0.75D$					$aa=0.5D$				
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	5,300	25.2	4,500	21.3	3,700	11.8	2,900	9.1	2,400	7.5
5/16	4,000	25.2	3,400	21.3	2,800	13.4	2,200	10.2	1,800	8.7
3/8	3,200	25.2	2,700	21.3	2,250	14.2	1,750	11	1,450	9.1
1/2	2,650	25.2	2,250	21.3	1,850	14.6	1,450	11.4	1,200	9.4
5/8	2,000	25.2	1,700	21.3	1,400	15.4	1,100	12.2	900	9.8
3/4	1,600	25.2	1,350	20.1	1,100	15.4	900	11.8	700	9.1
1	1,150	25.2	950	20.1	800	15.4	700	11.8	500	9.1

Slotting (Metric)

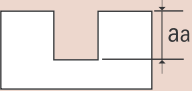
Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Cast Iron		Medium Steels Mild Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels	
Cutting Speed	335 SFM		230 SFM		295 SFM		217 SFM		177 SFM	
Depth of Cut	$aa=0.75D$					$aa=0.5D$				
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
6	6,360	30.2	5,400	25.5	4,440	14.2	3,480	10.9	2,880	9.0
8	4,800	30.2	4,080	25.5	3,360	16.1	2,640	12.3	2,160	10.4
10	3,840	30.2	3,240	25.5	2,700	17.0	2,100	13.2	1,740	10.9
12	3,180	30.2	2,700	25.5	2,220	17.5	1,740	13.7	1,440	11.3
16	2,400	30.2	2,040	25.5	1,680	18.4	1,320	14.6	1,080	11.8
20	1,920	30.2	1,620	24.1	1,320	18.4	1,080	14.2	840	10.9
25	1,520	29.9	890	23.2	1,140	17.9	840	13.0	680	9.8






List HP410

Slotting (Fractional)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC							
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels							
Cutting Speed	262 SFM		213 SFM		180 SFM		164 SFM		98 SFM		49 SFM							
Depth of Cut	<table border="1"> <tr><td></td><td>aa</td></tr> <tr><td>D < 1/16</td><td>0.05D</td></tr> <tr><td>1/16 < D</td><td>0.1D</td></tr> </table> 							aa	D < 1/16	0.05D	1/16 < D	0.1D	aa=0.02D					
	aa																	
D < 1/16	0.05D																	
1/16 < D	0.1D																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min						
1/32	31,500	15.7	27,000	13.8	22,000	9.8	19,000	7.9	11,500	3.1	6,350	1.2						
1/16	17,500	23.6	14,000	19.7	11,500	15.7	10,000	9.8	6,350	3.1	3,350	1.2						
3/32	10,500	23.6	8,650	19.7	7,100	15.7	6,100	9.8	3,800	3.1	2,000	1.2						
1/8	8,020	18.0	6,510	14.8	5,510	12.2	5,010	8.0	3,000	2.4	1,500	0.9						
3/16	5,340	12.0	4,340	9.9	3,670	8.1	3,340	5.3	2,000	2.4	1,000	0.9						

For side milling, increase feeds 20% to 50%.

Slotting (Metric)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC							
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels							
Cutting Speed	96 m/min		78 m/min		66 m/min		60 m/min		36 m/min		18 m/min							
Depth of Cut	<table border="1"> <tr><td></td><td>aa</td></tr> <tr><td>D < 1.5</td><td>0.05D</td></tr> <tr><td>1.5 < D</td><td>0.1D</td></tr> </table> 							aa	D < 1.5	0.05D	1.5 < D	0.1D	aa=0.02D					
	aa																	
D < 1.5	0.05D																	
1.5 < D	0.1D																	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min						
0.5	38,400	11.8	38,400	9.4	38,400	9.4	36,600	7.1	22,800	3.8	12,000	1.4						
0.6	38,400	14.2	38,400	11.8	35,400	10.4	30,000	9.4	18,600	3.8	10,140	1.4						
0.8	37,800	18.9	32,400	16.5	26,400	11.8	22,800	9.4	13,800	3.8	7,620	1.4						
1	31,800	23.6	25,800	21.3	21,000	16.5	18,000	11.8	11,400	3.8	6,060	1.4						
1.5	21,000	28.3	16,800	23.6	13,800	18.9	12,000	11.8	7,620	3.8	4,020	1.4						
2	15,600	28.3	12,600	23.6	10,680	18.9	9,120	11.8	5,700	3.8	3,000	1.4						
2.5	12,600	28.3	10,380	23.6	8,520	18.9	7,320	11.8	4,560	3.8	2,400	1.4						


For side milling, increase feeds 20% to 50%.



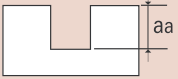


List HP411

Slotting (Fractional)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	294 SFM		236 SFM		196 SFM		164 SFM		105 SFM		72 SFM	
Depth of Cut	$a_a=0.1D$ 						$a_a=0.02D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	8,900	39.4	7,200	27.6	5,900	19.7	5,100	15.7	3,200	5.9	2,100	2.0
3/16	6,700	39.4	5,400	27.6	4,450	19.7	3,800	15.7	2,400	5.9	1,600	2.0
1/4	4,500	39.4	3,600	27.6	3,000	19.7	2,500	15.7	1,600	5.9	1,100	2.0

Slotting (Metric)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	294 SFM		236 SFM		196 SFM		164 SFM		105 SFM		72 SFM	
Depth of Cut	$a_a=0.1D$ 						$a_a=0.02D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	10,680	47.2	8,640	33.1	7,080	23.6	6,120	18.9	3,840	7.1	2,520	2.4
4	8,040	47.2	6,480	33.1	5,400	23.6	4,560	18.9	2,880	7.1	1,920	2.4
5	6,360	47.2	5,160	33.1	4,320	23.6	3,720	18.9	2,280	7.1	1,560	2.4
6	5,400	47.2	4,320	33.1	3,600	23.6	3,000	18.9	1,920	7.1	1,320	2.4





List HP455

Side Milling (Fractional)

Hardness	Up to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys	
Cutting Speed	156 SFM		144 SFM		114 SFM	
Depth of Cut	$aa=1.5D$ $ar=0.1D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	4,806	13.1	4,332	5.2	3,444	4.0
5/32	3,780	13.1	3,420	5.2	2,754	4.0
3/16	3,186	13.9	2,886	5.2	2,292	4.0
7/32	2,742	14.2	2,454	5.2	1,956	4.0
1/4	3,240	14.2	2,130	5.2	1,716	4.0
9/32	2,142	14.2	1,896	5.2	1,554	4.0
5/16	1,884	14.2	1,668	5.2	1,380	4.0
3/8	1,590	14.2	1,440	5.2	1,158	4.0
7/16	1,368	14.2	1,242	5.2	990	4.0
1/2	1,194	14.6	1,080	5.2	864	4.0
9/16	1,056	15.7	954	5.2	762	4.0
5/8	948	16.6	864	5.2	684	4.0
3/4	768	16.7	696	4.9	558	4.0
7/8	672	15.1	612	4.4	486	3.6
1	588	13.1	528	4.0	432	3.1

Side Milling (Metric)

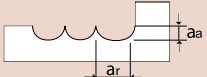
Hardness	Up to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys	
Cutting Speed	156 SFM		144 SFM		114 SFM	
Depth of Cut	$aa=1.5D$ $ar=0.1D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	4,806	13.1	4,332	5.2	3,444	4.0
4	3,780	13.1	3,420	5.2	2,754	4.0
5	2,934	14.2	2,646	5.2	2,100	4.0
6	2,400	14.2	2,130	5.2	1,716	4.0
7	2,142	14.2	1,896	5.2	1,554	4.0
8	1,884	14.2	1,668	5.2	1,380	4.0
10	1,464	14.2	1,332	5.2	1,062	4.0
11	1,368	14.2	1,242	5.2	990	4.0
12	1,194	14.6	1,080	5.2	864	4.0
14	1,056	15.7	954	5.2	762	4.0
16	948	16.6	864	5.2	684	4.0
20	768	16.7	696	4.9	558	4.0
25	588	13.1	528	4.0	432	3.1





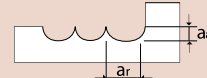
List HP421BN, HP441BN

Profiling Milling (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	575 SFM		460 SFM		375 SFM		310 SFM		260 SFM		230 SFM		165 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/16	32,450	40.6	29,350	35.8	26,650	29.1	21,300	18.9	18,750	13.4	16,200	9.8	12,000	6.3
3/32	24,300	44.1	19,700	35.8	16,250	29.1	13,100	18.9	11,500	13.8	9,900	9.8	7,450	6.3
1/8	17,050	44.1	13,850	35.8	11,600	29.5	9,300	19.3	8,150	14.6	7,000	10.6	5,200	7.1
5/32	14,050	44.1	11,550	35.8	9,700	29.5	7,750	20.5	6,750	16.9	5,800	12.2	4,300	7.9
3/16	11,750	48.0	9,500	39.0	7,900	29.9	6,300	20.9	5,550	17.3	4,700	13.0	3,550	7.9
1/4	8,750	53.1	7,000	42.9	5,800	33.1	4,600	22.8	4,050	19.3	3,450	14.2	2,550	8.7
5/16	7,250	60.6	5,800	48.8	4,800	36.6	3,800	25.6	3,350	20.9	2,850	15.0	2,100	9.4
3/8	5,900	57.1	4,700	45.3	3,900	35.0	3,100	24.4	2,700	20.5	2,350	15.4	1,700	9.4
7/16	4,950	53.1	3,950	42.1	3,300	33.1	2,600	23.2	2,300	19.7	1,950	14.6	1,450	9.1
1/2	4,350	50.4	3,450	40.6	2,900	31.9	2,300	22.4	2,000	18.9	1,700	14.2	1,250	8.7
5/8	3,600	49.6	2,850	39.4	2,350	30.3	1,850	22.4	1,600	17.7	1,400	12.6	1,050	8.7
3/4	3,000	46.1	2,400	36.6	2,000	28.0	1,600	21.7	1,350	17.3	1,200	11.8	900	7.9
1	2,450	37.6	1,760	31.3	1,430	21.5	1,185	16.5	1,000	13.5	880	9.6	630	6.5

Increase feeds 40% to 50% for Series HP441BN.

Profiling Milling (Metric)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	575 SFM		460 SFM		375 SFM		310 SFM		260 SFM		230 SFM		165 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	46,080	43.2	46,080	43.2	45,360	35.0	36,000	22.7	31,680	16.1	27,360	11.8	20,160	7.8
2	34,026	52.9	27,648	43.2	22,680	35.0	18,276	22.7	16,080	16.3	13,884	11.8	10,446	7.8
3	21,312	53.1	17,244	43.2	14,472	35.7	11,634	23.1	10,188	17.0	8,736	12.3	6,534	8.3
4	16,740	53.1	13,806	43.2	11,556	35.7	9,234	25.0	8,070	20.8	6,912	15.1	5,160	9.7
5	13,320	59.5	10,656	48.4	8,898	36.1	7,068	25.3	6,234	21.0	5,316	16.1	3,984	9.9
6	10,944	61.9	8,736	50.3	7,284	39.0	5,778	27.2	5,082	22.7	4,332	17.0	3,228	10.6
8	8,652	73.2	6,912	59.1	5,742	44.4	4,578	31.2	3,996	25.5	3,420	18.2	2,538	11.8
10	6,648	67.1	5,316	53.4	4,416	41.6	3,504	29.3	3,078	24.3	2,646	18.7	1,956	11.6
12	5,406	61.2	4,302	48.7	3,612	39.0	2,868	27.4	2,508	23.4	2,130	17.2	1,572	10.9
14	4,896	59.5	3,888	48.9	3,240	38.3	2,592	26.9	2,232	22.0	1,944	17.0	1,440	10.6
16	4,284	59.5	3,408	47.5	2,826	36.6	2,250	26.9	1,956	21.5	1,668	15.4	1,296	10.4
18	3,816	56.7	3,024	44.9	2,520	34.5	2,016	26.9	1,728	21.5	1,512	14.6	1,140	9.9
20	3,498	54.1	2,808	43.7	2,304	32.8	1,854	25.7	1,620	21.0	1,410	14.2	1,056	9.7
22	3,048	50.3	2,556	40.4	2,130	29.1	1,638	22.9	1,422	18.9	1,230	12.8	918	9.2
25	2,688	43.9	2,130	37.6	1,770	26.0	1,416	20.1	1,260	16.3	1,080	11.6	804	8.0

Increase feeds 40% to 50% for Series HP441BN.

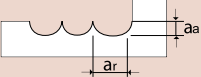
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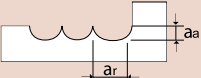
List HP421BN, HP441BN: (continued)

High Speed Light Milling (Fractional)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC										
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	985 SFM		855 SFM		740 SFM		590 SFM		590 SFM		400 SFM										
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$ 						<table border="1"> <thead> <tr> <th></th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D < 5/32$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13"</td> <td>0.05D</td> </tr> </tbody> </table>							a_a	a_r	$D < 5/32$	0.02D	0.05D	$5/32 < D$	0.13"	0.05D
							a_a	a_r													
$D < 5/32$	0.02D	0.05D																			
$5/32 < D$	0.13"	0.05D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1/16	39,250	126.0	35,500	110.2	35,200	98.4	33,600	88.6	23,300	59.1	17,750	39.4									
3/32	27,450	137.8	21,900	111.8	21,400	98.8	20,500	89.0	14,850	61.4	11,000	39.4									
1/8	20,050	140.2	16,150	117.3	16,650	101.2	14,850	90.9	11,000	65.0	8,250	40.2									
5/32	18,150	144.9	15,550	132.3	15,050	107.5	13,600	95.7	11,000	73.6	7,950	42.9									
3/16	16,000	158.3	14,900	153.9	13,900	111.8	11,400	91.3	10,150	81.1	7,550	45.7									
1/4	13,850	174.4	12,350	155.5	10,650	100.0	8,750	81.5	8,750	81.5	6,050	41.7									
5/16	11,650	146.1	10,150	128.0	9,050	83.9	7,250	67.7	7,250	67.7	5,000	35.4									
3/8	9,800	122.0	8,500	105.9	7,400	69.3	5,900	55.1	5,900	55.1	4,100	28.7									
7/16	8,250	102.8	7,150	88.6	6,200	57.9	4,950	45.7	4,950	45.7	3,400	24.0									
1/2	7,250	90.2	6,250	77.6	5,450	50.4	4,300	40.2	4,300	40.2	3,000	20.9									
5/8	6,050	75.6	5,200	63.8	4,500	41.7	3,600	33.9	3,600	33.9	2,450	17.3									
3/4	5,050	62.6	4,350	54.7	3,750	35.4	3,000	28.3	3,000	28.3	2,100	14.6									
1	3,765	46.8	3,270	41.1	2,830	26.7	2,250	21.2	2,250	21.2	1,530	10.6									

Increase feeds 40% to 50% for Series HP441BN.

High Speed Light Milling (Metric)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC										
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	985 SFM		855 SFM		740 SFM		590 SFM		590 SFM		400 SFM										
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$ 						<table border="1"> <thead> <tr> <th></th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D < 5/32$</td> <td>0.02D</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13"</td> <td>0.05D</td> </tr> </tbody> </table>							a_a	a_r	$D < 5/32$	0.02D	0.05D	$5/32 < D$	0.13"	0.05D
							a_a	a_r													
$D < 5/32$	0.02D	0.05D																			
$5/32 < D$	0.13"	0.05D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1	50,000	110	50,000	110	50,000	98	47,500	89	32,000	57	25,000	39									
2	31,780	137	25,385	110	24,890	98	23,875	89	17,225	61	12,690	39									
3	20,475	139	16,325	114	15,825	100	15,150	90	11,000	63	8,355	40									
4	18,085	145	15,525	133	15,025	108	13,555	96	11,000	74	7,960	43									
5	15,415	162	14,755	161	13,600	113	10,755	90	9,915	83	7,435	47									
6	14,380	181	12,880	162	11,050	104	9,080	85	9,080	85	6,305	43									
8	11,600	145	10,100	127	9,025	83	7,215	68	7,215	68	5,000	35									
10	9,250	115	8,025	99	6,950	65	5,540	52	5,540	52	3,840	27									
12	7,540	94	6,510	81	5,650	52	4,500	41	4,500	41	3,125	22									
14	6,800	85	5,900	73	5,100	47	4,050	38	4,050	38	2,800	20									
16	6,000	75	5,190	64	4,485	42	3,575	34	3,575	34	2,465	17									
18	5,300	65	4,550	57	3,950	37	3,150	30	3,150	30	2,200	16									
20	4,890	61	4,215	53	3,650	34	2,925	28	2,925	28	2,010	14									
22	4,255	53	3,710	46	3,190	30	2,550	24	2,550	24	1,755	12									
25	3,740	46	3,250	41	2,805	26	2,215	21	2,215	21	1,525	11									

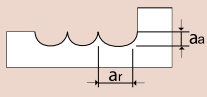
Increase feeds 40% to 50% for Series HP441BN.



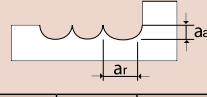


List HP416

Profiling Milling (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	575 SFM		460 SFM		375 SFM		310 SFM		260 SFM		230 SFM		165 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/32	65,000	30.1	58,700	30.1	53,300	24.4	42,600	15.7	37,500	11.2	32,400	8.2	24,000	5.5
1/16	32,450	40.6	29,350	35.8	26,650	29.1	21,300	18.9	18,750	13.4	16,200	9.8	12,000	6.3
3/32	24,300	44.1	19,700	35.8	16,250	29.1	13,100	18.9	11,500	13.8	9,900	9.8	7,450	6.3
1/8	17,050	44.1	13,850	35.8	11,600	29.5	9,300	19.3	8,150	14.6	7,000	10.6	5,200	7.1
3/16	11,750	48.0	9,500	39.0	7,900	29.9	6,300	20.9	5,550	17.3	4,700	13.0	3,550	7.9
1/4	8,750	53.1	7,000	42.9	5,800	33.1	4,600	22.8	4,050	19.3	3,450	14.2	2,550	8.7
5/16	7,250	60.6	5,800	48.8	4,800	36.6	3,800	25.6	3,350	20.9	2,850	15.0	2,100	9.4
3/8	5,900	57.1	4,700	45.3	3,900	35.0	3,100	24.4	2,700	20.5	2,350	15.4	1,700	9.4
1/2	4,350	50.4	3,450	40.6	2,900	31.9	2,300	22.4	2,000	18.9	1,700	14.2	1,250	8.7

Profiling Milling (Metric)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	575 SFM		460 SFM		375 SFM		310 SFM		260 SFM		230 SFM		165 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	46,080	43.2	46,080	43.2	45,360	35.0	36,000	22.7	31,680	16.1	27,360	11.8	20,160	7.8
2	34,026	52.9	27,648	43.2	22,680	35.0	18,276	22.7	16,080	16.3	13,884	11.8	10,446	7.8
3	21,312	53.1	17,244	43.2	14,472	35.7	11,634	23.1	10,188	17.0	8,736	12.3	6,534	8.3
4	16,740	53.1	13,806	43.2	11,556	35.7	9,234	25.0	8,070	20.8	6,912	15.1	5,160	9.7
5	13,320	59.5	10,656	48.4	8,898	36.1	7,068	25.3	6,234	21.0	5,316	16.1	3,984	9.9
6	10,944	61.9	8,736	50.3	7,284	39.0	5,778	27.2	5,082	22.7	4,332	17.0	3,228	10.6
8	8,652	73.2	6,912	59.1	5,742	44.4	4,578	31.2	3,996	25.5	3,420	18.2	2,538	11.8
10	6,648	67.1	5,316	53.4	4,416	41.6	3,504	29.3	3,078	24.3	2,646	18.7	1,956	11.6
12	5,406	61.2	4,302	48.7	3,612	39.0	2,868	27.4	2,508	23.4	2,130	17.2	1,572	10.9
14	4,896	59.5	3,888	48.9	3,240	38.3	2,592	26.9	2,232	22.0	1,944	17.0	1,440	10.6
16	4,284	59.5	3,408	47.5	2,826	36.6	2,250	26.9	1,956	21.5	1,668	15.4	1,296	10.4
18	3,816	56.7	3,024	44.9	2,520	34.5	2,016	26.9	1,728	21.5	1,512	14.6	1,140	9.9
20	3,498	54.1	2,808	43.7	2,304	32.8	1,854	25.7	1,620	21.0	1,410	14.2	1,056	9.7
22	3,048	50.3	2,556	40.4	2,130	29.1	1,638	22.9	1,422	18.9	1,230	12.8	918	9.2
25	2,688	43.9	2,130	37.6	1,770	26.0	1,416	20.1	1,260	16.3	1,080	11.6	804	8.0

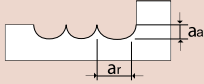
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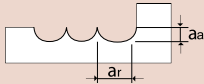


List HP416: (continued)

High Speed Light Milling (Fractional)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC										
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	985 SFM		855 SFM		740 SFM		590 SFM		590 SFM		400 SFM										
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$								<table border="1"> <tr> <td></td> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>$D < 5/32$</td> <td>0.020</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13"</td> <td>0.05D</td> </tr> </table>					a_a	a_r	$D < 5/32$	0.020	0.05D	$5/32 < D$	0.13"	0.05D
	a_a	a_r																			
$D < 5/32$	0.020	0.05D																			
$5/32 < D$	0.13"	0.05D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1/32	78,500	110.0	70,000	110.0	70,000	98.4	67,200	88.6	46,600	59.1	35,500	39.4									
1/16	39,250	126.0	35,500	110.2	35,200	98.4	33,600	88.6	23,300	59.1	17,750	39.4									
3/32	27,450	137.8	21,900	111.8	21,400	98.8	20,500	89.0	14,850	61.4	11,000	39.4									
1/8	20,050	140.2	16,150	117.3	15,650	101.2	14,850	90.9	11,000	65.0	8,250	40.2									
3/16	16,000	158.3	14,900	153.9	13,900	111.8	11,400	91.3	10,150	81.1	7,550	45.7									
1/4	13,850	174.4	12,350	155.5	10,650	100.0	8,750	81.5	8,750	81.5	6,050	41.7									
5/16	11,650	146.1	10,150	128.0	9,050	83.9	7,250	67.7	7,250	67.7	5,000	35.4									
3/8	9,800	122.0	8,500	105.9	7,400	69.3	5,900	55.1	5,900	55.1	4,100	28.7									
1/2	7,250	90.2	6,250	77.6	5,450	50.4	4,300	40.2	4,300	40.2	3,000	20.9									

High Speed Light Milling (Metric)

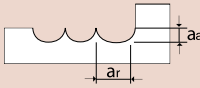
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC										
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	985 SFM		855 SFM		740 SFM		590 SFM		590 SFM		400 SFM										
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$								<table border="1"> <tr> <td></td> <td>a_a</td> <td>a_r</td> </tr> <tr> <td>$D < 5/32$</td> <td>0.020</td> <td>0.05D</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13"</td> <td>0.05D</td> </tr> </table>					a_a	a_r	$D < 5/32$	0.020	0.05D	$5/32 < D$	0.13"	0.05D
	a_a	a_r																			
$D < 5/32$	0.020	0.05D																			
$5/32 < D$	0.13"	0.05D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1	50,000	110.2	50,000	110.2	50,000	98.4	47,500	88.6	32,000	57.1	25,000	39.4									
2	31,780	137.0	25,385	110.2	24,890	98.4	23,875	88.6	17,225	60.6	12,690	39.4									
3	20,475	139.0	16,325	114.2	15,825	100.0	15,150	89.8	11,000	63.4	8,355	39.8									
4	18,085	145.3	15,525	133.1	15,025	107.9	13,555	96.1	11,000	74.0	7,960	42.9									
5	15,415	162.2	14,755	160.6	13,600	113.0	10,755	90.2	9,915	83.5	7,435	46.9									
6	14,380	180.7	12,880	161.4	11,050	103.5	9,080	84.6	9,080	84.6	6,305	43.3									
8	11,600	144.9	10,100	127.2	9,025	83.5	7,215	67.3	7,215	67.3	5,000	35.0									
10	9,250	115.0	8,025	99.2	6,950	65.0	5,540	51.6	5,540	51.6	3,840	27.2									
12	7,540	93.3	6,510	80.3	5,650	52.4	4,500	41.3	4,500	41.3	3,125	21.7									
14	6,800	84.6	5,900	72.8	5,100	47.2	4,050	38.2	4,050	38.2	2,800	19.7									
16	6,000	75.2	5,190	63.4	4,485	41.3	3,575	33.5	3,575	33.5	2,465	17.3									
18	5,300	65.0	4,550	57.1	3,950	37.0	3,150	29.5	3,150	29.5	2,200	15.4									
20	4,890	60.6	4,215	52.8	3,650	34.3	2,925	27.6	2,925	27.6	2,010	14.2									
22	4,255	53.1	3,710	46.1	3,190	29.9	2,550	24.0	2,550	24.0	1,755	12.2									
25	3,740	46.5	3,250	40.6	2,805	26.4	2,215	20.9	2,215	20.9	1,525	10.6									



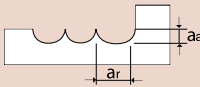


List HP418

Profiling Milling (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	497 SFM		397 SFM		330 SFM		262 SFM		230 SFM		196 SFM		146 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3/32	20,450	37.0	16,520	30.1	13,590	24.5	10,955	15.8	9,625	11.4	8,295	8.3	6,235	5.5
1/8	14,800	37.0	11,975	30.1	10,050	24.8	8,080	16.2	7,075	12.0	6,070	8.7	4,540	5.7
3/16	9,975	40.3	8,050	32.8	6,730	24.9	5,355	17.5	4,710	14.6	4,025	11.1	3,015	6.9
1/4	7,600	43.0	6,070	35.0	5,060	27.2	4,015	18.9	3,530	15.8	3,010	11.8	2,245	7.4
3/8	5,035	48.1	4,025	38.6	3,340	29.7	2,650	20.9	2,330	17.1	2,005	13.1	1,480	8.3

Profiling Milling (Metric)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	497 SFM		397 SFM		330 SFM		262 SFM		230 SFM		196 SFM		146 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	40,070	37.6	40,070	37.6	39,443	30.4	31,304	19.7	27,548	14.0	23,791	10.3	17,530	6.8
2	29,588	46.0	24,042	37.6	19,722	30.4	15,892	19.7	13,983	14.2	12,073	10.3	9,083	6.8
3	18,532	46.2	14,995	37.6	12,584	31.0	10,117	20.1	8,859	14.8	7,597	10.7	5,682	7.2
4	14,557	46.2	12,005	37.6	10,049	31.0	8,030	21.8	7,017	18.1	6,010	13.1	4,487	8.4
5	11,583	51.8	9,266	42.1	7,737	31.4	6,146	22.0	5,421	18.3	4,623	14.0	3,464	8.6
6	9,517	53.8	7,597	43.7	6,334	33.9	5,024	23.6	4,419	19.7	3,767	14.8	2,807	9.3
8	7,523	63.7	6,010	51.3	4,993	38.6	3,981	27.1	3,475	22.2	2,974	15.8	2,207	10.3
10	5,781	58.3	4,623	46.4	3,840	36.1	3,047	25.5	2,677	21.1	2,301	16.2	1,701	10.1
12	4,701	53.2	3,741	42.3	3,141	33.9	2,494	23.8	2,181	20.4	1,852	15.0	1,367	9.4

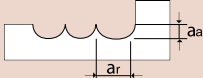
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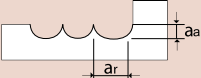


List HP418: (continued)

High speed Light Milling (Fractional)

Hardness	-		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC										
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	980 SFM		850 SFM		740 SFM		590 SFM		590 SFM		410 SFM										
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$ 						<table border="1"> <thead> <tr> <th></th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 5/32$</td> <td>0.020</td> <td>0.050</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13"</td> <td>0.050</td> </tr> </tbody> </table>							a_a	a_r	$D \leq 5/32$	0.020	0.050	$5/32 < D$	0.13"	0.050
	a_a	a_r																			
$D \leq 5/32$	0.020	0.050																			
$5/32 < D$	0.13"	0.050																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
3/32	27,490	137.8	21,750	110.2	21,250	98.4	20,450	88.6	14,705	61.0	10,950	39.4									
1/8	20,475	139.2	16,325	114.4	15,825	100.1	15,150	90.0	11,000	63.4	8,355	40.0									
3/16	16,085	154.6	15,110	153.3	14,230	112.8	11,585	91.9	10,230	80.8	7,675	46.3									
1/4	14,380	181.0	12,880	161.7	11,050	103.8	9,080	84.8	9,080	84.8	6,305	43.5									
3/8	9,975	124.2	8,660	108.0	7,575	70.7	6,035	56.4	6,035	56.4	4,180	29.6									

High Speed Light Milling (Metric)

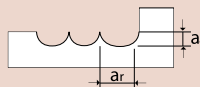
Hardness	-		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC										
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	980 SFM		850 SFM		740 SFM		590 SFM		590 SFM		410 SFM										
Depth of Cut	$a_a=0.02D$ $a_r=0.05D$ 						<table border="1"> <thead> <tr> <th></th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D \leq 5/32$</td> <td>0.020</td> <td>0.050</td> </tr> <tr> <td>$5/32 < D$</td> <td>0.13"</td> <td>0.050</td> </tr> </tbody> </table>							a_a	a_r	$D \leq 5/32$	0.020	0.050	$5/32 < D$	0.13"	0.050
	a_a	a_r																			
$D \leq 5/32$	0.020	0.050																			
$5/32 < D$	0.13"	0.050																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1	43,478	95.9	43,478	95.9	43,478	85.6	41,304	77.0	27,826	49.6	21,739	34.3									
2	27,635	119.1	22,074	95.9	21,643	85.6	20,761	77.0	14,978	52.7	11,035	34.3									
3	17,804	120.9	14,196	99.3	13,761	87.0	13,174	78.1	9,565	55.1	7,265	34.6									
4	15,726	126.3	13,500	115.7	13,065	93.8	11,787	83.5	9,565	64.4	6,922	37.3									
5	13,404	141.1	12,830	139.7	11,826	98.3	9,352	78.4	8,622	72.6	6,465	40.7									
6	12,504	157.1	11,200	140.4	9,609	90.0	7,896	73.6	7,896	73.6	5,483	37.7									
8	10,087	126.0	8,783	110.6	7,848	72.6	6,274	58.5	6,274	58.5	4,348	30.5									
10	8,043	100.0	6,978	86.3	6,043	56.5	4,817	44.8	4,817	44.8	3,339	23.6									
12	6,557	81.1	5,661	69.8	4,913	45.6	3,913	35.9	3,913	35.9	2,717	18.8									





List HP419, HP413

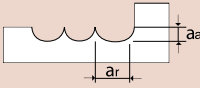
Profiling Milling (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	574 SFM		460 SFM		377 SFM		295 SFM		262 SFM		230 SFM		164 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/32	38,400	36.0	38,400	36.0	38,400	28.8	38,400	18.6	38,400	13.2	28,680	10.0	21,000	6.6
1/16	32,400	41.0	29,230	36.1	26,520	29.3	21,180	18.9	18,640	13.6	16,090	9.9	11,970	6.6
3/32	24,540	44.4	19,820	36.1	16,300	29.4	13,140	18.9	11,550	13.7	9,950	9.9	7,480	6.6
1/8	17,760	44.4	14,370	36.1	12,060	29.8	9,690	19.5	8,490	14.4	7,280	10.4	5,440	6.9
3/16	11,970	48.3	9,660	39.4	8,070	29.9	6,420	21.0	5,650	17.5	4,830	13.3	3,610	8.3

Reduce speeds and feeds 10% to 25% for Series HP419.

List HP419, HP419L, HP413

Profiling Milling (Metric)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels	
Cutting Speed	574 SFM		460 SFM		377 SFM		295 SFM		262 SFM		230 SFM		164 SFM	
Depth of Cut	$a_a=0.1D$ $a_r=0.2D$ 										$a_a=0.05D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.5	46,080	35.4	46,080	35.4	46,080	28.3	46,080	18.0	46,080	14.2	55,032	9.4	40,320	7.1
0.6	46,080	38.3	46,080	38.3	46,080	31.2	46,080	18.9	46,080	15.1	55,032	10.4	40,320	7.3
0.8	46,080	42.5	46,080	42.5	46,080	33.5	46,080	19.8	46,080	15.6	34,416	11.3	25,200	7.6
1	46,080	43.2	46,080	43.2	45,360	35.0	36,000	22.7	31,680	16.1	27,360	11.8	20,160	7.8
2	34,020	52.9	27,648	43.2	22,680	35.0	18,276	22.7	16,080	16.3	13,884	11.8	10,440	7.8
3	21,312	53.1	17,244	43.2	14,472	35.7	11,628	23.1	10,188	17.0	8,736	12.3	6,528	8.3
4	16,740	53.1	13,800	43.2	11,556	35.7	9,228	25.0	8,064	20.8	6,912	15.1	5,160	9.7
5	13,320	59.5	10,656	48.4	8,892	36.1	7,068	25.3	6,228	21.0	5,316	16.1	3,984	9.9
6	10,944	61.9	8,736	50.3	7,284	39.0	5,772	27.2	5,076	22.7	4,332	17.0	3,228	10.6
8	8,652	73.2	6,912	59.1	5,736	44.4	4,572	31.2	3,996	25.5	3,420	18.2	2,532	11.8
10	6,648	67.1	5,316	53.4	4,416	41.6	3,504	29.3	3,072	24.3	2,640	18.7	1,956	11.6
12	5,400	61.2	4,296	48.7	3,612	39.0	2,868	27.4	2,508	23.4	2,124	17.2	1,572	10.9

Reduce feeds 10% to 20% for Series HP419L.

continued on next page →





List HP419, HP413: (continued)

High Speed Light Milling (Fractional)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC										
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	951 SFM		820 SFM		722 SFM		574 SFM		574 SFM		394 SFM										
Depth of Cut									<table border="1"> <thead> <tr> <th></th> <th>da</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 5/32</td> <td>0.020</td> <td>0.05D</td> </tr> <tr> <td>5/32 < D</td> <td>0.13"</td> <td>0.05D</td> </tr> </tbody> </table>					da	ar	D < 5/32	0.020	0.05D	5/32 < D	0.13"	0.05D
									da	ar											
D < 5/32	0.020	0.05D																			
5/32 < D	0.13"	0.05D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
1/32	50,000	86.6	50,000	86.6	50,000	78.7	50,000	74.8	32,000	45.2	32,000	39.4									
1/16	46,955	151.7	42,370	132.3	42,015	118.1	40,080	106.3	27,820	71.2	21,185	47.2									
3/32	32,990	165.4	26,105	132.3	25,505	118.1	24,540	106.3	17,650	73.2	13,145	47.2									
1/8	24,570	167.0	19,590	137.2	18,990	120.1	18,180	108.0	13,200	76.1	10,030	48.0									
3/16	19,305	185.6	18,135	184.0	17,080	135.3	13,905	110.3	12,280	96.9	9,215	55.6									

Reduce speeds and feeds 10% to 25% for Series HP419.

List HP419, HP419L, HP413: (continued)

High Speed Light Milling (Metric)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC										
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels										
Cutting Speed	951 SFM		820 SFM		722 SFM		574 SFM		574 SFM		394 SFM										
Depth of Cut									<table border="1"> <thead> <tr> <th></th> <th>da</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 5/32</td> <td>0.020</td> <td>0.05D</td> </tr> <tr> <td>5/32 < D</td> <td>0.13"</td> <td>0.05D</td> </tr> </tbody> </table>					da	ar	D < 5/32	0.020	0.05D	5/32 < D	0.13"	0.05D
									da	ar											
D < 5/32	0.020	0.05D																			
5/32 < D	0.13"	0.05D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min									
0.5	50,000	57.1	50,000	55.1	50,000	55.1	50,000	47.2	32,000	28.9	32,000	28.9									
0.6	50,000	65.0	50,000	65.0	50,000	65.0	50,000	55.1	32,000	34.6	32,000	34.6									
0.8	50,000	86.6	50,000	86.6	50,000	78.7	50,000	74.8	32,000	45.3	32,000	39.4									
1	50,000	110.2	50,000	110.2	50,000	98.4	47,500	88.6	32,000	57.1	25,000	39.4									
2	31,780	137.4	25,385	110.2	24,890	98.4	23,875	88.6	17,225	60.9	12,690	39.4									
3	20,475	139.2	16,325	114.4	15,825	100.1	15,150	90.0	11,000	63.4	8,355	40.0									
4	18,085	145.4	15,525	133.1	15,025	108.0	13,555	96.2	11,000	74.4	7,960	43.1									
5	15,415	162.5	14,755	161.0	13,600	113.2	10,755	90.2	9,915	83.6	7,435	46.9									
6	14,380	181.0	12,880	161.7	11,050	103.8	9,080	84.8	9,080	84.8	6,305	43.5									
8	11,600	145.1	10,100	127.3	9,025	83.5	7,215	67.6	7,215	67.6	5,000	35.4									
10	9,250	115.0	8,025	99.5	6,950	65.0	5,540	51.6	5,540	51.6	3,840	27.2									
12	7,540	93.6	6,510	80.5	5,650	52.4	4,500	41.5	4,500	41.5	3,125	22.0									


Reduce feeds 10% to 20% for Series HP419L.





List HP432


Slotting (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC				
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels				
Cutting Speed	360 SFM		330 SFM		260 SFM		220 SFM		180 SFM		120 SFM		80 SFM				
Depth of Cut			$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$				
	$D < 1/16$	0.1D	$1/16 < D < 1/8$	0.3D	$1/8 < D$	0.5D							$D < 1/16$	0.02D	$1/16 < D < 1/8$	0.02D	$1/8 < D$
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min			
1/8	9,450	10.7	8,570	9.8	7,310	7.4	6,135	4.9	5,135	3.7	3,180	2.2	2,300	1.4			
3/16	7,190	15.4	6,540	14.0	5,325	10.5	4,455	6.0	3,785	4.5	2,360	2.6	1,590	1.4			
1/4	5,600	16.0	5,090	14.5	4,125	11.1	3,375	6.0	2,870	4.7	1,775	2.6	1,205	1.2			
5/16	4,395	15.3	4,000	13.9	3,270	11.1	2,660	5.9	2,295	4.7	1,390	2.4	960	1.2			
3/8	3,695	14.7	3,360	13.3	2,735	11.0	2,225	5.9	1,910	4.5	1,200	2.4	800	1.2			
1/2	2,760	14.5	2,510	13.2	2,030	10.6	1,655	5.6	1,415	4.4	900	2.1	600	0.9			
5/8	2,195	12.6	1,995	12.3	1,625	9.5	1,330	4.7	1,150	4.0	720	1.7	470	0.7			
3/4	1,760	11.1	1,605	10.0	1,305	7.6	1,095	3.8	935	3.2	580	1.4	380	0.6			
1	1,360	8.5	1,240	7.7	1,020	6.0	840	3.0	720	2.6	440	0.9	300	0.5			

For side milling, increase feeds 20% to 50%.

List HP432, HP433

Slotting (Metric)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC				
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels				
Cutting Speed	360 SFM		330 SFM		260 SFM		220 SFM		180 SFM		120 SFM		80 SFM				
Depth of Cut			$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$		$\frac{aa}{D}$				
	$D < 1/16$	0.1D	$1/16 < D < 1/8$	0.3D	$1/8 < D$	0.5D							$D < 1/16$	0.02D	$1/16 < D < 1/8$	0.02D	$1/8 < D$
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min			
3	11,750	12.5	10,656	11.4	9,144	8.5	7,632	5.6	6,408	4.3	3,960	2.6	2,880	1.7			
4	9,425	14.7	8,568	13.5	7,056	10.5	6,134	7.0	5,040	5.0	3,168	2.9	2,232	1.7			
5	8,395	19.7	7,632	17.9	6,192	13.4	5,112	7.4	4,392	5.6	2,736	3.2	1,814	1.7			
6	7,049	19.3	6,408	17.6	5,184	13.4	4,248	7.4	3,600	5.6	2,232	3.2	1,512	1.4			
8	5,227	18.4	4,752	16.7	3,888	13.4	3,168	7.0	2,736	5.6	1,656	2.9	1,145	1.4			
10	4,198	17.4	3,816	15.8	3,096	13.1	2,520	7.0	2,160	5.3	1,375	2.9	914	1.4			
12	3,485	17.4	3,168	15.8	2,592	13.1	2,088	7.0	1,800	5.3	1,145	2.6	763	1.1			

For side milling, increase feeds 20% to 50%.


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List HP434


Side Milling (Fractional)

Hardness	-		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC														
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels														
Cutting Speed	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 SFM														
Depth of Cut	<table border="1"> <thead> <tr> <th></th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D < 1/8$</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>$1/8 < D$</td> <td>1.5D</td> <td>0.1D</td> </tr> </tbody> </table>													a_a	a_r	$D < 1/8$	1.5D	0.05D	$1/8 < D$	1.5D	0.1D			$a_a = 1D$		$a_r = 0.02D$	
		a_a	a_r																								
$D < 1/8$	1.5D	0.05D																									
$1/8 < D$	1.5D	0.1D																									
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min													
1/8	12,060	28.4	10,205	24.0	8,700	16.9	7,125	5.9	5,475	5.2	3,180	2.9	2,290	2.2													
3/16	8,075	33.7	6,740	28.3	5,930	19.4	4,455	6.5	3,935	5.7	2,360	3.5	1,565	2.0													
1/4	7,060	34.4	5,090	28.9	4,235	20.0	3,375	6.9	3,030	6.1	1,775	3.3	1,205	1.9													
5/16	4,820	33.6	4,000	27.8	3,330	19.8	2,660	6.9	2,360	6.1	1,390	3.2	960	1.7													
3/8	4,005	33.6	3,360	27.8	2,795	19.8	2,225	6.9	1,970	6.1	1,200	3.8	800	1.7													
1/2	3,010	32.7	2,510	27.5	2,090	19.7	1,655	6.9	1,475	6.0	900	2.7	600	1.3													
5/8	2,355	31.4	1,995	26.1	1,630	19.6	1,325	6.1	1,200	5.4	720	2.3	470	0.9													
3/4	1,920	29.7	1,605	24.9	1,350	15.7	1,095	5.0	975	4.5	580	1.7	380	0.9													
1	1,485	23.3	1,240	19.5	1,050	14.0	840	3.9	750	3.5	440	1.4	300	0.7													

For Slotting, reduce feeds 20% to 50%.

List HP434, HP435

Side Milling (Metric)

Hardness	-		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC														
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels		Hardened Steels														
Cutting Speed	390 SFM		330 SFM		270 SFM		220 SFM		190 SFM		120 SFM		80 SFM														
Depth of Cut	<table border="1"> <thead> <tr> <th></th> <th>a_a</th> <th>a_r</th> </tr> </thead> <tbody> <tr> <td>$D < 1/8$</td> <td>1.5D</td> <td>0.05D</td> </tr> <tr> <td>$1/8 < D$</td> <td>1.5D</td> <td>0.1D</td> </tr> </tbody> </table>													a_a	a_r	$D < 1/8$	1.5D	0.05D	$1/8 < D$	1.5D	0.1D			$a_a = 1D$		$a_r = 0.02D$	
		a_a	a_r																								
$D < 1/8$	1.5D	0.05D																									
$1/8 < D$	1.5D	0.1D																									
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min													
3	14,472	34.1	12,246	28.9	10,440	20.3	8,550	7.1	6,570	6.2	3,816	3.5	2,748	2.6													
4	11,556	35.9	9,672	30.0	9,468	21.0	6,204	7.6	5,370	6.4	3,186	4.0	2,178	2.6													
5	9,126	41.9	7,428	35.1	6,234	24.1	4,968	8.0	4,416	7.0	2,646	4.3	1,746	2.3													
6	8,472	41.3	6,108	34.6	5,082	24.0	4,050	8.2	3,636	7.4	2,130	4.0	1,446	2.3													
8	5,784	40.3	4,800	33.4	3,996	23.7	3,192	8.2	2,832	7.4	1,668	3.9	1,152	2.0													
10	4,416	40.3	3,708	33.4	3,078	23.7	2,448	8.2	2,172	7.4	1,332	4.6	882	2.0													
12	3,612	39.3	3,012	33.1	2,508	23.6	1,986	8.2	1,770	7.2	1,080	3.2	720	1.6													

For Slotting, reduce feeds 20% to 50%.

continued on next page





List HP432, HP434 (Continued)

High Speed Light Milling (Fractional)

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC																						
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels																						
Cutting Speed	1,310 SFM		1,150 SFM		820 SFM		490 SFM		260 SFM																						
Depth of Cut	<table border="1" style="display: inline-table; margin-right: 20px;"> <thead> <tr><th></th><th>aa</th><th>ar</th></tr> </thead> <tbody> <tr><td>D < 5/16</td><td>1.5D</td><td>0.01D</td></tr> <tr><td>5/16 < D < 5/8</td><td>1.5D</td><td>0.02D</td></tr> <tr><td>5/8 < D</td><td>1.5D</td><td>0.05D</td></tr> </tbody> </table>						aa	ar	D < 5/16	1.5D	0.01D	5/16 < D < 5/8	1.5D	0.02D	5/8 < D	1.5D	0.05D	<table border="1" style="display: inline-table;"> <thead> <tr><th></th><th>aa</th><th>ar</th></tr> </thead> <tbody> <tr><td>D < 5/16</td><td>1D</td><td>0.01D</td></tr> <tr><td>5/16 < D</td><td>1D</td><td>0.02D</td></tr> </tbody> </table>						aa	ar	D < 5/16	1D	0.01D	5/16 < D	1D	0.02D
	aa	ar																													
D < 5/16	1.5D	0.01D																													
5/16 < D < 5/8	1.5D	0.02D																													
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	aa	ar																													
D < 5/16	1D	0.01D																													
5/16 < D	1D	0.02D																													
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																					
1/8	40,550	79.9	35,500	70.5	25,300	49.6	15,200	26.0	8,050	14.6																					
3/16	26,950	112.6	23,550	81.1	16,850	54.3	10,100	28.7	5,350	17.3																					
1/4	20,000	96.5	17,600	84.3	12,450	58.7	7,600	31.1	4,000	16.5																					
5/16	15,650	96.5	13,650	82.7	9,950	57.1	6,000	31.1	3,150	16.5																					
3/8	13,200	97.6	11,550	82.7	8,400	57.1	5,000	31.1	2,650	16.5																					
1/2	9,950	94.9	8,750	81.1	6,250	55.5	3,750	30.3	1,950	15.7																					
5/8	8,000	88.6	7,000	76.8	4,950	53.1	2,950	28.0	1,550	14.6																					
3/4	6,650	85.4	5,800	73.6	4,150	51.2	2,450	26.8	1,300	14.2																					
1	4,950	65.7	43,950	58.3	3,100	40.6	1,850	21.7	950	10.6																					

Reduce feeds 50% for Series HP432 High speed Light Milling.

▶ continued on next page ▶





List HP432, HP434, HP433, HP435: (continued)

High Speed Light Milling (Metric)

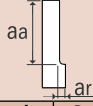
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC																						
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels																						
Cutting Speed	1,310 SFM		1,150 SFM		820 SFM		490 SFM		260 SFM																						
Depth of Cut	<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 8</td> <td>1.5D</td> <td>0.01D</td> </tr> <tr> <td>8 < D < 16</td> <td>1.5D</td> <td>0.02D</td> </tr> <tr> <td>16 < D</td> <td>1.5D</td> <td>0.05D</td> </tr> </tbody> </table>					aa	ar	D < 8	1.5D	0.01D	8 < D < 16	1.5D	0.02D	16 < D	1.5D	0.05D			<table border="1"> <thead> <tr> <th></th> <th>aa</th> <th>ar</th> </tr> </thead> <tbody> <tr> <td>D < 8</td> <td>1D</td> <td>0.01D</td> </tr> <tr> <td>8 < D</td> <td>1D</td> <td>0.02D</td> </tr> </tbody> </table>					aa	ar	D < 8	1D	0.01D	8 < D	1D	0.02D
	aa	ar																													
D < 8	1.5D	0.01D																													
8 < D < 16	1.5D	0.02D																													
16 < D	1.5D	0.05D																													
	aa	ar																													
D < 8	1D	0.01D																													
8 < D	1D	0.02D																													
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																					
3	42,450	79.5	37,150	70.1	26,500	49.2	15,900	26.0	8,450	14.2																					
4	31,800	83.5	27,850	72.8	19,900	53.1	11,900	27.2	6,350	16.5																					
5	25,450	98.4	22,250	83.9	15,900	55.1	9,550	29.5	5,050	17.7																					
6	21,000	96.5	18,500	84.6	13,000	59.1	7,950	31.3	4,200	16.5																					
8	15,500	96.5	13,500	82.7	9,900	57.1	5,950	31.3	3,150	16.7																					
10	12,500	98.4	11,000	82.7	7,950	57.1	4,750	31.5	2,500	16.5																					
12	10,500	96.5	9,250	82.7	6,600	57.1	3,950	31.1	2,100	16.1																					

Reduce feeds 50% for Series HP432 High speed Light Milling.

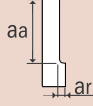


Standard 2 Flute and 3 Flute Carbide

Side Milling (Fractional)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	330-400 SFM		100-150 SFM		100-150 SFM		80-115 SFM		80-100 SFM		50 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.015	100,000	15.7	31,500	3.9	30,000	2.0	25,000	1.2	25,000	0.6	16,000	0.3
0.020	62,000	17.7	22,400	4.9	22,000	2.4	16,000	1.4	16,000	0.7	9,500	0.4
0.030	40,000	17.7	16,000	4.9	14,000	2.4	10,000	1.4	10,000	0.7	6,000	0.4
3/64	31,500	17.7	14,000	6.9	11,000	3.3	8,000	2.4	8,000	1.4	4,800	0.6
1/16	21,200	17.7	9,500	6.9	7,500	3.3	5,300	2.4	5,400	1.4	3,200	0.6
5/64	16,000	17.7	7,100	9.8	5,500	3.3	4,000	2.4	4,000	1.4	2,400	1.0
1/8	12,500	17.7	4,750	11.8	4,500	5.9	3,550	4.7	3,150	1.8	1,600	1.0
5/32	9,500	18.7	3,550	11.8	3,550	6.9	2,650	4.7	2,360	1.8	1,200	1.0
3/16	7,500	18.7	2,800	11.8	2,800	7.9	2,120	4.9	1,900	1.8	950	1.0
1/4	6,300	18.7	2,360	11.8	2,360	7.9	1,700	4.9	1,600	1.8	800	1.0
5/16	4,750	19.7	1,800	11.8	1,800	7.9	1,320	4.9	1,180	1.8	600	1.0
3/8	3,750	19.7	1,400	12.4	1,400	8.9	1,060	4.9	950	1.8	480	1.0
1/2	3,150	22.0	1,180	12.4	1,180	8.9	850	4.9	800	1.8	400	1.0
5/8	2,360	22.0	900	14.8	900	9.8	670	5.5	600	1.8	300	1.0
3/4	1,900	22.0	710	14.8	710	9.8	530	5.9	475	1.8	240	1.0
1	1,500	19.7	560	14.8	560	9.8	425	5.5	375	1.4	190	0.8

Side Milling (Metric)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	330-400 SFM		100-150 SFM		100-150 SFM		80-115 SFM		80-100 SFM		50 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0	100,000	15.7	31,500	3.9	30,000	2.0	25,000	1.2	25,000	0.6	16,000	0.3
1	62,000	17.7	22,400	4.9	22,000	2.4	16,000	1.4	16,000	0.7	9,500	0.4
1	40,000	17.7	16,000	4.9	14,000	2.4	10,000	1.4	10,000	0.7	6,000	0.4
1	31,500	17.7	14,000	6.9	11,000	3.3	8,000	2.4	8,000	1.4	4,800	0.6
2	21,200	17.7	9,500	6.9	7,500	3.3	5,300	2.4	5,400	1.4	3,200	0.6
2	16,000	17.7	7,100	9.8	5,500	3.3	4,000	2.4	4,000	1.4	2,400	0.6
3	12,500	17.7	4,750	11.8	4,500	5.9	3,550	4.7	3,150	1.8	1,600	1.0
4	9,500	18.7	3,550	11.8	3,550	6.9	2,650	4.7	2,360	1.8	1,200	1.0
5	7,500	18.7	2,800	11.8	2,800	7.9	2,120	4.9	1,900	1.8	950	1.0
6	6,300	18.7	2,360	11.8	2,360	7.9	1,700	4.9	1,600	1.8	800	1.0
8	4,750	19.7	1,800	11.8	1,800	7.9	1,320	4.9	1,180	1.8	600	1.0
10	3,750	19.7	1,400	12.4	1,400	8.9	1,060	4.9	950	1.8	480	1.0
12	3,150	22.0	1,180	12.4	1,180	8.9	850	4.9	800	1.8	400	1.0
16	2,360	22.0	900	14.8	900	9.8	670	5.5	600	1.8	300	1.0
20	1,900	22.0	710	14.8	710	9.8	530	5.9	475	1.8	240	1.0
25	1,500	19.7	560	14.8	560	9.8	425	5.5	375	1.4	190	0.8

(1) Increase speeds & feeds 5-10% for Series 412 and 422. (2) Reduce speeds & feeds 20-30% for Series 462. (3) Reduce speeds & feeds 40-50% for Series 482. (4) Increase speeds & feeds 20-30% for 402 TiN. (5) Column for Hardened Steels (40-50 HRC) is for Series 402 TiN and 403 TiN only. (6) Increase speeds & feeds 20-30% for Series 403 and 445. (7) Increase speeds & feeds 20-40% for Series 403 TiN.

continued on next page 





Standard 2 Flute and 3 Flute Carbide: (continued)

Slotting (Fractional)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC									
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels									
Cutting Speed	330 SFM		100-150 SFM		100-130 SFM		65-100 SFM		65-82 SFM		43 SFM									
Depth of Cut	<table border="1"> <tr><td></td><td>aa</td></tr> <tr><td>D < 1/32</td><td>0.25D</td></tr> <tr><td>1/32 < D < 5/64</td><td>0.5D</td></tr> <tr><td>5/64 < D</td><td>1D</td></tr> </table>													aa	D < 1/32	0.25D	1/32 < D < 5/64	0.5D	5/64 < D	1D
														aa						
D < 1/32	0.25D																			
1/32 < D < 5/64	0.5D																			
5/64 < D	1D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min								
0.015	100,000	7.1	31,500	3.9	30,000	1.4	22,400	0.7	21,200	0.5	16,000	0.3								
0.020	62,000	7.9	22,400	4.9	19,000	1.6	13,000	0.8	12,000	0.6	9,500	0.3								
0.030	40,000	7.9	16,000	4.9	14,000	2.5	8,000	1.0	8,000	0.6	6,000	0.3								
3/64	31,500	7.9	14,000	5.5	12,500	3.0	7,500	1.2	7,000	0.6	4,800	0.3								
1/16	21,200	7.9	9,500	5.5	8,500	3.5	6,500	1.4	5,000	0.8	3,200	0.4								
5/64	16,000	11.8	7,100	5.9	6,300	3.9	5,000	2.4	4,000	1.2	2,400	0.6								
1/8	11,200	11.8	4,750	6.3	4,250	3.9	3,200	3.1	2,600	1.2	1,600	0.6								
5/32	8,000	11.8	3,550	6.3	3,150	3.9	2,400	3.1	2,000	1.2	1,200	0.6								
3/16	6,300	11.8	2,800	6.3	2,500	3.9	2,000	3.1	1,600	1.2	950	0.6								
1/4	5,300	11.8	2,360	7.9	2,120	3.9	1,600	3.1	1,300	1.2	800	0.6								
5/16	4,000	11.8	1,800	9.3	1,600	3.9	1,200	3.1	1,000	1.2	600	0.6								
3/8	3,150	11.8	1,400	9.3	1,250	3.9	1,000	3.1	800	1.2	480	0.6								
1/2	2,650	11.8	1,180	9.3	1,060	3.9	820	3.1	700	1.2	400	0.6								
5/8	2,000	11.8	900	9.3	800	3.9	640	3.3	500	1.5	300	0.5								
3/4	1,600	11.8	710	9.3	630	3.9	500	3.3	400	1.5	240	0.4								
1	1,250	11.8	560	9.3	500	3.9	400	3.3	320	1.5	190	0.3								

Slotting (Metric)


Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC									
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels									
Cutting Speed	330 SFM		100-150 SFM		100-130 SFM		65-100 SFM		65-82 SFM		43 SFM									
Depth of Cut	<table border="1"> <tr><td></td><td>aa</td></tr> <tr><td>D < 0.8</td><td>0.25D</td></tr> <tr><td>0.8 < D < 2</td><td>0.5D</td></tr> <tr><td>≥ D</td><td>1D</td></tr> </table>													aa	D < 0.8	0.25D	0.8 < D < 2	0.5D	≥ D	1D
														aa						
D < 0.8	0.25D																			
0.8 < D < 2	0.5D																			
≥ D	1D																			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min								
0.3	100,000	7.1	31,500	3.9	30,000	1.4	22,400	0.7	21,200	0.5	16,000	0.3								
0.5	62,000	7.9	22,400	4.9	19,000	1.6	13,000	0.8	12,000	0.6	9,500	0.3								
0.8	40,000	7.9	16,000	4.9	14,000	2.5	8,000	1.0	8,000	0.6	6,000	0.3								
1	31,500	7.9	14,000	5.5	12,500	3.0	7,500	1.2	7,000	0.6	4,800	0.3								
1.5	21,200	7.9	9,500	5.5	8,500	3.5	6,500	1.4	5,000	0.8	3,200	0.4								
2	16,000	11.8	7,100	5.9	6,300	3.9	5,000	2.4	4,000	1.2	2,400	0.6								
3	11,200	11.8	4,750	6.3	4,250	3.9	3,200	3.1	2,600	1.2	1,600	0.6								
4	8,000	11.8	3,550	6.3	3,150	3.9	2,400	3.1	2,000	1.2	1,200	0.6								
5	6,300	11.8	2,800	6.3	2,500	3.9	2,000	3.1	1,600	1.2	950	0.6								
6	5,300	11.8	2,360	7.9	2,120	3.9	1,600	3.1	1,300	1.2	800	0.6								
8	4,000	11.8	1,800	9.3	1,600	3.9	1,200	3.1	1,000	1.2	600	0.6								
10	3,150	11.8	1,400	9.3	1,250	3.9	1,000	3.1	800	1.2	480	0.6								
12	2,650	11.8	1,180	9.3	1,060	3.9	820	3.1	700	1.2	400	0.6								
16	2,000	11.8	900	9.3	800	3.9	640	3.3	500	1.5	300	0.5								
20	1,600	11.8	710	9.3	630	3.9	500	3.3	400	1.5	240	0.4								
25	1,250	11.8	560	9.3	500	3.9	400	3.3	320	1.5	190	0.3								

(1) Increase speeds & feeds 5-10% for Series 412 and 422. (2) Reduce speeds & feeds 20-30% for Series 462. (3) Reduce speeds & feeds 40-50% for Series 482. (4) Increase speeds & feeds 20-30% for 402 TiN. (5) Column for Hardened Steels (40-50 HRC) is for Series 402 TiN and 403 TiN only. (6) Increase speeds & feeds 20-30% for Series 403 and 445. (7) Increase speeds & feeds 20-40% for Series 403 TiN.




Standard 4 Flute and Multiple Flute Carbide

Side Milling (Fractional)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	330-400 SFM		100-150 SFM		100-150 SFM		80-115 SFM		80-100 SFM		50 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.030	40,000	24.8	16,000	6.9	14,000	3.3	10,000	2.0	10,000	1.0	6,000	0.6
3/64	31,500	24.8	14,000	9.6	11,000	4.7	8,000	3.3	8,000	2.0	4,800	0.8
1/16	21,200	24.8	9,500	9.6	7,500	4.7	5,300	3.3	5,400	2.0	3,200	0.8
5/64	16,000	24.8	7,100	13.8	5,500	4.7	4,000	3.3	4,000	2.0	2,400	0.8
1/8	12,500	24.8	4,750	16.5	4,500	8.3	3,550	6.7	3,150	2.5	1,600	1.4
5/32	9,500	26.2	3,550	16.5	3,550	9.6	2,650	6.7	2,360	2.5	1,200	1.4
3/16	7,500	26.2	2,800	16.5	2,800	11.0	2,120	6.7	1,900	2.5	950	1.4
1/4	6,300	26.2	2,360	16.5	2,360	11.0	1,700	6.7	1,600	2.5	800	1.4
5/16	4,750	27.6	1,800	16.5	1,800	11.0	1,320	6.7	1,180	2.5	600	1.4
3/8	3,750	27.6	1,400	17.3	1,400	12.2	1,060	6.7	950	2.5	480	1.4
1/2	3,150	30.7	1,180	17.3	1,180	12.2	850	6.7	800	2.5	400	1.4
5/8	2,360	30.7	900	20.7	900	13.8	670	7.9	600	2.5	300	1.4
3/4	1,900	30.7	710	20.7	710	13.8	530	8.3	475	2.5	240	1.4
1	1,500	27.6	560	20.7	560	13.8	425	7.9	375	2.0	190	1.1

Side Milling (Metric)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	330-400 SFM		100-150 SFM		100-150 SFM		80-115 SFM		80-100 SFM		50 SFM	
Depth of Cut	$a_a=1.5D$ $a_r=0.1D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.8	40,000	24.8	16,000	6.9	14,000	3.3	10,000	2.0	10,000	1.0	6,000	0.6
1	31,500	24.8	14,000	9.6	11,000	4.7	8,000	3.3	8,000	2.0	4,800	0.8
1.5	21,200	24.8	9,500	9.6	7,500	4.7	5,300	3.3	5,400	2.0	3,200	0.8
2	16,000	24.8	7,100	13.8	5,500	4.7	4,000	3.3	4,000	2.0	2,400	0.8
3	12,500	24.8	4,750	16.5	4,500	8.3	3,550	6.7	3,150	2.5	1,600	1.4
4	9,500	26.2	3,550	16.5	3,550	9.6	2,650	6.7	2,360	2.5	1,200	1.4
5	7,500	26.2	2,800	16.5	2,800	11.0	2,120	6.7	1,900	2.5	950	1.4
6	6,300	26.2	2,360	16.5	2,360	11.0	1,700	6.7	1,600	2.5	800	1.4
8	4,750	27.6	1,800	16.5	1,800	11.0	1,320	6.7	1,180	2.5	600	1.4
10	3,750	27.6	1,400	17.3	1,400	12.2	1,060	6.7	950	2.5	480	1.4
12	3,150	30.7	1,180	17.3	1,180	12.2	850	6.7	800	2.5	400	1.4
16	2,360	30.7	900	20.7	900	13.8	670	7.9	600	2.5	300	1.4
20	1,900	30.7	710	20.7	710	13.8	530	8.3	475	2.5	240	1.4
25	1,500	27.6	560	20.7	560	13.8	425	7.9	375	2.0	190	1.1

(1) Reduce speeds & feeds 20-30% for Series 464. (2) Reduce speeds & feeds 40-50% for Series 484. (3) Slotting is not recommended for Series 484. (4) Increase speeds & feeds 20-30% for Series 404 TiN. (5) Column for Hardened Steels (40-50 HRC), is for Series 404 TiN only.

➔ continued on next page ➔





Standard 4 Flute and Multiple Flute Carbide: (continued)

Slotting (Fractional)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC																	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels																	
Cutting Speed	330 SFM		100-150 SFM		100-130 SFM		65-100 SFM		65-82 SFM		43 SFM																	
Depth of Cut	<table border="1"> <tr> <td colspan="2"></td> <td colspan="2">a_a</td> </tr> <tr> <td colspan="2">$D < 1/32$</td> <td colspan="2">0.2D</td> </tr> <tr> <td colspan="2">$1/32 < D < 5/64$</td> <td colspan="2">0.3D</td> </tr> <tr> <td colspan="2">$5/64 < D$</td> <td colspan="2">0.5D</td> </tr> </table>														a_a		$D < 1/32$		0.2D		$1/32 < D < 5/64$		0.3D		$5/64 < D$		0.5D	
															a_a													
$D < 1/32$		0.2D																										
$1/32 < D < 5/64$		0.3D																										
$5/64 < D$		0.5D																										
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																
0.030	40,000	11.0	16,000	6.9	14,000	3.5	8,000	1.4	8,000	0.8	6,000	0.4																
3/64	31,500	11.0	14,000	7.9	12,500	4.1	7,500	1.7	7,000	0.8	4,800	0.4																
1/16	21,200	11.0	9,500	7.9	8,500	4.9	6,500	2.0	5,000	1.1	3,200	0.6																
5/64	16,000	16.5	7,100	8.3	6,300	5.5	5,000	3.3	4,000	1.7	2,400	0.9																
1/8	11,200	16.5	4,750	8.9	4,250	5.5	3,200	4.3	2,600	1.7	1,600	0.9																
5/32	8,000	16.5	3,550	8.9	3,150	5.5	2,400	4.3	2,000	1.7	1,200	0.9																
3/16	6,300	16.5	2,800	8.9	2,500	5.5	2,000	4.3	1,600	1.7	950	0.9																
1/4	5,300	16.5	2,360	11.0	2,120	5.5	1,600	4.3	1,300	1.7	800	0.9																
5/16	4,000	16.5	1,800	13.0	1,600	5.5	1,200	4.3	1,000	1.7	600	0.9																
3/8	3,150	16.5	1,400	13.0	1,250	5.5	1,000	4.3	800	1.7	480	0.9																
1/2	2,650	16.5	1,180	13.0	1,060	5.5	820	4.3	700	1.7	400	0.9																
5/8	2,000	16.5	900	13.0	800	5.5	640	4.7	500	2.0	300	0.7																
3/4	1,600	16.5	710	13.0	630	5.5	500	4.7	400	2.0	240	0.6																
1	1,250	16.5	560	13.0	500	5.5	400	4.7	320	2.0	190	0.4																

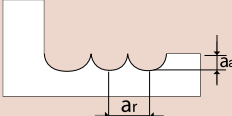
Slotting (Metric)

Hardness	-		-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC																	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels																	
Cutting Speed	330 SFM		100-150 SFM		100-130 SFM		65-100 SFM		65-82 SFM		43 SFM																	
Depth of Cut	<table border="1"> <tr> <td colspan="2"></td> <td colspan="2">a_a</td> </tr> <tr> <td colspan="2">$D < 0.8$</td> <td colspan="2">0.2D</td> </tr> <tr> <td colspan="2">$0.8 < D < 2$</td> <td colspan="2">0.3D</td> </tr> <tr> <td colspan="2">$2 < D$</td> <td colspan="2">0.5D</td> </tr> </table>														a_a		$D < 0.8$		0.2D		$0.8 < D < 2$		0.3D		$2 < D$		0.5D	
															a_a													
$D < 0.8$		0.2D																										
$0.8 < D < 2$		0.3D																										
$2 < D$		0.5D																										
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min																
0.8	40,000	11.0	16,000	6.9	14,000	3.5	8,000	1.4	8,000	0.8	6,000	0.4																
1	31,500	11.0	14,000	7.9	12,500	4.1	7,500	1.7	7,000	0.8	4,800	0.4																
1.5	21,200	11.0	9,500	7.9	8,500	4.9	6,500	2.0	5,000	1.1	3,200	0.6																
2	16,000	16.5	7,100	8.3	6,300	5.5	5,000	3.3	4,000	1.7	2,400	0.9																
3	11,200	16.5	4,750	8.9	4,250	5.5	3,200	4.3	2,600	1.7	1,600	0.9																
4	8,000	16.5	3,550	8.9	3,150	5.5	2,400	4.3	2,000	1.7	1,200	0.9																
5	6,300	16.5	2,800	8.9	2,500	5.5	2,000	4.3	1,600	1.7	950	0.9																
6	5,300	16.5	2,360	11.0	2,120	5.5	1,600	4.3	1,300	1.7	800	0.9																
8	4,000	16.5	1,800	13.0	1,600	5.5	1,200	4.3	1,000	1.7	600	0.9																
10	3,150	16.5	1,400	13.0	1,250	5.5	1,000	4.3	800	1.7	480	0.9																
12	2,650	16.5	1,180	13.0	1,060	5.5	820	4.3	700	1.7	400	0.9																
16	2,000	16.5	900	13.0	800	5.5	640	4.7	500	2.0	300	0.7																
20	1,600	16.5	710	13.0	630	5.5	500	4.7	400	2.0	240	0.6																
25	1,250	16.5	560	13.0	500	5.5	400	4.7	320	2.0	190	0.4																



List 497

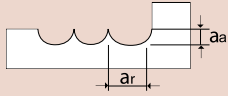
Profiling (Fractional)

Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC							
Work Material	Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steel Die & Alloy Steels		Pre-hardened Steels Stainless Steel Die & Alloy Steels		Hardened Steels							
Cutting Speed	390 SFM		390 SFM		330 SFM		260 SFM		200 SFM							
Depth of Cut	$a_r = 0.3D$ <table border="1" style="margin: 10px auto;"> <tr><td></td><td>a_a</td></tr> <tr><td>$D < 5/8$</td><td>0.05D</td></tr> <tr><td>$5/8 < D$</td><td>0.03D</td></tr> </table> 											a_a	$D < 5/8$	0.05D	$5/8 < D$	0.03D
	a_a															
$D < 5/8$	0.05D															
$5/8 < D$	0.03D															
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min						
1/8	12,000	34.0	12,000	29.0	10,600	24.0	8,500	16.0	6,400	12.0						
3/16	9,600	36.0	9,600	29.0	8,000	24.0	6,400	18.0	4,800	14.0						
1/4	7,600	36.0	7,600	29.0	6,400	24.0	5,100	19.0	3,800	14.0						
5/16	6,400	36.0	6,400	30.0	5,300	24.0	4,200	20.0	3,200	15.0						
3/8	4,800	27.0	4,800	23.0	4,000	19.0	3,200	15.0	2,400	11.0						
7/16	3,800	21.0	3,800	18.0	3,200	15.0	2,500	12.0	1,900	9.0						
1/2	3,500	20.0	3,500	16.0	2,900	14.0	2,300	11.0	1,700	8.0						
9/16	3,200	18.0	3,200	15.0	2,600	13.0	2,100	10.0	1,600	8.0						
5/8	2,400	14.0	2,400	11.0	2,000	9.0	1,600	8.0	1,200	6.0						
3/4	1,900	11.0	1,900	9.0	1,600	8.0	1,300	6.0	950	5.0						
1	1,500	9.0	1,500	7.0	1,300	6.0	1,000	5.0	760	4.0						

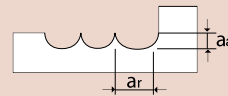


Standard Ball Nose Carbide 2 Flute and 3 Flute

Profiling (Fractional)

Hardness	-		-		Up tp 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	330 SFM		115 SFM		115 SFM		80 SFM		65 SFM		82 SFM	
Depth of Cut	$da=0.3D$ $ar=0.7D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3/64	32,000	7.5	11,000	3.5	11,000	3.1	8,000	1.8	6,400	0.9	8,000	1.8
5/64	16,000	7.5	5,600	3.5	5,600	3.1	4,000	1.8	3,200	0.9	4,000	1.8
1/8	10,000	7.5	3,700	3.9	3,700	3.5	2,600	2.0	2,100	1.2	2,600	2.2
5/32	8,000	7.5	2,800	3.9	2,800	3.5	2,000	2.0	1,600	1.2	2,000	2.2
3/16	6,400	7.5	2,200	3.9	2,200	3.5	1,600	2.0	1,300	1.2	1,600	2.2
1/4	5,300	7.5	1,900	3.9	1,900	3.5	1,320	2.0	1,000	1.2	1,320	2.2
5/16	4,000	8.7	1,400	3.9	1,400	3.5	1,000	2.0	800	1.2	1,000	2.2
13/32	3,200	8.7	1,100	3.9	1,100	3.5	800	2.0	640	1.2	800	2.2
15/32	2,600	8.7	930	3.9	930	3.5	660	2.0	530	1.2	660	2.2
5/8	2,000	8.7	700	3.9	700	3.5	500	2.0	400	1.2	500	2.2
25/32	1,600	8.7	560	3.9	560	3.5	400	2.0	320	1.2	400	2.2
1	1,200	8.7	450	3.9	450	3.5	320	2.0	250	1.2	320	2.2

Profiling (Metric)

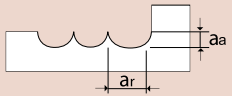
Hardness	-		-		Up tp 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Cast Iron		Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	330 SFM		115 SFM		115 SFM		80 SFM		65 SFM		82 SFM	
Depth of Cut	$da=0.3D$ $ar=0.7D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	32,000	7.5	11,000	3.5	11,000	3.1	8,000	1.8	6,400	0.9	8,000	1.8
2	16,000	7.5	5,600	3.5	5,600	3.1	4,000	1.8	3,200	0.9	4,000	1.8
3	10,000	7.5	3,700	3.9	3,700	3.5	2,600	2.0	2,100	1.2	2,600	2.2
4	8,000	7.5	2,800	3.9	2,800	3.5	2,000	2.0	1,600	1.2	2,000	2.2
5	6,400	7.5	2,200	3.9	2,200	3.5	1,600	2.0	1,300	1.2	1,600	2.2
6	5,300	7.5	1,900	3.9	1,900	3.5	1,320	2.0	1,000	1.2	1,320	2.2
8	4,000	8.7	1,400	3.9	1,400	3.5	1,000	2.0	800	1.2	1,000	2.2
10	3,200	8.7	1,100	3.9	1,100	3.5	800	2.0	640	1.2	800	2.2
12	2,600	8.7	930	3.9	930	3.5	660	2.0	530	1.2	660	2.2
16	2,000	8.7	700	3.9	700	3.5	500	2.0	400	1.2	500	2.2
20	1,600	8.7	560	3.9	560	3.5	400	2.0	320	1.2	400	2.2
25	1,200	8.7	450	3.9	450	3.5	320	2.0	250	1.2	320	2.2

(1) Increase speeds & feeds 5-10% for Series 412BN, 414BN, 442BN and 444BN. (2) Reduce speeds & feeds 20-30% for Series 462BN and 464BN. (3) Reduce speeds & feeds 40-50% for Series 482BN and 484BN. (4) Increase speeds & feeds 20-30% for Series 402BN TiN and 404BN TiN. (5) Column for Hardened Steels (40-50 HRC) is for 402BN TiN and 404BN TiN only.

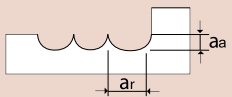


Standard Ball Nose Carbide 4 Flute and Multiple Flute

Profiling (Fractional)

Hardness	-	-	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC			
Work Material	Aluminum	Cast Iron	Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels			
Cutting Speed	330 SFM	100-115 SFM	100-130 SFM		65-100 SFM		65-82 SFM		43 SFM			
Depth of Cut	$a_a = 0.3D$ $a_r = 0.7D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3/64	32,000	10.5	11,000	5.0	11,000	4.4	8,000	2.5	6,400	1.3	8,000	2.5
5/64	16,000	10.5	5,600	5.0	5,600	4.4	4,000	2.5	3,200	1.3	4,000	2.5
1/8	10,000	10.5	3,700	5.5	3,700	5.0	2,600	2.8	2,100	1.7	2,600	3.0
5/32	8,000	10.5	2,800	5.5	2,800	5.0	2,000	2.8	1,600	1.7	2,000	3.0
3/16	6,400	10.5	2,200	5.5	2,200	5.0	1,600	2.8	1,300	1.7	1,600	3.0
1/4	5,300	10.5	1,900	5.5	1,900	5.0	1,320	2.8	1,000	1.7	1,320	3.0
5/16	4,000	12.1	1,400	5.5	1,400	5.0	1,000	2.8	800	1.7	1,000	3.0
13/32	3,200	12.1	1,100	5.5	1,100	5.0	800	2.8	640	1.7	800	3.0
15/32	2,600	12.1	930	5.5	930	5.0	660	2.8	530	1.7	660	3.0
5/8	2,000	12.1	700	5.5	700	5.0	500	2.8	400	1.7	500	3.0
25/32	1,600	12.1	560	5.5	560	5.0	400	2.8	320	1.7	400	3.0
1	1,200	12.1	450	5.5	450	5.0	320	2.8	250	1.7	320	3.0

Profiling (Metric)



Hardness	-	-	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC			
Work Material	Aluminum	Cast Iron	Mild Carbon Steels Mild Steels		Pre-hardened Steels Die & Alloy Steels		Pre-hardened Steels Die & Alloy Steels		Hardened Steels			
Cutting Speed	330 SFM	100-115 SFM	100-130 SFM		65-100 SFM		65-82 SFM		43 SFM			
Depth of Cut	$a_a = 0.3D$ $a_r = 0.7D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	32,000	8.9	11,000	5.0	11,000	4.4	8,000	2.5	6,400	1.3	8,000	2.5
2	16,000	8.9	5,600	5.0	5,600	4.4	4,000	2.5	3,200	1.3	4,000	2.5
3	10,000	8.9	3,700	5.5	3,700	5.0	2,600	2.8	2,100	1.7	2,600	3.0
4	8,000	8.9	2,800	5.5	2,800	5.0	2,000	2.8	1,600	1.7	2,000	3.0
5	6,400	8.9	2,200	5.5	2,200	5.0	1,600	2.8	1,300	1.7	1,600	3.0
6	5,300	8.9	1,900	5.5	1,900	5.0	1,320	2.8	1,000	1.7	1,320	3.0
8	4,000	12.1	1,400	5.5	1,400	5.0	1,000	2.8	800	1.7	1,000	3.0
10	3,200	12.1	1,100	5.5	1,100	5.0	800	2.8	640	1.7	800	3.0
12	2,600	12.1	930	5.5	930	5.0	660	2.8	530	1.7	660	3.0
16	2,000	12.1	700	5.5	700	5.0	500	2.8	400	1.7	500	3.0
20	1,600	12.1	560	5.5	560	5.0	400	2.8	320	1.7	400	3.0
25	1,200	12.1	450	5.5	450	5.0	320	2.8	250	1.7	320	3.0

(1) Increase speeds & feeds 5-10% for Series 412BN, 414BN, 442BN and 444BN. (2) Reduce speeds & feeds 20-30% for Series 462BN and 464BN. (3) Reduce speeds & feeds 40-50% for Series 482BN and 484BN. (4) Increase speeds & feeds 20-30% for Series 402BN TiN and 404BN TiN. (5) Column for Hardened Steels (40-50 HRC) is for 402BN TiN and 404BN TiN only.






List 400: 4 flute

Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	130 SFM		100 SFM		66 SFM		50 SFM	
Depth of Cut	 $a_a=1.5D$ $a_r=0.1D$				 $a_a=1.5D$ $a_r=0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
6	2,100	15.7	1,600	12.6	1,320	10.2	800	6.3
8	1,600	15.7	1,200	11.8	1,000	9.8	600	5.9
10	1,280	15.4	950	11.4	800	9.6	480	5.9
12	1,060	15.2	800	11.4	660	9.4	400	5.9
16	800	15.7	600	11.8	500	9.8	300	5.9
20	640	13.0	480	9.8	400	8.3	240	4.9
25	510	11.8	380	9.1	320	7.5	190	4.3



Slotting

Hardness	Up to 20 HRC		20 to 30 HRC		35 to 45 HRC		45 to 55 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	110 SFM		85 SFM		56 SFM		43 SFM	
Depth of Cut	 up to 1/2" $a_a=1.0D$ over 1/2" $a_a=0.5D$				 $a_a=0.5D$		 $a_a=0.5D$	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
6	2,100	6.3	1,600	4.7	1,320	3.9	800	2.4
8	1,600	6.3	1,200	4.7	1,000	3.9	600	2.4
10	1,280	6.3	950	4.7	800	3.9	480	2.4
12	1,060	6.3	800	4.7	660	3.9	400	2.4
16	800	6.3	600	4.7	500	3.9	300	2.4
20	640	5.1	480	3.9	400	3.3	240	2.0
25	510	4.3	380	3.3	320	2.8	190	1.6




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Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	130 SFM		100 SFM		66 SFM		50 SFM	
Depth of Cut	 $a_a = 1.5D$ $a_r = 0.1D$				 $a_a = 1.5D$ $a_r = 0.1D$			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	2,100	16	1,600	13	1,320	10	800	6
5/16	1,600	16	1,200	12	1,000	10	600	6
3/8	1,280	15	950	11	800	10	480	6
1/2	1,060	15	800	11	660	9	400	6
5/8	800	16	600	12	500	10	300	6
3/4	640	13	480	10	400	8	240	5
1	510	12	380	9	320	7	190	4

Slotting

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	110 SFM		85 SFM		56 SFM		43 SFM	
Depth of Cut	 up to 1/2" $a_a = 1.0D$ over 1/2" $a_a = 0.5D$				 $a_a = 0.5D$		 $a_a = 0.5D$	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	2,100	6	1,600	5	1,320	4	800	2
5/16	1,600	6	1,200	5	1,000	4	600	2
3/8	1,280	6	950	5	800	4	480	2
1/2	1,060	6	800	5	660	4	400	2
5/8	800	6	600	5	500	4	300	2
3/4	640	5	480	4	400	3	240	2
1	510	4	380	3	320	3	190	2



List 492, 494: Miniature

Hardness	–		Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC	
Work Material	Aluminum Aluminum Alloys Plastics Wood		Mild Steels Cast Iron Brass Bronze		Mild Steel Forging Hard Brass and Bronze Copper		Medium Tensile Steels Unalloyed Titanium Tool Steels Heat Resistant Ferritic Low Alloys		High Tensile Steel Medium Strength Stainless Steels and Titanium Alloys	
Number of Flutes	2 or More Flutes		2 or More Flutes		2 or More Flutes		2 or More Flutes		2 or More Flutes	
Cutting Speed	200-400 SFM		100-120 SFM		70-90 SFM		50-60 SFM		30-40 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/64	12,222 Up	1.8	12,222 Up	1.5	12,222 Up	1.0	12,222 Up	0.5	7,334 - 9,779	0.4
1/32	12,222 Up	3.0	12,222 Up	2.0	8,556 - 11,001	2.0	6,112 - 7,334	0.6	3,667 - 4,889	0.5
3/64	12,222 Up	3.1	81,50-9,780	2.5	5,704 - 7,334	3.0	4,075 - 4,889	0.8	2,445 - 3,260	0.6
1/16	12,222 Up	5.1	6,112 - 7,333	3.1	4,280 - 5,502	4.0	3,057 - 3,668	1.3	1,834 - 2,445	0.8
5/64	9,779 Up	5.1	4,889 - 5,867	3.1	3,423 - 4,400	4.0	2,445 - 2,934	1.3	1,467 - 1,956	0.8
3/32	8,146 Up	5.1	4,075 - 4,890	3.1	2,853 - 3,667	4.0	2,038 - 2,446	1.3	1,222 - 1,426	0.8
7/64	7,364 Up	5.3	3,492 - 4,191	3.1	2,445 - 3,143	4.0	1,746 - 2,095	1.3	1,048 - 1,397	0.8
1/8	6,112 Up	5.5	3,056 - 3,667	3.5	2,139 - 2,750	4.0	1,528 - 1,834	1.3	917 - 1,222	0.8
9/64	5,433 - 10,865	5.6	2,716 - 4,191	3.5	1,901 - 2,445	4.2	1,358 - 1,630	1.3	815 - 1,087	0.9
5/32	4,889 - 9,779	5.6	2,448 - 2,934	3.6	1,711 - 2,200	4.4	1,222 - 1,467	1.4	733 - 978	1.0
11/64	4,445 - 8,890	5.8	2,222 - 2,667	3.8	1,556 - 2,000	4.6	1,111 - 1,333	1.5	667 - 889	1.1
3/16	4,074 - 8,148	5.9	2,037 - 2,445	4.0	1,426 - 1,834	4.8	1,019 - 1,222	1.6	611 - 815	1.3

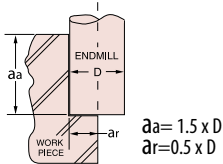


List 420: Stub Length - Multiple Flute - Fine Pitch

List 450: Multiple Flute - Fine Pitch - Center Hole

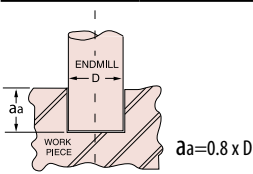
Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Tensile Steels Mild Steels		High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys		Heat Resistant High Alloys High Strength and Titanium Alloys Stainless Steels	
Cutting Speed	90-110 SFM		60-75 SFM		45-60 SFM		30-45 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	1,500	4.0	1,000	2.6	800	1.9	530	1.1
5/16	1,180	4.5	800	3.3	630	2.3	425	1.3
3/8	1,000	4.8	670	3.3	530	2.5	355	1.4
1/2	750	5.8	500	3.9	400	2.9	265	1.6
5/8	600	6.6	400	4.4	315	3.3	224	2.0
3/4	500	7.5	325	4.8	265	3.5	180	2.0
7/8	425	7.9	280	5.3	224	3.5	150	1.9
1	375	7.4	250	4.9	200	3.5	132	1.9
1-1/8	335	7.0	224	4.6	180	3.5	118	1.8
1-1/4	300	6.4	200	4.3	160	3.1	106	1.8
1-1/2	250	5.9	160	3.6	132	2.8	90	1.6
1-3/4	312	5.0	140	3.3	112	2.4	75	1.4
2	190	4.5	125	2.9	100	2.3	67	1.4



Slotting

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Tensile Steels Mild Steels		High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys		Heat Resistant High Alloys High Strength and Titanium Alloys Stainless Steels	
Cutting Speed	90-110 SFM		60-75 SFM		45-60 SFM		30-45 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	1,500	4.1	1,000	2.5	800	1.5	530	0.9
3/8	1,000	4.6	670	3.0	530	1.9	355	1.0
1/2	750	5.0	500	3.0	400	2.0	265	1.3
5/8	600	5.1	400	3.8	315	2.3	224	1.4
3/4	500	6.1	325	4.0	265	2.9	180	1.5
7/8	425	6.1	280	4.0	224	2.9	150	1.6
1	375	5.8	250	3.9	200	2.8	132	1.6
1-1/4	300	5.4	200	3.6	160	2.5	106	1.5
1-1/2	200	5.0	160	3.3	132	2.4	90	1.4

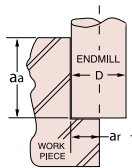




List 455: Multiple Flute - Fine Pitch - Center Hole

Side Milling

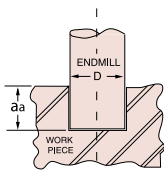
Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		Up to 45 HRC	
Work Material	Cast Iron Mild Steel Forgings Brass		Medium Carbon Steels Mild Steel Forgings		High Tensile Steels 4140, 4340 304 Stainless Steels Ti-Alloy		D2 H13 17-4PH		Heat Resistant Alloys Inconel 718 Heat Treated Materials	
Cutting Speed	150 SFM		120 SFM		90 SFM		65 SFM		50 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	3,150	6.3	2,360	4.4	1,600	3.0	1,320	2.2	750	1.5
5/16	2,360	7.5	1,900	5.9	1,250	3.9	1,000	3.1	560	1.5
3/8	1,900	8.3	1,500	6.7	1,000	4.4	800	3.5	450	1.5
1/2	1,600	8.8	1,250	6.7	850	4.4	670	3.5	400	1.5
5/8	1,180	10.4	950	7.5	630	4.9	500	3.9	300	1.7
3/4	950	11.0	750	8.3	500	5.5	400	4.4	236	1.8
7/8	850	11.0	670	8.3	450	5.5	375	4.4	212	1.8
1	750	11.0	600	7.5	400	4.9	315	3.9	190	1.7
1-1/8	630	10.4	500	7.5	335	4.9	265	3.9	160	1.7
1-1/4	475	8.8	375	7.1	250	4.6	200	3.5	118	1.5
1-1/2	375	7.1	300	5.5	200	3.7	160	2.5	95	1.2



1/4" up to 2";
 $aa = 1.5 \times D$
 $ar = 0.5 \times D$

Slotting

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		Up to 45 HRC	
Work Material	Cast Iron Mild Steel Forgings Brass		Medium Carbon Steels Mild Steel Forgings		High Tensile Steels 4140, 4340 304 Stainless Steels Ti-Alloy		D2 H13 17-4PH		Heat Resistant Alloys Inconel 718 Heat Treated Materials	
Cutting Speed	150 SFM		120 SFM		90 SFM		65 SFM		50 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	2,360	6.3	1,900	4.9	1,320	3.1	1,000	2.4	750	1.6
5/16	1,700	7.9	1,400	5.5	1,000	3.5	800	2.8	560	1.6
3/8	1,400	9.8	1,120	5.5	800	3.9	630	3.1	450	1.6
1/2	1,180	9.8	950	5.5	670	3.9	530	3.1	375	1.6
5/8	850	11.8	710	7.1	500	4.4	400	3.1	280	2.2
3/4	710	13.2	560	6.7	400	3.9	300	3.1	224	2.4
7/8	600	11.8	450	5.9	335	3.9	265	3.1	200	2.4
1	500	10.4	355	5.2	265	3.3	224	3.0	180	2.0
1-1/4	335	9.3	212	4.9	200	3.7	170	3.1	140	2.2
1-1/2	250	6.7	170	4.4	160	3.0	125	2.4	112	1.8
2	190	5.2	132	3.7	125	2.2	100	1.6	90	1.4



$aa = 0.8 \times D$



List 440: Ball End - Multiple Flute - General Purpose - Regular Pitch

Slotting

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		-	
Work Material	Mild Steels Carbon Steels Cast Iron		Medium Carbon Steels Hard Brass and Bronze Cast Iron		High Carbon Steel Titanium Alloys Medium Strength Stainless Effects		Heat Resistant High Alloys Austenitic Alloys Tool Steels		Aluminum Aluminum Alloys	
Cutting Speed	80-390 SFM		80-150 SFM		50-65 SFM		30-50 SFM		16-32 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/2	1,000	10.5	450	3.3	315	2.1	200	1.1	2,500	21.0
5/8	800	8.5	355	3.0	250	2.0	160	0.9	2,000	16.7
3/4	710	8.5	315	2.8	225	2.0	140	0.9	1,800	16.9
1	500	7.0	224	2.2	160	1.6	100	0.9	1,250	14.1
1-1/4	400	5.3	180	1.7	125	1.1	80	0.7	1,000	10.5
1-1/2	315	4.0	140	1.1	100	0.8	63	0.5	800	8.0
2	250	3.9	112	1.1	80	0.8	50	0.5	630	7.8

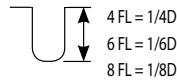
Depth of Cut:

For 4 Flute end mills - (1/4) diameter of the tool

For 6 Flute end mills - (1/6) diameter of the tool

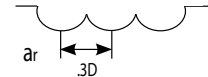
For 8 Flute end mills - (1/8) diameter of the tool

In case of deeper operation, slow down feed by 20-50%.



For Profiling Cut:

Stepover (Ar) = .3D



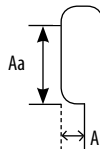
Side Milling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		-	
Work Material	Mild Steels Carbon Steels Cast Iron		Medium Carbon Steels Hard Brass and Bronze Cast Iron		High Carbon Steel Titanium Alloys Medium Strength Stainless Effects		Heat Resistant High Alloys Austenitic Alloys Tool Steels		Aluminum Aluminum Alloys	
Cutting Speed	190-330 SFM		100-130 SFM		60-75 SFM		40-55 SFM		26-40 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/2	1,000	4.5	450	2.4	315	1.5	200	0.9	2,500	15.8
5/8	800	5.0	355	2.6	250	1.6	160	1.0	2,000	17.6
3/4	710	4.9	315	2.8	225	1.8	140	1.0	1,800	18.5
1	500	5.0	224	2.6	160	1.6	100	1.0	1,250	17.8
1-1/4	400	5.7	180	3.0	125	1.9	80	1.1	1,000	19.9
1-1/2	315	5.2	140	2.6	100	1.6	63	1.0	800	17.6
2	250	4.3	112	2.3	80	1.4	50	0.9	630	14.8

Depth of Cut:

1/2" up to 1-1/8" - Aa = 1.5 (D) and Ar = 0.5 (D)

1/4" up to 2" - Aa = 1.0 (D) and Ar = 0.5 (D)

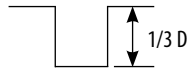




List 430E: For Aluminum - 3 Flute

Slotting

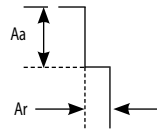
Work Material	Aluminum Aluminum Alloys	
Cutting Speed	195-330 SFM	
Mill Dia.	Speed RPM	Feed in/min
3/8	3,550	15.0
1/2	2,500	15.0
5/8	2,000	13.4
3/4	1,800	13.5
7/8	1,400	11.9
1	1,250	11.3
1-1/4	1,000	9.5
1-1/2	800	8.0
2	630	6.3



Cutting Depth = (1/3) Diameter

Side Milling

Work Material	Aluminum Aluminum Alloys	
Cutting Speed	195-330 SFM	
Mill Dia.	Speed RPM	Feed in/min
3/8	5,600	47.5
1/2	4,000	48.0
5/8	3,150	42.3
3/4	2,800	42.0
7/8	2,240	38.1
1	2,000	36.0
1-1/4	1,600	30.4
1-1/2	1,250	25.0
2	1,000	30.0

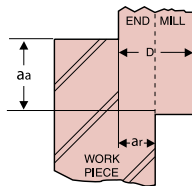


$Aa = 1.5D$
 $Ar = 0.15D$

List 410: Stub Length - 3 Flute - Regular Pitch

List 490: Multiple Flute - Regular Pitch - General Purpose - Center Hole

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Medium Tensile Steels (up to 115x103 Lb/in ²) Mild Steel Forgings Cast Iron Brass and Bronze Copper		High Tensile Steels (115x103~145x103 Lb/in ²) Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels (145x103~200x103 Lb/in ²) Tool Steels Medium Strength Stainless Steels Titanium Alloys		Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys		Aluminum Alloyed Aluminum Plastics Woods	
Cutting Speed	80-100 SFM		60-75 SFM		40-55 SFM		26-40 SFM		195-330 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	1,320	2.6	1,000	1.6	750	1.0	500	0.6	4,000	11.1
5/16	1,060	3.0	800	1.9	600	1.1	400	0.8	3,150	12.4
3/8	950	3.1	710	2.0	530	1.0	355	0.8	2,800	13.0
1/2	670	3.8	500	2.4	375	1.5	250	0.9	2,000	15.8
5/8	600	4.8	400	2.6	300	1.6	200	1.0	1,600	17.6
3/4	475	4.5	355	2.8	265	1.8	180	1.0	1,400	18.5
7/8	375	4.5	280	2.8	212	1.8	140	1.0	1,120	18.8
1	335	4.1	250	2.6	190	1.6	125	1.0	1,000	17.8
1-1/8	300	4.0	224	2.5	170	1.6	112	0.9	900	16.9
1-1/4	265	4.6	200	3.0	150	1.9	100	1.0	800	19.9
1-1/2	212	4.1	160	2.6	118	1.6	80	1.0	630	17.6
1-3/4	190	4.0	140	2.5	106	1.5	71	1.0	560	16.5
2	170	3.5	125	2.3	95	1.4	63	0.9	500	14.8

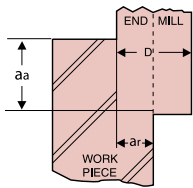


1/2" up to 1 1/8"; aa= 1.5 x D, ar= 0.5 x D
 1 1/4" up to 2"; aa= 1 x D, ar= 0.5 x D

List 470: Regular Length - Multiple Flute - Center Hole

Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Medium Tensile Steels (up to 115 x 103 Lb/in ²) Mild Steel Forgings Cast Iron Brass and Bronze Copper		High Tensile Steels (115 x 103~145 x 103 Lb/in ²) Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels (145 x 103 ~200 x 103 Lb/in ²) Tool Steels Medium Strength Stainless Steels and Titanium Alloys		Heat Resistant High Alloys High Strength Stainless Steels and Titanium Alloys		Aluminum Alloyed Aluminum Plastics Woods	
Cutting Speed	80-100 SFM		60-75 SFM		40-55 SFM		26-40 SFM		195-330 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	1,320	2.1	1,000	1.3	750	0.9	500	0.5	4,000	8.9
5/16	1,060	2.4	800	1.5	600	1.0	400	0.5	3,150	9.9
3/8	950	2.3	710	1.5	530	1.0	355	0.6	2,800	10.5
1/2	670	3.0	500	1.9	375	1.1	250	0.8	2,000	12.4
5/8	600	3.4	400	2.1	300	1.4	200	0.8	1,600	14.0
3/4	475	3.5	355	2.3	265	1.4	180	0.9	1,400	14.8
7/8	375	3.5	280	2.3	212	1.4	140	0.9	1,120	14.8
1	335	3.4	250	2.1	190	1.4	125	0.8	1,000	14.0
1-1/8	300	3.1	224	2.0	170	1.3	112	0.8	900	13.3
1-1/4	265	3.8	200	2.4	150	1.5	100	1.0	800	15.8
1-1/2	212	3.4	160	2.1	118	1.4	80	0.9	630	14.0
1-3/4	190	3.1	140	2.0	106	1.3	71	0.8	560	13.3
2	170	2.9	125	1.8	95	1.1	63	0.8	500	11.8



1/2" up to 1 1/8"; $aa = 1.5 \times D$, $ar = 0.3 \times D$
 1 1/4" up to 2"; $aa = 1 \times D$, $ar = 0.3 \times D$

List 460: Multiple Flute - Fine Pitch

Side Milling

Hardness	-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	400-460 SFM		130-160 SFM		100 SFM		65 SFM		50 SFM	
Depth of Cut										
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
6	6,900	21.7	2,400	10.6	1,600	6.7	1,060	3.0	800	1.2
8	5,200	21.7	1,800	10.6	1,200	6.7	800	3.0	600	1.2
10	4,200	23.6	1,400	13.4	950	6.7	640	3.0	480	1.2
12	3,500	23.6	1,200	14.2	800	7.1	530	3.0	400	1.2
16	2,600	23.6	900	15.7	600	7.1	400	3.0	300	1.2
20	2,100	23.6	720	16.1	480	7.9	320	3.0	240	1.2
25	1,700	23.6	580	13.8	380	7.1	250	3.0	190	1.2

Slotting

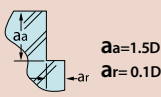
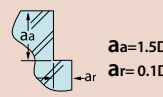
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	125 SFM		85 SFM		55 SFM		40 SFM	
Depth of Cut								
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
6	2,040	7.9	1,360	4.7	900	2.0	680	0.8
8	1,530	8.3	1,020	4.7	680	2.0	510	0.8
10	1,190	9.1	810	4.7	540	2.0	410	0.8
12	1,020	9.8	680	5.1	450	2.0	340	0.8
16	760	10.6	510	5.1	340	2.0	260	0.8
20	620	11.0	410	5.5	270	2.0	200	0.8
25	500	9.4	320	5.1	210	2.0	160	0.8

For 460 TiN Series, multiply cutting condition by 1.2 to 1.5




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List 460: Multiple Flute - Fine Pitch (Continued)

Side Milling

Hardness	-		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Aluminum		Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	390-460 SFM		130-164 SFM		100 SFM		66 SFM		50 SFM	
Depth of Cut	 $a_a=1.5D$ $a_r=0.1D$				 $a_a=1.5D$ $a_r=0.1D$					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	6,900	21.7	2,400	10.6	1,600	6.7	1,060	3.0	800	1.2
5/16	5,200	21.7	1,800	10.6	1,200	6.7	800	3.0	600	1.2
3/8	4,200	23.6	1,400	13.4	950	6.7	640	3.0	480	1.2
1/2	3,500	23.6	1,200	14.2	800	7.1	530	3.0	400	1.2
5/8	2,600	23.6	900	15.7	600	7.1	400	3.0	300	1.2
3/4	2,100	23.6	720	16.1	480	7.9	320	3.0	240	1.2
1	1,700	23.6	580	13.8	380	7.1	250	3.0	190	1.2

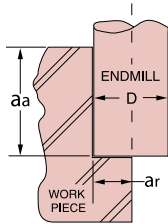
Slotting

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	110-140 SFM		85 SFM		56 SFM		43 SFM	
Depth of Cut	 $a_a=1.0D$ up to 1/2" $a_a=1.0D$ over 1/2" $a_a=0.5D$				 $a_a=0.5D$		 $a_a=0.5D$	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	2,040	7.9	1,360	4.7	900	2.0	680	0.8
5/16	1,530	7.9	1,020	4.7	680	2.0	510	0.8
3/8	1,190	9.1	810	4.7	540	2.0	410	0.8
1/2	1,020	9.8	680	5.1	450	2.0	340	0.8
5/8	760	10.6	510	5.1	340	2.0	260	0.8
3/4	620	11.0	410	5.5	270	2.0	200	0.8
1	500	9.4	320	5.1	210	2.0	160	0.8

List 690: Regular Length - Multiple Flute - Center Hole

Side Milling

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 45 HRC		Up to 50 HRC	
Work Material	Mild Steels (up to 70x103 lb/in.2)		Medium Tensile Steels (70x103 to 115x103 lb/in.2) Mild Steel Forgings Cast Iron		High Tensile Steels (115x103 to 142x103 lb/in.2) Heat Resistant Ferritic Low Alloys		High Tensile Steels (142x103 to 200x103 lb/in.2) Tool Steels Medium Strength Stainless Steel		High Strength Stainless Steels	
Cutting Speed	130-148 SFM		115-131 SFM		79-83 SFM		55-66 SFM		45-47 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	2,230	6.0	1,770	4.5	1,250	3.0	940	2.3	700	1.5
5/16	1,700	7.9	1,600	6.3	1,000	3.5	800	2.8	560	1.5
3/8	1,470	10.3	1,180	7.0	835	4.0	660	3.3	470	1.9
1/2	1,100	9.3	900	6.4	630	4.1	425	3.1	355	1.9
5/8	850	12.5	715	8.4	500	6.3	400	4.0	280	2.4
3/4	725	14.8	590	8.4	420	6.0	325	4.3	235	2.4
7/8	630	14.0	500	8.4	350	6.0	280	4.5	200	2.4
1	560	14.0	450	7.9	310	6.0	250	4.5	175	2.3
1-1/8	490	12.1	400	7.0	270	6.0	220	4.3	160	2.4
1-1/4	450	11.8	355	7.0	250	5.5	200	4.0	140	2.3
1-1/2	370	10.1	300	6.6	210	4.5	165	3.3	115	1.9
1-3/4	315	8.8	250	6.0	180	4.0	140	2.8	100	1.5
2	275	7.8	220	5.0	155	3.5	120	2.3	90	1.4



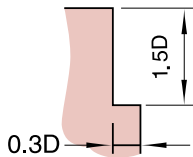
1/2" Up to 1-1/8"; aa = 1.5 x D, ar = 0.5 x D
 1-1/4" Up to 2"; aa = 1xD, ar = 0.5 x D



List 660: Super High-Helix - Regular Length - Multiple Flute

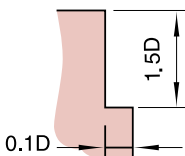
Semi-Roughing Cut

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	1045 1055 Cast Steel Cast Iron		15-5 PH 4140, 4340, 304, 316, 410, 420, 430 A1		6AL-4V 17-4 PH H13 (HRC38) P20, D2 Beryllium Copper		H13 (HRC45) Inconel 718 Hastelloy Waspaloy	
Cutting Speed	80-100 SFM		50-65 SFM		35-45 SFM		20-30 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	1,500	3.2	1,000	2.1	630	1.3	400	0.7
5/16	1,250	3.2	750	1.9	500	1.3	315	0.7
3/8	1,000	3.5	600	2.1	450	1.6	280	0.8
7/16	850	3.6	500	2.1	355	1.5	224	0.8
1/2	710	3.8	450	2.4	315	1.7	200	0.8
5/8	560	3.8	375	2.5	250	1.7	160	0.9
3/4	450	3.8	280	2.4	224	1.9	140	0.8
7/8	400	4.0	236	2.4	180	1.8	112	0.8
1	315	3.5	200	2.2	160	1.8	100	0.8



Finish Cut

Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	1045 1055 Cast Steel Cast Iron		15-5 PH 4140, 4340, 304, 316, 410, 420, 430 A1		6AL-4V 17-4 PH H13 (HRC38) P20, D2 Beryllium Copper		H13 (HRC45) Inconel 718 Hastelloy Waspaloy	
Cutting Speed	80-100 SFM		50-65 SFM		35-45 SFM		20-30 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/4	1,800	7.6	1,120	3.8	630	2.1	400	1.1
5/16	1,400	8.4	900	4.3	500	2.4	315	1.2
3/8	1,250	8.8	800	4.6	400	2.3	280	1.3
7/16	1,000	9.0	630	4.7	355	2.7	224	1.4
1/2	900	8.5	560	4.5	315	2.5	200	1.4
5/8	710	8.0	450	4.5	250	2.5	160	1.5
3/4	630	7.1	400	4.3	200	2.1	140	1.5
7/8	500	7.5	315	4.7	180	2.7	112	1.6
1	450	6.8	280	4.2	160	2.4	100	1.4



List 573: Regular Length, 2 Flute

List 574: Regular Length, Multiple Flute

Slotting with 2FL

Hardness	-		Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC	
Work Material	Aluminum Alloyed Aluminum Plastics Woods		Mild Steels Brass Bronze		Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper		High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys	
Cutting Speed	250-350 SFM		80-100 SFM		50-65 SFM		35-45 SFM		20-30 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	10,000	10.0	4,000	4.5	3,000	7.1	1,800	1.5	1,250	0.9
5/32	8,000	11.4	3,150	5.0	2,360	8.0	1,400	1.6	1,000	1.0
3/16	6,300	12.0	2,500	5.5	1,900	9.0	1,120	1.8	800	1.1
1/4	5,000	13.3	2,000	6.4	1,500	10.1	900	2.0	630	1.3
5/16	4,000	15.3	1,600	7.1	1,180	11.3	710	2.3	500	1.4
3/8	3,550	15.0	1,400	7.4	1,060	11.8	630	2.4	450	1.5
7/16	2,800	14.9	1,120	7.5	850	12.0	500	2.5	355	1.5
1/2	2,500	15.0	1,000	7.5	750	11.4	450	2.4	315	1.5
9/16	2,240	14.1	900	7.3	670	11.4	400	2.4	280	1.6
5/8	2,000	13.4	800	6.8	600	10.6	355	2.4	250	1.6
11/16	1,800	13.5	710	6.8	530	9.5	315	2.3	224	1.6
3/4	1,800	13.5	710	6.8	530	9.5	315	2.3	224	1.6
13/16	1,600	12.8	630	6.3	475	8.4	280	2.3	200	1.6
7/8	1,400	11.9	560	5.9	425	7.5	250	2.0	180	1.5
15/16	1,250	11.3	500	5.6	375	6.8	224	1.8	160	1.3
1	1,250	11.3	500	5.6	375	6.8	224	1.8	160	1.3

1) Based on regular 4FL end mills cutting depth (1.5D) x cutting width (0.1D).
 2) For 2FL end mill, decrease feed 50%.
 3) For finish, increase RPM 1.3 to 1.5 times.

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List 574: Regular Length, Multiple Flute (Continued)

Side Milling with 4FL, 6FL

Hardness	-		Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC	
Work Material	Aluminum Alloyed Aluminum Plastics Woods		Mild Steels Brass Bronze		Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper		High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys	
Cutting Speed	325-590 SFM		130-165 SFM		105-125 SFM		65-80 SFM		30-50 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	16,000	32.0	4,500	10.1	3,550	7.1	2,240	3.6	1,250	1.6
5/32	12,500	35.5	3,550	11.4	2,800	8.0	1,800	4.0	1,000	1.9
3/16	10,000	38.0	2,800	12.4	2,240	9.0	1,400	4.5	800	2.1
1/4	8,000	42.3	2,240	14.4	1,800	10.1	1,120	5.0	630	2.4
5/16	6,300	47.9	1,800	16.1	1,400	11.3	900	5.8	500	2.6
3/8	5,600	47.5	1,600	17.0	1,250	11.8	800	6.1	450	2.9
7/16	4,500	47.8	1,250	16.8	1,000	12.0	630	6.3	355	3.0
1/2	4,000	48.0	1,120	16.8	900	11.4	560	5.9	315	3.0
9/16	3,550	44.8	1,000	16.0	800	11.4	500	6.0	280	3.1
5/8	3,150	42.3	900	15.3	710	10.6	450	6.0	250	3.1
11/16	2,800	42.0	800	15.3	630	9.5	400	5.6	224	3.1
3/4	2,800	42.0	800	15.3	630	9.5	400	5.6	224	3.1
13/16	2,500	40.0	710	14.3	560	8.4	355	5.6	200	3.3
7/8	2,240	38.1	630	13.4	500	7.5	315	5.0	180	2.9
15/16	2,000	36.0	560	12.5	450	6.8	280	4.5	160	2.5
1	2,000	36.0	560	12.5	450	6.8	280	4.5	160	2.5

- 1) Based on regular 4FL end mills cutting depth (1.5D) x cutting width (0.1D).
- 2) For 2FL end mill, decrease feed 50%.
- 3) For finish, increase RPM 1.3 to 1.5 times.



Standard 2 Flute HSS-Co

Slotting

Hardness	Up to 145 Brinell			Up to 20 HRC			20 to 30 HRC		
Work Material	Mild Steels Brass Bronze			Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper			High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys		
Cutting Speed	80-150 SFM			80-110 SFM			50-65 SFM		
Mill Dia.	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min
1/64	20,000	0.00002	1.0	20,000	0.00002	0.9	14,000	0.00001	0.5
1/32	16,000	0.00007	2.3	11,800	0.00006	1.5	7,100	0.00005	0.8
3/64	10,000	0.00014	2.8	7,500	0.00012	1.9	4,500	0.00010	0.9
1/16	8,000	0.00020	3.3	6,000	0.00018	2.1	3,550	0.00014	1.0
5/64	6,300	0.00028	3.5	4,750	0.00025	2.4	2,800	0.00020	1.1
3/32	5,000	0.00040	4.0	3,750	0.00035	2.6	2,240	0.00028	1.3
7/64	4,500	0.00047	4.3	3,350	0.00042	2.9	2,000	0.00033	1.4
1/8	4,000	0.00056	4.5	3,000	0.00050	3.0	1,800	0.00040	1.5
9/64	3,550	0.00067	4.8	2,650	0.00060	3.1	1,600	0.00047	1.5
5/32	3,150	0.00080	5.0	2,360	0.00071	3.4	1,400	0.00056	1.6
11/64	2,800	0.00095	5.4	2,120	0.00085	3.6	1,250	0.00067	1.6
3/16	2,500	0.00110	5.5	1,900	0.00100	3.8	1,120	0.00080	1.8
1/4	2,000	0.00160	6.4	1,500	0.00140	4.3	900	0.00112	2.0
5/16	1,600	0.00224	7.1	1,180	0.00200	4.8	710	0.00160	2.3
3/8	1,400	0.00265	7.4	1,060	0.00236	5.0	630	0.00190	2.4
7/16	1,120	0.00335	7.5	850	0.00300	5.1	500	0.00250	2.5
1/2	1,000	0.00375	7.5	750	0.00315	4.8	450	0.00265	2.4
9/16	900	0.00400	7.3	670	0.00355	4.8	400	0.00300	2.4
5/8	800	0.00425	6.8	600	0.00375	4.5	355	0.00335	2.4
11/16	710	0.00475	6.8	530	0.00400	4.3	315	0.00355	2.3
3/4	710	0.00475	6.8	530	0.00400	4.3	315	0.00355	2.3
13/16	630	0.00500	6.3	475	0.00400	3.8	280	0.00400	2.3
7/8	560	0.00530	5.9	425	0.00400	3.4	250	0.00400	2.0
15/16	500	0.00560	5.6	375	0.00400	3.0	224	0.00400	1.8
1	500	0.00560	5.6	375	0.00400	3.0	224	0.00400	1.8
1-1/8	450	0.00560	5.0	335	0.00400	2.6	200	0.00400	1.6
1-1/4	400	0.00600	4.8	300	0.00400	2.4	180	0.00400	1.5
1-3/8	355	0.00600	4.3	265	0.00400	2.1	160	0.00400	1.3
1-1/2	315	0.00630	4.0	236	0.00400	1.9	140	0.00400	1.1
1-5/8	315	0.00630	4.0	236	0.00400	1.9	140	0.00400	1.1
1-3/4	280	0.00630	3.5	212	0.00400	1.8	125	0.00400	1.0
1-7/8	250	0.00630	3.1	190	0.00400	1.5	112	0.00400	0.9
2	250	0.00630	3.1	190	0.00400	1.5	112	0.00400	0.9

- 1) Speeds and Feeds for Lists 520, 522, 540, 541, 542, 543, 548, 620 and 641
- 2) Reduce Speeds and Feeds 5-10% for Lists 525, 527, 547
- 3) Reduce Speeds and Feeds 10-20% for Lists 545 and 557
- 4) Increase Speeds and Feeds 5-15% for Lists 530 and 535 (Aluminum only)
- 5) Increase Speeds and Feeds 10-20% for List 529
- 6) Speeds can be increased up to 20% for 520TiN, 522TiN, 540TiN, and 542TiN
- 7) Speeds can be increased up to 15% for Lists 541TiN/TiCN and 548 TiCN

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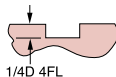
Standard 2 Flute HSS-Co: (Continued)

Slotting

Hardness	30 to 40 HRC			40 to 50 HRC			-		
Work Material	High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys			Heat Resistant High Strength Stainless Steels and Titanium Alloys			Aluminum Alloy Aluminum Plastics Woods		
Cutting Speed	80-150 SFM			16-32 SFM			150-165 SFM		
Mill Dia.	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min
1/64	10,000	0.00002	0.3	6,300	0.00001	0.1	20,000	0.00003	2.4
1/32	5,000	0.00004	0.4	3,150	0.00003	0.1	20,000	0.00008	3.0
3/64	3,150	0.00009	0.5	2,000	0.00006	0.3	20,000	0.00014	5.5
1/16	2,500	0.00012	0.6	1,600	0.00008	0.3	20,000	0.00020	8.0
5/64	2,000	0.00017	0.6	1,250	0.00011	0.3	16,000	0.00028	9.0
3/32	1,600	0.00024	0.8	1,000	0.00016	0.4	12,500	0.00038	9.4
7/64	1,400	0.00028	0.8	900	0.00020	0.4	11,200	0.00043	9.5
1/8	1,250	0.00034	0.9	800	0.00024	0.4	10,000	0.00050	10.0
9/64	1,120	0.00040	0.9	710	0.00028	0.4	9,000	0.00060	10.8
5/32	1,000	0.00048	1.0	630	0.00034	0.4	8,000	0.00071	11.4
11/64	900	0.00056	1.0	560	0.00040	0.5	7,100	0.00080	11.4
3/16	800	0.00067	1.1	500	0.00048	0.5	6,300	0.00095	12.0
1/4	630	0.00095	1.3	400	0.00071	0.6	5,000	0.00132	13.3
5/16	500	0.00132	1.4	315	0.00100	0.6	4,000	0.00190	15.3
3/8	450	0.00160	1.5	280	0.00118	0.6	3,550	0.00212	15.0
7/16	355	0.00212	1.5	224	0.00140	0.6	2,800	0.00265	14.9
1/2	315	0.00236	1.5	200	0.00180	0.8	2,500	0.00300	15.0
9/16	280	0.00280	1.6	180	0.00200	0.8	2,240	0.00315	14.1
5/8	250	0.00315	1.6	160	0.00224	0.8	2,000	0.00335	13.4
11/16	224	0.00355	1.6	140	0.00250	0.8	1,800	0.00375	13.5
3/4	224	0.00355	1.6	140	0.00250	0.8	1,800	0.00375	13.5
13/16	200	0.00400	1.6	125	0.00280	0.8	1,600	0.00400	12.8
7/8	180	0.00400	1.5	112	0.00315	0.8	1,400	0.00425	11.9
15/16	160	0.00400	1.3	100	0.00355	0.8	1,250	0.00450	11.3
1	160	0.00400	1.3	100	0.00355	0.8	1,250	0.00450	11.3
1-1/8	140	0.00400	1.1	90	0.00400	0.8	1,120	0.00475	10.6
1-1/4	125	0.00400	1.0	80	0.00400	0.6	1,000	0.00475	9.5
1-3/8	112	0.00400	0.9	71	0.00400	0.6	900	0.00500	9.0
1-1/2	100	0.00400	0.8	63	0.00400	0.5	800	0.00500	8.0
1-5/8	100	0.00400	0.8	63	0.00400	0.5	800	0.00500	8.0
1-3/4	90	0.00400	0.8	56	0.00400	0.5	710	0.00500	7.1
1-7/8	80	0.00400	0.6	50	0.00400	0.4	630	0.00500	6.3
2	80	0.00400	0.6	50	0.00400	0.4	630	0.00500	6.3

1) Based on regular 2FL cutting depth (1/2D) 4FL depth (1/4D).
 2) In case of deeper operation, slow down feed by 20-50%.

1/2 D 2FL
 1/4 D 4FL



Standard 4 Flute and 6 Flute HSS-Co

Side Milling

Hardness	Up to 145 BHN			Up to 20 HRC			20 to 30 HRC		
Work Material	Mild Steels Brass Bronze			Medium Tensile Steels Mild Steel Forgings Cast Iron Hard Brass and Bronze Copper			High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys		
Cutting Speed	80-150 SFM			80-110 SFM			16-32 SFM		
Mill Dia.	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min
1/16	9,000	0.00020	7.3	7,100	0.00018	5.1	4,500	0.00014	2.5
5/64	7,100	0.00028	8.0	5,600	0.00025	5.6	3,550	1.00020	2.9
3/32	5,600	0.00040	9.0	4,500	0.00036	6.4	2,800	1.00028	3.1
7/64	5,000	0.00048	9.5	4,000	0.00043	6.8	2,500	0.00034	3.4
1/8	4,500	0.00056	10.1	3,550	0.00050	7.1	2,240	0.00040	3.6
9/64	4,000	0.00067	10.8	3,150	0.00060	7.5	2,000	0.00048	3.8
5/32	3,550	0.00080	11.4	2,800	0.00071	8.0	1,800	0.00056	4.0
11/64	3,150	0.00095	12.0	2,500	0.00085	8.5	1,600	0.00067	4.3
3/16	2,800	0.00110	12.4	2,240	0.00100	9.0	1,400	0.00080	4.5
1/4	2,240	0.00160	14.4	1,800	0.00140	10.1	1,120	0.00112	5.0
5/16	1,800	0.00224	16.1	1,400	0.00200	11.3	900	0.00160	5.8
3/8	1,600	0.00265	17.0	1,250	0.00236	11.8	800	0.00190	6.1
7/16	1,250	0.00335	16.8	1,000	0.00300	12.0	630	0.00250	6.3
1/2	1,120	0.00375	16.8	900	0.00315	11.4	560	0.00265	5.9
9/16	1,000	0.00400	16.0	800	0.00355	11.4	500	0.00300	6.0
5/8	900	0.00425	15.3	710	0.00375	10.6	450	0.00335	6.0
11/16	800	0.00475	15.3	630	0.00375	9.5	400	0.00355	5.6
3/4	800	0.00475	15.3	630	0.00375	9.5	400	0.00355	5.6
13/16	710	0.00500	14.3	560	0.00375	8.4	355	0.00400	5.6
7/8	630	0.00530	13.4	500	0.00375	7.5	315	0.00400	5.0
15/16	560	0.00560	12.5	450	0.00375	6.8	280	0.00400	4.5
1	560	0.00560	12.5	450	0.00375	6.8	280	0.00400	4.5
1-1/8	500	0.00560	11.3	400	0.00375	6.0	250	0.00400	4.0
1-1/4	450	0.00600	10.8	355	0.00375	5.4	224	0.00400	3.6
1-3/8	400	0.00600	9.6	315	0.00375	4.8	200	0.00400	3.3
1-1/2	355	0.00630	9.0	280	0.00375	4.3	180	0.00400	2.9
1-3/4	315	0.00630	11.9	250	0.00375	5.6	160	0.00400	3.9
2	280	0.00630	10.6	224	0.00375	5.0	140	0.00400	3.4

- 1) Speeds and Feeds for Lists 540, 541, 542, 543, 547, 548, 575, and 641
- 2) Reduce Speeds and Feeds 15-20% for Lists 557
- 3) Reduce Speeds and Feeds 10-15% for Lists 545, 546, 558 and 646
- 4) Increase Speeds and Feeds 5-15% for Lists 549

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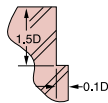
Standard 4 Flute and 6 Flute HSS-Co: (Continued)

Side Milling

Hardness	30 to 40 HRC			40 to 50 HRC			-		
Work Material	High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys			Heat Resistant High Strength Stainless Steels and Titanium Alloys			Aluminum Alloyed Aluminum Plastics Woods		
Cutting Speed	30-50 SFM			16-32 SFM			150-390 SFM		
Mill Dia.	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min	Speed RPM	IPT	Feed in/min
1/16	2,500	0.00012	1.1	1,600	0.00008	0.5	20,000	0.00020	16.0
5/64	2,000	0.00017	1.4	1,250	0.00011	0.5	20,000	0.00028	22.4
3/32	1,600	0.00024	1.5	1,000	0.00016	0.6	20,000	0.00038	30.0
7/64	1,400	0.00028	1.5	900	0.00020	0.8	18,000	0.00043	30.6
1/8	1,250	0.00034	1.6	800	0.00024	0.8	16,000	0.00050	32.0
9/64	1,120	0.00040	1.8	710	0.00028	0.8	14,000	0.00060	33.6
5/32	1,000	0.00048	1.9	630	0.00034	0.9	12,500	0.00071	35.5
11/64	900	0.00056	2.0	560	0.00040	0.9	11,200	0.00080	35.9
3/16	800	0.00067	2.1	500	0.00048	1.0	10,000	0.00095	38.0
1/4	630	0.00095	2.4	400	0.00071	1.1	8,000	0.00132	42.3
5/16	500	0.00132	2.6	315	0.00100	1.3	6,300	0.00190	47.9
3/8	450	0.00160	2.9	280	0.00118	1.4	5,600	0.00212	47.5
7/16	355	0.00212	3.0	224	0.00140	1.3	4,500	0.00265	47.8
1/2	315	0.00236	3.0	200	0.00180	1.5	4,000	0.00300	48.0
9/16	280	0.00280	3.1	180	0.00200	1.5	3,550	0.00315	44.8
5/8	250	0.00315	3.1	160	0.00224	1.4	3,150	0.00335	42.3
11/16	224	0.00355	3.1	140	0.00250	1.4	2,800	0.00375	42.0
3/4	224	0.00355	3.1	140	0.00250	1.4	2,800	0.00375	42.0
13/16	200	0.00400	3.3	125	0.00280	1.4	2,500	0.00400	40.0
7/8	180	0.00400	2.9	112	0.00315	1.4	2,240	0.00425	38.1
15/16	160	0.00400	2.5	100	0.00355	1.4	2,000	0.00450	36.0
1	160	0.00400	2.5	100	0.00355	1.4	2,000	0.00450	36.0
1-1/8	140	0.00400	2.3	90	0.00400	1.5	1,800	0.00475	34.3
1-1/4	125	0.00400	2.0	80	0.00400	1.3	1,600	0.00475	30.4
1-3/8	112	0.00400	1.8	71	0.00400	1.1	1,400	0.00500	28.0
1-1/2	100	0.00400	1.6	63	0.00400	1.0	1,250	0.00500	25.0
1-3/4	90	0.00400	2.1	56	0.00400	1.4	1,120	0.00500	33.6
2	80	0.00400	1.9	50	0.00400	1.3	1,000	0.00500	30.0

- 1) Based on regular 4FL end mills. cutting depth (1.5D) x cutting width (0.1D)
- 2) For finish cut, increase RPM 30-50%.

1-1/2"; 4 Flutes
1-3/4", 2", 6 Flutes



- List 521: Single End, Regular Length, 2 Flute**
- List 523: Double End, Regular Length, 2 Flute**
- List 526: Single End, Regular Length, 2 Flute, Extension Type**
- List 544: Single End, Regular Length, 4 Flute**
- List 621: Ball End, Regular Length, 2 Flute**
- List 644: Ball End, Regular Length, Multiple Flute**

Profiling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Medium Carbon Steels Medium Strength Titanium Alloys Medium Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys		Aluminum Aluminum Alloys	
Cutting Speed	80-150 SFM		80-110 SFM		50-65 SFM		30-50 SFM		16-32 SFM		80-390 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	4,000	4.5	3,000	3.0	1,800	1.5	1,250	0.9	800	0.4	10,000	10.0
3/16	2,500	5.5	1,900	3.8	1,120	1.8	800	1.1	500	0.5	6,300	12.0
1/4	2,000	6.4	1,500	4.3	900	2.0	630	1.3	400	0.6	5,000	13.3
5/16	1,600	7.1	1,180	4.8	710	2.3	500	1.4	315	0.6	4,000	15.3
3/8	1,400	7.4	1,060	5.0	630	2.4	450	1.5	280	0.6	3,550	15.0
7/16	1,120	7.5	850	5.1	500	2.5	355	1.5	224	0.6	2,800	14.9
1/2	1,000	7.5	750	4.8	450	2.4	315	1.5	200	0.8	2,500	15.0
9/16	900	7.3	670	4.8	400	2.4	280	1.6	180	0.8	2,240	14.1
5/8	800	6.8	600	4.5	355	2.4	250	1.6	160	0.8	2,000	13.4
3/4	710	6.8	530	4.3	315	2.3	225	1.6	140	0.8	1,800	13.5
7/8	560	5.9	425	3.4	250	2.0	180	1.5	110	0.8	1,400	11.9
1	500	5.6	375	3.0	224	1.8	160	1.3	100	0.8	1,250	11.3
1-1/8	450	5.0	335	2.6	200	1.6	140	1.1	90	0.8	1,120	10.6
1-1/4	400	4.8	300	2.4	180	1.5	125	1.0	80	0.6	1,000	9.5
1-1/2	315	4.0	235	1.9	140	1.1	100	0.8	63	0.5	800	8.0

Reduce Speeds and Feeds by 10% for List 526

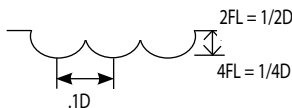
Depth of Cut:

For 2 Flute end mills - (1/2) diameter of the tool

For 4 Flute end mills - (1/4) diameter of the tool

Step-over(ar) = .1D

In case of deeper operation, slow down feed by 20-50%





Single/Double End

Cobalt High Speed Steel

List 580: Single End, Regular Length, 2 Flute

List 582: Double End, Regular Length, 2 Flute

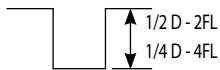
Side Milling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys		Aluminum Aluminum Alloys	
Cutting Speed	125-145 SFM		95-110 SFM		50-65 SFM		30-50 SFM		16-32 SFM		160-390 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	4,500	4.2	3,360	3.0	2,000	1.4	1,400	0.8	800	0.4	11,200	9.8
4	3,150	4.9	2,360	3.3	1,400	1.6	1,000	1.0	630	0.4	8,000	11.4
5	2,500	5.5	1,900	3.7	1,120	1.8	800	1.0	500	0.5	6,300	12.4
6	2,240	5.9	1,700	3.9	1,000	1.9	710	1.1	400	0.6	5,600	12.4
8	1,600	7.1	1,180	4.6	710	2.2	500	1.1	315	0.6	4,000	15.2
10	1,250	7.9	950	5.2	560	2.5	400	1.3	280	0.6	3,150	15.7
12	1,000	7.5	750	4.6	450	2.4	315	1.5	200	0.8	2,500	14.8
14	900	7.1	670	4.6	400	2.4	280	1.6	180	0.8	2,250	13.9
16	800	6.7	600	4.4	355	2.4	250	1.6	160	0.8	2,000	13.6
18	710	6.5	530	4.2	315	2.2	225	1.6	140	0.8	1,800	13.6
20	630	6.3	475	3.7	280	2.2	200	1.6	140	0.8	1,600	12.4
22	560	5.9	425	3.3	250	2.0	180	1.4	112	0.8	1,400	11.8
24	500	5.5	375	3.0	225	1.8	160	1.3	100	0.8	1,250	11.0
25	500	5.5	375	3.0	225	1.8	160	1.3	100	0.6	1,250	11.0
26	500	5.5	375	3.0	225	1.8	160	1.3	90	0.6	1,250	11.0
28	450	4.9	335	2.6	200	1.6	140	1.1	80	0.6	1,120	10.4
30	450	4.9	335	2.6	200	1.6	140	1.1	70	0.6	1,120	10.4
32	400	4.7	300	2.4	180	1.4	125	1.0	63	0.5	1,000	9.3
35	355	4.1	265	2.1	160	1.3	110	0.9	63	0.5	900	8.8
36	355	4.1	265	2.1	160	1.3	110	0.8	63	0.5	900	8.8
40	315	3.9	236	1.9	140	1.1	100	0.8	56	0.4	800	7.9
45	280	3.5	212	1.7	125	1.0	90	0.7	50	0.4	710	7.1
50	250	3.1	190	1.5	110	0.9	80	0.7	50	0.4	630	6.3

Depth of Cut:

For 2 Flute end mills - (1/2) diameter of the tool

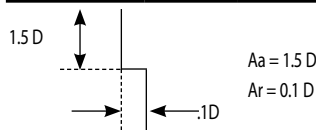
In case of deeper operation, slow down feed by 20-50%



List 581: Regular Length - Multiple Flute - Center Hole

Side Milling with 4FL, 6FL

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Heat Resistant High Alloys High Strength Stainless Steels Titanium Alloys		Aluminum Aluminum Alloys	
Cutting Speed	130-165 SFM		105-125 SFM		65-85 SFM		30-50 SFM		16-32 SFM		450-590 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3	5,300	9.8	4,000	7.5	2,650	3.7	1,600	1.8	800	0.8	18,000	31.5
4	3,750	11.8	2,800	8.8	1,900	4.2	1,120	2.1	630	0.9	12,500	35.4
5	3,000	13.2	2,240	9.8	1,500	4.6	900	2.4	500	1.0	10,000	39.4
6	2,650	14.0	2,000	10.4	1,320	4.9	800	2.5	400	1.1	9,000	39.4
8	1,900	16.7	1,400	12.4	950	5.9	560	3.0	315	1.3	6,300	46.5
10	1,500	18.7	1,120	14.0	750	6.7	450	3.3	280	1.4	5,000	49.2
12	1,180	17.7	900	13.2	600	6.3	355	3.3	200	1.5	4,000	46.5
14	1,060	16.7	800	12.4	530	6.3	315	3.5	180	1.5	3,550	44.1
16	950	15.7	710	11.8	475	6.3	280	3.5	160	1.4	3,150	41.7
18	850	15.7	630	11.0	425	5.9	250	3.5	140	1.4	2,800	41.7
20	750	14.8	560	9.8	375	5.9	200	3.1	140	1.4	2,500	39.4
22	670	14.0	500	8.8	335	5.2	180	2.8	112	1.4	2,000	33.5
24	600	13.2	450	7.9	300	4.6	160	2.5	100	1.4	1,800	31.5
25	600	13.2	450	7.9	300	4.6	160	2.5	100	1.4	1,800	31.5
26	600	13.2	450	7.9	300	4.6	160	2.5	90	1.5	1,800	31.5
28	530	11.8	400	7.1	265	4.2	140	2.2	80	1.3	1,600	29.5
30	530	11.8	400	7.1	265	4.2	140	2.2	71	1.1	1,600	29.5
32	475	10.2	355	6.3	236	3.7	125	2.0	71	1.1	1,400	26.4
35	425	9.8	315	5.5	212	3.3	112	1.8	63	1.0	1,250	24.8
36	425	9.8	315	5.5	212	3.3	112	1.8	63	1.0	1,250	24.8
40	375	9.3	280	4.9	190	3.0	100	1.6	56	1.4	1,120	22.0
45	335	9.8	250	5.5	170	3.3	90	1.8	56	1.4	1,000	24.8
50	300	8.8	224	4.9	150	3.0	80	1.6	50	1.3	900	22.0





List 531: Single End - Regular Length - 3 Flute

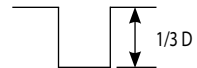
List 532: Double End - Regular Length - 3 Flute

List 536: Single End - Long Length - 3 Flute

Slotting

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		-	
Work Material	Mild Steels Brass Bronze Cast Iron		Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings		High Carbon Steel Unalloyed Titanium Ferritic Low Alloys		High Alloys Titanium Alloys High Strength Stainless Steels		Aluminum Aluminum Alloys	
Cutting Speed	115-150 SFM		90-110 SFM		50-65 SFM		15-35 SFM		325-375 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	4,500	5.5	3,350	3.9	2,000	1.9	1,400	1.0	11,200	12.4
3/16	2,500	7.1	1,900	4.9	1,120	2.4	800	1.4	6,300	15.7
1/4	2,240	7.9	1,700	5.2	1,000	2.5	710	1.4	5,600	15.7
5/16	1,600	9.3	1,180	5.9	710	3.0	500	1.8	4,000	20.9
3/8	1,250	10.2	950	6.7	560	3.1	400	2.0	3,150	19.7
1/2	1,000	9.8	750	5.9	450	3.1	315	2.0	2,500	17.7
5/8	800	8.8	600	5.9	355	3.1	250	2.1	2,000	17.7
3/4	630	8.3	475	4.9	280	2.8	200	2.1	1,600	15.7
1	500	7.1	375	3.9	224	2.4	160	1.7	1,250	14.8
1-1/4	450	6.3	335	3.5	200	2.1	140	1.5	1,120	14.0
1-1/2	355	5.5	265	2.8	160	1.7	112	1.2	900	11.8

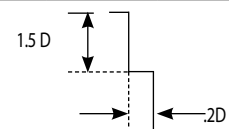
When using List Number 536, reduce speeds and feeds by 10%.
 Depth of Cut: For 3 Flute end mills - (1/3) diameter of the tool



Side Milling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings		High Carbon Steel Unalloyed Titanium Ferritic Low Alloys		High Alloys Titanium Alloys High Strength Stainless Steels		Aluminum Aluminum Alloys	
Cutting Speed	155 SFM		115 SFM		70 SFM		40 SFM		395 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	4,700	5.7	3,516	4.1	2,140	2.0	1,223	0.9	12,076	13.4
3/16	3,200	9.1	2,344	6.0	1,427	3.1	815	1.4	8,051	20.1
1/4	2,350	8.3	1,758	5.4	1,070	2.7	611	1.2	6,038	16.9
5/16	1,896	11.0	1,406	7.0	856	3.6	489	1.8	4,831	25.2
3/8	1,580	12.9	1,172	8.3	713	3.9	408	2.0	4,025	25.2
1/2	1,185	11.6	879	6.9	535	3.7	306	1.9	3,019	21.4
5/8	948	10.4	703	6.9	428	3.7	245	2.1	2,415	21.4
3/4	790	10.4	586	6.0	357	3.6	204	2.1	2,013	19.8
1	592	8.4	439	4.6	268	2.9	153	1.6	1,510	17.9
1-1/4	474	6.6	352	3.7	214	2.2	122	1.3	1,208	15.1
1-1/2	395	6.1	293	3.1	178	1.9	102	1.1	1,006	13.2

When using List Number 536, reduce speeds and feeds by 10%.
 Depth of Cut:
 Aa = 1.5D
 Ar = 0.2D



List 591: 1° Taper on Side - 3 Flute

Slotting

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Brass Bronze Cast Iron		Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings		High Carbon Steel Unalloyed Titanium Ferritic Low Alloys		High Carbon Steel Unalloyed Titanium Ferritic Low Alloys		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Aluminum Aluminum Alloys	
Cutting Speed	80-120 SFM		60-80 SFM		45-60 SFM		10 - 20 SFM		8-15 SFM		150-350 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5/64	4,480	3.2	3,520	2.3	2,080	1.1	776	0.5	504	0.3	15,480	8.8
3/32	3,760	3.3	2,720	2.4	1,760	1.2	640	0.4	416	0.2	13,008	7.3
1/8	2,800	3.5	2,080	2.5	1,360	1.5	480	0.6	312	0.3	9,680	9.1
3/16	2,240	3.7	1,680	2.8	1,040	1.6	320	0.5	208	0.3	6,440	8.5
1/4	1,760	4.0	1,280	3.0	792	1.8	240	0.4	156	0.2	4,880	9.6
3/8	1,120	5.3	840	3.8	528	2.2	160	0.7	104	0.4	3,280	12.4
1/2	880	5.0	640	3.6	396	2.2	120	0.6	78	0.4	2,400	10.8
5/8	704	4.3	512	3.1	316	1.9	96	0.6	62	0.3	1,920	9.5

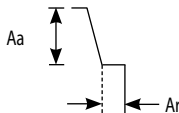
Cutting Depth = (1/3)D



Side Milling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Brass Bronze Cast Iron		Med. Carbon Steels Hard Brass and Bronze Mild Steel Forgings		High Carbon Steel Unalloyed Titanium Ferritic Low Alloys		High Carbon Steel Unalloyed Titanium Ferritic Low Alloys		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Aluminum Aluminum Alloys	
Cutting Speed	80-120 SFM		60-80 SFM		45-60 SFM		25-45 SFM		16-32 SFM		150-400 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5/64	5,600	7.9	4,400	6.2	2,700	3.8	1,500	2.1	1,050	1.4	20,000	28.3
3/32	4,700	6.6	3,600	5.1	2,300	3.2	1,250	1.7	875	1.1	16,500	23.3
1/8	3,500	8.2	2,700	6.4	1,700	4.0	900	2.2	630	1.4	12,400	29.3
3/16	2,800	9.2	2,200	7.3	1,400	4.5	750	2.4	525	1.6	9,900	32.7
1/4	2,300	8.3	1,800	6.4	1,200	4.0	600	2.2	420	1.4	8,300	29.4
3/8	1,400	13.2	1,100	9.9	700	6.4	370	3.5	259	2.3	5,000	47.2
1/2	1,200	12.9	900	10.0	600	6.4	310	3.5	217	2.3	4,100	46.0
5/8	900	10.8	700	8.4	400	4.9	230	2.8	161	1.8	3,100	38.4

Aa = 1.5D
Ar = 0.1D





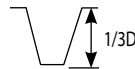
List 593: 2° Taper on Side - 3 Flute

List 594: 3° Taper on Side - 3 Flute

Slotting

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Aluminum Aluminum Alloys	
Cutting Speed	80-120 SFM		60-80 SFM		45-60 SFM		25-45 SFM		8-20 SFM		150-350 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5/64	3,774	2.5	3,020	2.1	1,887	1.1	566	0.4	396	0.2	13,211	7.6
3/32	3,152	2.4	2,522	2.1	1,576	1.1	473	0.3	330	0.2	11,032	7.8
1/8	2,370	2.5	1,896	2.2	1,185	1.4	356	0.4	248	0.2	8,295	7.9
3/16	1,576	2.4	1,261	2.4	788	1.3	236	0.4	165	0.2	5,516	8.1
1/4	1,180	2.8	944	2.8	590	1.6	177	0.3	123	0.2	4,132	8.5
3/8	788	3.4	630	2.9	394	1.9	118	0.5	82	0.3	2,758	10.5
1/2	591	3.2	473	2.5	296	1.6	89	0.5	62	0.3	2,070	9.4
5/8	473	2.6	378	2.3	236	1.5	71	0.4	49	0.2	1,654	8.5

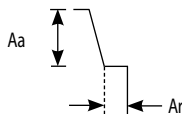
Cutting Depth = (1/3)D



Side Milling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Aluminum Aluminum Alloys	
Cutting Speed	130-150 SFM		105-120 SFM		65-80 SFM		20-50 SFM		15-20 SFM		400-590 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5/64	5,000	7.1	3,800	5.4	2,400	3.4	1,300	1.8	910	1.2	17,500	24.1
3/32	4,100	5.8	3,200	4.5	2,000	2.8	1,100	1.6	770	1.0	14,500	20.5
1/8	3,100	7.3	2,400	5.6	1,500	3.5	800	1.8	560	1.2	11,000	25.9
3/16	2,500	8.2	1,900	6.2	1,200	3.9	650	2.1	455	1.4	8,800	29.1
1/4	2,050	7.2	1,600	5.6	1,000	3.5	550	1.9	385	1.2	7,300	25.8
3/8	1,250	11.8	950	8.9	600	5.6	330	3.1	231	2.0	4,400	41.5
1/2	1,000	11.2	800	8.9	500	5.6	275	3.1	193	2.0	3,600	40.3
5/8	750	9.3	600	7.4	380	4.7	200	2.4	140	1.6	2,700	33.5

Aa = 1.5D
Ar = 0.1D

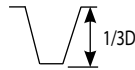


List 595: 5° Taper on Side - 3 Flute
List 596: 7° Taper on Side - 3 Flute

Slotting

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Aluminum Aluminum Alloys	
Cutting Speed	80-120 SFM		60-80 SFM		45-60 SFM		8 - 15 SFM		5 - 10 SFM		150-350 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5/64	3,592	2.4	2,760	1.9	1,760	1.1	540	0.4	378	0.2	12,400	7.5
3/32	2,920	2.3	2,240	1.8	1,400	1.0	456	0.3	319	0.2	10,000	7.5
1/8	2,040	2.1	1,600	1.9	880	1.1	340	0.4	238	0.2	7,200	7.7
3/16	1,160	2.2	880	2.0	540	1.2	224	0.4	157	0.2	4,000	7.8
1/4	720	2.4	512	2.2	320	1.2	168	0.3	118	0.1	3,120	8.2
3/8	565	2.6	400	2.0	280	1.3	84	0.4	59	0.2	1,980	8.3
1/2	452	2.4	360	1.9	200	1.2	68	0.4	48	0.2	1,584	7.9

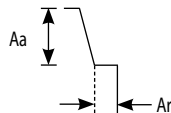
Cutting Depth = (1/3)D



Side Milling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Aluminum Aluminum Alloys	
Cutting Speed	130-165 SFM		105-125 SFM		65-80 SFM		20-50 SFM		15-20 SFM		400-590 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5/64	4,515	6.8	3,450	4.9	2,200	3.1	1,130	1.6	791	1.0	15,500	23.3
3/32	3,650	5.1	2,800	3.9	1,750	2.5	900	1.3	630	0.8	12,500	17.6
1/8	2,550	6.0	2,000	4.7	1,200	2.8	600	1.4	420	0.9	9,000	21.1
3/16	1,450	4.8	1,100	3.5	675	2.2	400	1.3	280	0.9	5,000	16.4
1/4	900	3.4	640	2.1	400	1.4	300	1.1	210	0.7	3,900	14.7
3/8	800	7.5	500	4.6	375	3.5	265	2.4	186	1.6	3,300	31.1
1/2	750	8.8	450	4.8	250	2.8	200	2.2	140	1.4	2,400	28.1

Aa = 1.5D
Ar = 0.1D





List 597: 10° Taper on Side - 3 Flute

Slotting

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Aluminum Aluminum Alloys	
Cutting Speed	80-120 SFM		60-80 SFM		45-60 SFM		25-45 SFM		5 - 12 SFM		150-350 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3/32	2,800	1.7	2,240	1.6	1,400	1.0	440	0.3	286	0.2	10,000	7.1
1/8	2,000	2.1	1,600	1.9	960	1.1	328	0.4	213	0.2	7,200	7.5
1/4	720	2.2	520	2.0	320	1.2	164	0.3	107	0.2	3,120	8.2

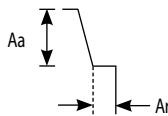
Cutting Depth = (1/3)D



Side Milling

Hardness	Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC		-	
Work Material	Mild Steels Hard Brass Bronze Cast Iron		Med. Carbon Steels Med. Strength Titanium Alloys Med. Strength Stainless Steels		High Carbon Steel Titanium Alloys High Strength Stainless Steels		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Heat Resistant High Alloys Austenitic Alloys Nickel Base Alloys		Aluminum Aluminum Alloys	
Cutting Speed	80-120 SFM		60-80 SFM		45-60 SFM		25-45 SFM		15-20 SFM		150-350 SFM	
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
3/32	3,500	4.9	2,800	3.9	1,750	2.5	900	1.3	630	0.8	12,500	17.7
1/8	2,550	6.0	2,000	4.7	1,200	2.8	600	1.4	420	0.9	9,000	21.3
1/4	900	3.4	650	2.2	400	1.4	300	1.1	210	0.7	3,900	13.8

Aa = 1.5D
Ar = 0.1D



End Mill

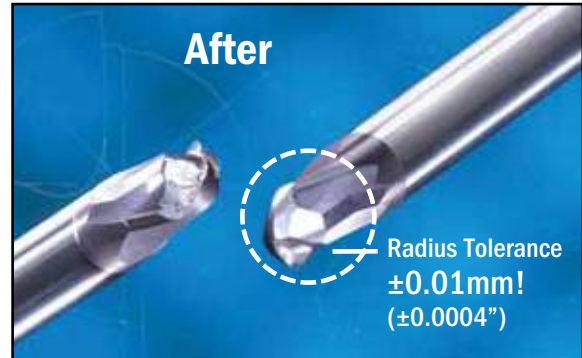
Reconditioning





OSG Tool Reconditioning

OSG's Bensenville facility is the special cutting tool and regrinding authority based in the Chicago area. Through accurate and expedient regrinds of high-end cutting tools, OSG helps customers extend tool life and save money by restoring their used cutting tools to their original condition. In addition to regrinding, the Bensenville facility also manufactures custom drills, reamers, and other special cutting tools, performs product modifications and provides premium coating services.



As part of the OSG Corporation (headquartered in Japan), the regrind facility is the only OSG authorized regrinding source in America. The regrinding program uses the same OSG manufacturing drawings, adheres to OSG's strict quality control standards and uses the same equipment for OSG manufacturing and inspection procedures. As one of the world's leading cutting tool manufacturers, OSG offers a global network of support to our customers.

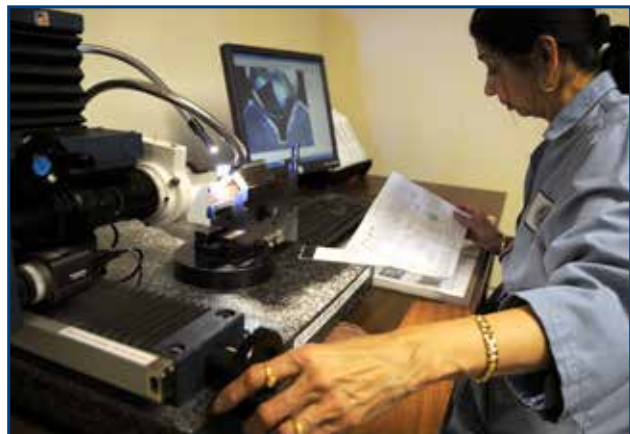
Tool Reconditioning Lowers Costs

The primary benefit of tool reconditioning is clear: the reduction in overall tooling costs. As part of normal production, tool wear, chipping and breakage occurs often affecting tool performance and increasing manufacturing costs. By reconditioning high performance drills, end mills and taps, OSG helps manufacturers realize substantial cost savings through extended tool life without jeopardizing production quality or performance. Because OSG's reconditioned tools are manufactured to the same high level of quality and held to the same exacting standards that new tools are, customers of OSG's tool reconditioning services can expect the same high performance and quality they are accustomed with OSG's new tools even after regrinding multiple times.

Engineering & Sales Support

OSG reconditions OSG tools using the same prints as the original tools made in our plants around the world. By using original part drawings, tools are accurately reconditioned to the original specifications, so customers are assured that reconditioned tools realize the same high level of performance. Manufacturers can also work directly with OSG design engineers to customize tools for enhanced performance or to meet specific requirements.

OSG's national sales team provides tooling expertise in the field for onsite evaluations and recommendations for manufacturers to implement a customized reconditioning program. The goal is to help manufacturers reduce tool costs and inventory, optimize performance and enhance overall profits.



Contact your OSG representative or distributor to review your tool reconditioning program.





CNC Training

OSG CNC technicians are extensively trained on proper setup methodologies and reconditioning processes by an on-staff CNC trainer. Through their development, the CNC technician training program moves operators through three levels where they are diligently monitored and certified/reevaluated annually to maintain consistency and quality in our tools. Technicians are also trained and certified/reevaluated annually by Quality Assurance to perform inspections to print on first piece and in process tools.

Inspector Training

In order to guarantee that our tools are reconditioned to the highest standards, inspectors also undergo annual training and certifications which involve standardized procedures. These are the same methods that are used in the OSG manufacturing facilities in Japan and around the world. Inspectors are trained to inspect and measure tools completely to the original tool prints.

Throughout the reconditioning process, the tools are also continuously inspected until 100% visual inspection ensures that no chipped or defective tools are received by the customer. The high tech inspection equipment used at the reconditioning facility is the same equipment used at all OSG locations. This includes in-house developed tool analyzers and state-of-the-art equipment with up to 300x magnification capabilities. The key to inspecting high performance, accurate reconditioned tools is assuring that they are held to the same inspection standards through the use of the same inspection methods as new OSG tools.

The Bensenville plant is subject to OSG's stringent JQA regrinding standards and is certified regularly by OSG Japan.

Equipment and Facility

In 2015, OSG opened a reconditioning facility which is equipped with state-of-the-art production and inspection equipment. The facility uses high precision 5-Axis CNC grinders throughout the reconditioning process for improved repeatability and precision.

OSG's weekly equipment Preventive Maintenance (PM) program ensures consistency and accuracy throughout the reconditioning process. Through this PM program, OSG's tool reconditioning performance will be consistent year after year.



INDEXABLE

OSG **PHOENIX**[®]

OSG's high performance indexable tooling for rough and finish milling and drilling in a variety of applications.

EXOCARB[®] ***DISC CUTTER S***

OSG's patented face mill for high feed, roughing applications on low horsepower machine spindles.

EXOCARB[®] ***DISC CUTTER PRO***

OSG's patented face mill for high feed, finishing applications on low horsepower machine spindles.










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OSG PHOENIX®							
INDEXABLE DRILLING	52400		OSG PHOENIX® PXD	Inch	0.551-1.023"	Exchangeable Head Drill, 3D & 5D	1154
	78310			Metric	14.00-25.99mm	Exchangeable Head Drill, 3D & 5D	1155
	78PXD			-	-	PXD Exchangeable Heads	1156-1160
	7808H			-	-	PXD Accessories	1161
	52502		OSG PHOENIX® PD	Inch	0.594-2.500"	Indexable Drill, 2D	1163-1164
	78031			Metric	15.00-63.00mm	Indexable Drill, 2D	1165-1166
	52503			Inch	0.594-2.500"	Indexable Drill, 3D	1167-1168
	78032			Metric	15.00-63.00mm	Indexable Drill, 3D	1169-1170
	52504			Inch	0.594-2.500"	Indexable Drill, 4D	1171-1172
	78033			Metric	15.00-63.00mm	Indexable Drill, 4D	1173-1174
	52505			Inch	0.594-2.500"	Indexable Drill, 5D	1175-1176
	78027			Metric	15.00-63.00mm	Indexable Drill, 5D	1177-1178
	78P5D			-	-	PD Inserts	1179
	7808H			-	-	PD Accessories	1180
	78001		OSG PHOENIX® PHP	Metric	14.00-40.00mm	High Performance Drill, 3D	1185
	78PHP			-	-	PHP Inserts	1186
	7808H			-	-	PHP Accessories	1186
	INDEXABLE MILLING	52700		OSG PHOENIX® PAS	Inch	2.000-6.000"	45° Face Mill, 2-Sided Square Insert, Bore
78020		Metric			50-125mm	45° Face Mill, 2-Sided Square Insert, Bore	1188
78PAS		-			-	PAS Inserts	1189
7808H		-			-	PAS Accessories	1189
52800			OSG PHOENIX® PAO	Inch	2.000-8.000"	45° Face Mill, 2-Sided Octagon Insert, Bore	1191
78120				Metric	50-200mm	45° Face Mill, 2-Sided Octagon Insert, Bore	1192
78PAO				-	-	PAO Inserts	1193
7808H				-	-	PAO Accessories	1194
78013			OSG PHOENIX® PSE	Inch	0.625-1.500"	90° Shoulder Cutter, SA/FA	1196
78011				Metric	16-36mm	90° Shoulder Cutter, SS	1197-1198
78012				Inch	2.000-6.000"	90° Shoulder Cutter, Bore	1199
78010				Metric	40-125mm	90° Shoulder Cutter, Bore	1200
52601				Inch	0.625-1.500"	90° Shoulder Cutter, ASF	1201
78016				Metric	16-40mm	90° Shoulder Cutter, SF	1202
78PSE	-			-	PSE/PSEL Inserts	1203	
7808H	-			-	PSE Accessories	1204	

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OSG PHOENIX®

INDEXABLE MILLING	53000		OSG PHOENIX® PSEL	Inch	1.000-1.500"	90° Roughing Cutter, SA/FA	1207
	78029			Metric	25-50mm	90° Roughing Cutter, SS	1208
	53001			Inch	2.000-3.000"	90° Roughing Cutter, Bore	1209
	78028			Metric	50-80mm	90° Roughing Cutter, Bore	1209
	78PSE			-	-	PSE/PSEL Inserts	1210
	7808H			-	-	PSEL Accessories	1211
			NEW INSERT				
	52900		OSG PHOENIX® PSF	Inch	1.000-1.500"	90° Shoulder Cutter, Square Insert, SA/FA	1214
	78030			Metric	25-40mm	90° Shoulder Cutter, Square Insert, SS	1214
	52901			Inch	2.000-3.000"	90° Shoulder Cutter, Square Insert, Bore	1215
	78130			Metric	50-80mm	90° Shoulder Cutter, Square Insert, Bore	1215
	78PSF			-	-	PSF/PSFL Inserts	1216
	7808H			-	-	PSF Accessories	1216
			NEW INSERT				
	53200		OSG PHOENIX® PSFL	Inch	1.250-1.500"	90° Roughing Cutter, Square Insert, SA/FA	1218
	78037			Metric	32-40mm	90° Roughing Cutter, Square Insert, SS	1218
	53201			Inch	2.000-4.000"	90° Roughing Cutter, Square Insert, Bore	1219
	78137			Metric	50-80mm	90° Roughing Cutter, Square Insert, Bore	1219
78PSF	-			-	PSF/PSFL Inserts	1220	
7808H	-			-	PSFL Accessories	1220	
		NEW					
53100		OSG PHOENIX® PSTW	Inch	2.000-6.000"	90° Shoulder Cutter, 2-Sided Triangle Insert, Bore	1222	
78131			Metric	50-125mm	90° Shoulder Cutter, 2-Sided Triangle Insert, Bore	1223	
78PSTW			-	-	PSTW Inserts	1224	
7808H			-	-	PSTW Accessories	1224	
		NEW SIZES					
78005		OSG PHOENIX® PRC	Inch	1.000-1.500"	Radius Cutter, SA	1226	
78003			Metric	20-63mm	Radius Cutter, SS	1227	
78004			Inch	2.000-6.000"	Radius Cutter, Bore	1228	
78002			Metric	50-100mm	Radius Cutter, Bore	1229	
52602			Inch	1.000-1.500"	Radius Cutter, ASF	1230	
78017			Metric	20-40mm	Radius Cutter, SF	1230	
78PRC			-	-	PRC Inserts	1231	
7808H			-	-	PRC Accessories	1231	
		NEW INSERT					

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OSG PHOENIX®

INDEXABLE MILLING	78009		OSG PHOENIX® PHC	Inch	0.625-1.500"	High Feed Radius Cutter, SA/FA	1234-1235
	78007			Metric	16-63mm	High Feed Radius Cutter, SS	1236-1237
	78008			Inch	2.000-6.000"	High Feed Radius Cutter, Bore	1238
	78006			Metric	40-100mm	High Feed Radius Cutter, Bore	1239
	52603			Inch	0.625-1.500"	High Feed Radius Cutter, ASF	1240
	78015			Metric	16-40mm	High Feed Radius Cutter, SF	1241
	78PHC			-	-	PHC Inserts	1242
	7808H			-	-	PHC Accessories	1242
			NEW INSERT				
	6420		OSG PHOENIX® PDR	Metric	40-50mm	Deep Feed Radius Cutter, SS	1245
6450	Metric			63-125mm	Deep Feed Radius Cutter, Bore	1245	
78PDR	-			-	PDR Inserts	1246	
7808H	-			-	PDR Accessories	1246	
78036		OSG PHOENIX® PFAL	Metric	50-160mm	Finishing Cutter for Aluminum, Bore	1248	
78PFAL			-	-	PFAL Inserts	1249	
7808H			-	-	PFAL Accessories	1249	
52100		OSG PHOENIX® PFB	Inch	0.250-1.250"	Finishing Ball End Mill, SA	1251-1252	
78014			Metric	6-32mm	Finishing Ball End Mill, SS	1253	
52604			Inch	0.375-1.000"	Finishing Ball End Mill, ASF	1254	
78114			Metric	10-32mm	Finishing Ball End Mill, SF	1254	
78PFB			-	-	PFB Inserts	1255-1256	
7808H			-	-	PFB Accessories	1257	
52200				OSG PHOENIX® PFR	Inch	0.250-1.250"	Finishing Radius End Mill, SA
78320	Metric	6-32mm			Finishing Radius End Mill, SS	1261	
52605	Inch	0.375-1.000"			Finishing Radius End Mill, ASF	1262	
78220	Metric	10-32mm			Finishing Radius End Mill, SF	1262	
78PFR	-	-			PFR Inserts	1263-1267	
7808H	-	-			PFR Accessories	1268	

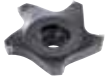



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OSG PHOENIX®

INDEXABLE MILLING	OSG PHOENIX® SF		Inch	0.625-1.500"	Screw Fit Cutter, PSE ASF	1271		
	52601		Metric	16-40mm	Screw Fit Cutter, PSE SF	1272		
	78016		Inch	1.000-1.500"	Screw Fit Cutter, PRC ASF	1273		
	52602		Metric	20-40mm	Screw Fit Cutter, PRC SF	1273		
	78017		Inch	0.625-1.500"	Screw Fit Cutter, PHC ASF	1274		
	52603		Metric	16-40mm	Screw Fit Cutter, PHC SF	1275		
	78015		Inch	0.375-1.000"	Screw Fit Cutter, PFB ASF	1276		
	52604		Metric	10-30mm	Screw Fit Cutter, PFB SF	1277		
	78114		Inch	0.375-1.000"	Screw Fit Cutter, PFR ASF	1278		
	52605		Metric	10-32mm	Screw Fit Cutter, PFR SF	1278		
	78220		Inch	-	Screw Fit Cutter, SF Arbor SA	1279		
	52600		Metric	-	Screw Fit Cutter, SF Arbor SS	1280		
	78019		-	-	Screw Fit Cutter, SF Arbor BT	1281		
	78025		-	-	Screw Fit Cutter, SF Arbor HSK	1282		
	78125		OSG PHOENIX® PXM		Inch/ Metric	0.500-1.000" 12-25mm	PXSE, 4 Flute, Square & Corner Radius	1283
	78PXSE			Inch/ Metric	0.500-1.000" 12-25mm	PXVC, 4 Flute, Square & Corner Radius	1284	
	78PXVC			Inch/ Metric	0.500-1.000" 12-25mm	PXSM, Multiple Flute, Square & Corner Radius	1285	
	78PXSM	Inch/ Metric		0.500-1.000" 12-25mm	PXNL, 4 Flute, Roughing, Low Helix	1286		
	78PXNL	Inch/ Metric		0.500-1.000" 12-25mm	PXNH, 4 Flute, Roughing, High Helix	1286		
	78PXNH	Inch/ Metric		0.500-1.000" 12-20mm	PXRE, Multiple Flute, Straight Flute, Corner Radius	1287		
	78PXRE	Inch/ Metric		0.500-1.000" 12-20mm	PXDR, 3 Flute, Helical Flute, Corner Radius	1287-1288		
	78PXDR	Inch/ Metric		0.500-1.000" 12-20mm	PXBE, 3 Flute, Ball End	1288-1289		
	78PXBE	Inch/ Metric		0.500-1.000" 12-20mm	PXBM, Multiple Flute, Ball End	1289		
	78PXBM	Inch		0.500-1.000"	PXM SA/TPA	1290-1292		
52300	Metric	12-25mm		PXM SS/TP	1291-1292			
78018	Metric	12-25mm		PXMC	1293			
78340	-	-		PXM Accessories	1292			
7808H	NEW SIZES							

EXOCARB® DISC CUTTER®

MILLING	6440		EXOCARB® DISC CUTTER® S	Metric	80-125mm	Face Milling Cutter for Small Machines, Roughing	1306
	6442						1307
	6441		EXOCARB® DISC CUTTER® PRO	Metric	80-125mm	Face Milling Cutter for Small Machines, Finishing	1308
	6541						1309

EXOCARB® Arbor

ARBORS	6640		EXOCARB® Arbor	Metric	-	Face Mill Arbor for Small Machines, BT30, CAT40 & HSK40A	1310
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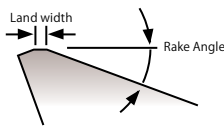
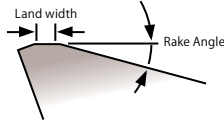
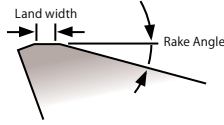
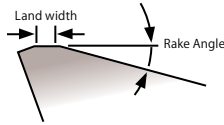
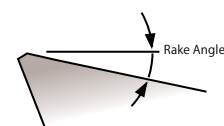
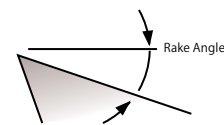
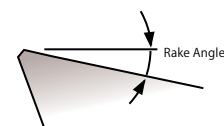
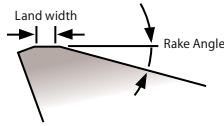
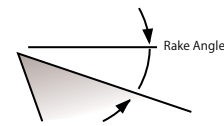


Material Class	Grade	Coating Method	Hardness (HRA)	Surface Treatment		Features
				Main Component	Coating Thickness	
P	XC3020	CVD	90.5	TiCN + Al ₂ O ₃	10 µm	For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistance coating.
	XP3025	PVD	90.5	TiAlN	5 µm	For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistance coating.
	XC3025	CVD	90.8	TiCN + TiN + Al ₂ O ₃	4 µm	For Machining Steel, Stainless Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating.
	XC3030	CVD	89.5	TiCN + Al ₂ O ₃	10 µm	For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating.
	XP3035	PVD	89.5	TiAlN	5 µm	For Machining Steel, Stainless Steel and Cast Iron A grade for general purpose milling. Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating.
	XP3930	PVD	90.8	TiAlN	3 µm	For Machining Steel, Stainless Steel and Cast Iron Excellent balance; can accommodate a wide range of workpiece materials.
	XP3225	PVD	91.5	Cr	3 µm	For Machining Steel, Stainless Steel and Cast Iron Composed of a tough carbide material with an excellent general purpose coating.
	XP3310	PVD	92.5	SiC Silicon-based heat-resistant coating	3 µm	For Machining Steel and Cast Iron Composed of a tough, high-strength carbide material with a chipping-resistant and wear-resistant coating.
	XP3320	PVD	91.5	SiC Silicon-based heat-resistant coating	3 µm	For Machining Steel, Stainless Steel and Cast Iron Composed of a tough carbide material with a heat-resistant and wear-resistant coating.
	XP3425	PVD	91.8	Cr Composite multilayer	7 µm	For Drilling Steel Composed of a tough, high strength carbide material with a wear-resistant thick film coating.
	XC9015	CVD	91.9	TiCN + Al ₂ O ₃	7 µm	For Drilling Steel Composed of a tough carbide material with an anti-chipping and wear-resistant coating.
	XP9020	PVD	91.9	TiAlN	3 µm	For Drilling Steel, Stainless Steel, Cast Iron and Non-Ferrous Materials Composed of a tough carbide material with an anti-chipping and wear-resistant coating.
	XP9040	PVD	91.9	TiAlN	3 µm	For Drilling Steel and Stainless Steel Composed of a high-strength carbide material with an anti-chipping and wear-resistant coating.
	M	XP2025	PVD	91.0	TiAlN	5 µm
XP2040		PVD	89.6	TiAlN	5 µm	For Machining Stainless Steel and Steel Ideal for general-purpose milling. Composed of a tough, high-strength carbide with an anti-chipping and wear-resistant coating.



Material Class	Grade	Coating Method	Hardness (HRA)	Surface Treatment		Features
				Main Component	Coating Thickness	
K	XC1015	CVD	91.5	TiCN + Al ₂ O ₃	10 μm	For Machining Cast Iron Composed of a tough, high-strength carbide material with an anti-chipping and wear-resistant coating.
	XP1020	PVD	91.5	TiAlN	5 μm	For Machining Cast Iron Composed of a tough, high-strength carbide material with an anti-chipping and wear-resistant coating.
	XP1010	PVD	91.4	TiAlN	6 μm	For Drilling Cast Iron Composed of a tough, high-strength carbide material with highly rigid cutting edge and wear resistant coating.
	XP1425	PVD	91.8	Cr Composite multilayer	7 μm	For Drilling Cast Iron Composed of a tough, high strength carbide material with a wear-resistant thick film coating.
	XC9025	CVD	90.8	TiCN + Al ₂ O ₃	6 μm	For Drilling Cast Iron Composed of a tough, high-strength carbide with an anti-chipping and wear-resistant coating.
N	CK010	-	92.0	-	-	For Machining Non-Ferrous Materials Composed of a non-coated carbide material with an anti-chipping and wear-resistant properties.
	XC4505	CVD	93.0	DIA	12 μm	For Machining Non-Ferrous Materials Micro crystal diamond provides a coating layer with excellent strength.
	CK110	-	92.2	-	-	For Drilling Aluminum Alloy and Non-Ferrous Materials Composed of a non-coated carbide material with a sharp cutting edge and polished surface.
	CF225	-	91.8	-	-	For Drilling Non-Ferrous Materials Composed of a non-coated carbide material with an anti-chipping and wear-resistant properties.
S	XC5035	CVD	89.3	TiN + Ti(CN) + Al ₂ O ₃ + Ti(BN)	6 μm	For Machining Heat-Resistant Alloy and Stainless Steel Composed of a tough carbide material with an oxidation-resistant and high-lubricity coating.
	XC5040	CVD	89.3	TiN + TiB ₂	4 μm	For Machining Heat-Resistant Alloy and Stainless Steel Can be used for wet machining. Composed of a tough carbide material with an oxidation-resistant and high-lubricity coating.
H	XP6015	PVD	92.2	TiAlN	4 μm	For Machining High Hardness Steel Composed of a tough, high-strength carbide material with a wear-resistant coating.
	XP6305	PVD	93.0	SiC Silicon-based heat-resistant coating	3 μm	For Machining High Hardness Steel Composed of a tough, high-strength carbide material with excellent thermal conductivity.



Machining Method	Chip Breaker	Cutting Edge Cross-Section (Approximate)	Application
Milling	GL		For milling stainless steel: a breaker with a large rake angle and a small flat land to reduce cutting force.
	GM		For milling various materials from steel to cast iron: a breaker with a superior balance of rake angle and flat land.
	GR		For milling various materials from steel to cast iron: a highly rigid breaker with large rake angle and flat and to provide a sharp cutting edge and enable efficient milling.
	HR		For milling high hardened steel: a breaker with sharpness and excellent rigidity.
	SM		For milling difficult materials: a breaker with a sharp cutting edge to reduce cutting force and provide smooth chip evacuation.
	NM		For milling non-ferrous materials: a breaker with a sharp cutting edge and a large rake angle to suppress welding, improve the milling surface and prevent burrs.
Holemaking	DM		For drilling various materials from steel to cast iron: a general purpose breaker with an ideal rake angle.
	DR		For drilling cast iron: a highly rigid breaker with an optimal land width and rake angle.
	DN		For drilling non-ferrous materials: a breaker with a sharp cutting edge and polish treatment for excellent chip evacuation.





PHC	12	R	150	SA	125	-	3	S
①	②	③	④	⑤	⑥		⑦	⑧

Abbreviation

Example:
PHC =
Phoenix High Feed Cutter

Cutting Direction

R = Right Hand
L = Left Hand

Mounting Diameter

Example:
125 = 1.25"
32 = 32 mm

Number of Flutes

Example:
3 = 3-Flute

Insert Size

Example:
12 = 12 mm

Cutter Diameter

Example:
150 = 1.50"
080 = 80 mm

Mounting Type









A	Bore Type (Inch)
M	Bore Type (Metric)
SA	Straight Shank (Inch)
FA	Weldon Shank (Inch)
SS	Straight Shank (Metric)
MT	Morse Taper Shank
ASF	Screw Fit Type (Inch)
SF	Screw Fit Type (Metric)
FS	Flat Shank

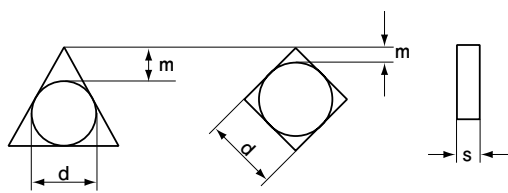
Shank Type

S	Short
L	Long
LL	Extra Long

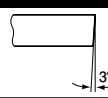
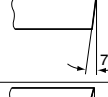
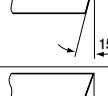
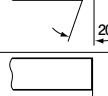
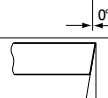
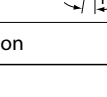


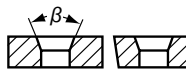
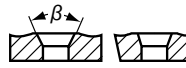
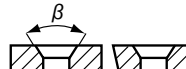
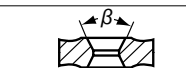
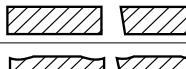

Z	D	K	T
①	②	③	④

Shape of Insert		
C	Diamond Apex 80°	
D	Diamond Apex 55°	
O	Octagon	
R	Round	
S	Square	
T	Triangle	
V	Diamond Apex 35°	
W	Axonometric Hexagon	
Z	Other Shapes	-

Tolerance			
			
Symbol	Inscribed Circle Tolerance (mm)	Corner Height Tolerance (mm)	Thickness Tolerance (mm)
A	±0.025	±0.005	±0.025
C	±0.025	±0.013	±0.025
E	±0.025	±0.025	±0.025
H	±0.013	±0.013	±0.025
K*	±0.05~±0.15	±0.013	±0.025
M*	±0.05~±0.15	±0.08~±0.18	±0.13
N*	±0.05~±0.15	±0.08~±0.18	±0.025

*Sintered insert shown on the side

Clearance Angle		
A	3°	
C	7°	
D	15°	
E	20°	
N	0°	
P	11°	
X	Special Dimension	

Special Cutting and Fastening Feature			
Symbol	Shape of Hole	With or Without Breaker	Insert Cross Section
W	(40°~60°) Partial cylindrical hole	No Breaker	
T		One Side	
B	(70°~90°) Partial cylindrical hole	No Breaker	
U	(40°~60°) Partial cylindrical hole	Both Sides	
N	-	No Breaker	
R	-	One Side	



15	05	08	S	R	-	GM
⑤	⑥	⑦	⑧	⑨	-	⑩

Length of the Cutting Edge	
O	
R	
S	
T	
Z	

Corner Radius Symbol	
Symbol	Corner Radius (mm)
02	R0.2
04	R0.4
08	R0.8
12	R1.2
16	R1.6
24	R2.4

Cutting Direction	
Symbol	Cutting Direction
R	Right Hand
L	Left Hand
N	Neutral

Thickness of Insert	
Symbol	Thickness (mm)
02	2.38
03	3.18
T3	3.97
04	4.76
05	5.56
06	6.35

Type of Cutting Edge	
Symbol	Appearance
F	 Sharp Edge
E	 Round Honing
T	 Chamfer Honing
S	 Combination Honing

Type of Chip Breaker	
Symbol	Name
GL	GL Breaker
GM	GM Breaker
GR	GR Breaker
HR	HR Breaker
NM	NM Breaker
SM	SM Breaker
DM	DM Breaker
DR	DR Breaker
DN	DN Breaker



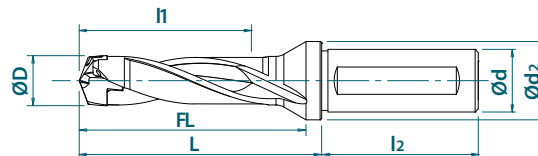


List 52400

PXD 3D (Inch)

SPEED FEED
P1162

Recommended Materials: p1162
Accessories & Inserts: p1156-1161



EDP No.	Body Type	Designation	Drill Dia. (inch)		Drilling Depth (inch)	Flute Length (inch)	Gage Length (inch)	Shank Length (inch)	Shank Dia. (inch)	Flange Dia. (inch)	Appl. Head
			D Min	D Max	l1	FL	L	l2	d	d2	
52400000	Cylindrical Shank	PXDZ0551-3D-113.5-0625	0.551	0.570	1.693	2.496	2.752	1.890	0.625	0.787	1
52400001		PXDZ0571-3D-115.5-0625	0.571	0.590	1.752	2.579	2.835	1.890	0.625	0.787	2
52400002		PXDZ0591-3D-119.5-0750	0.591	0.629	1.831	2.642	2.898	1.969	0.750	0.984	3
52400003		PXDZ0630-3D-123.5-0750	0.630	0.668	1.949	2.823	3.079	1.969	0.750	0.984	4
52400004		PXDZ0669-3D-128.5-0750	0.669	0.708	2.067	3.024	3.280	1.969	0.750	0.984	5
52400005		PXDZ0709-3D-138.5-1000	0.709	0.747	2.185	3.205	3.461	2.205	1.000	1.260	6
52400006		PXDZ0748-3D-142.5-1000	0.748	0.786	2.303	3.362	3.618	2.205	1.000	1.260	7
52400007		PXDZ0787-3D-146.5-1000	0.787	0.826	2.421	3.547	3.803	2.205	1.000	1.260	8
52400008		PXDZ0827-3D-154.5-1250	0.827	0.865	2.539	3.728	3.984	2.362	1.250	1.654	9
52400009		PXDZ0866-3D-158.5-1250	0.866	0.905	2.657	3.890	4.146	2.362	1.250	1.654	10
52400010		PXDZ0906-3D-162.5-1250	0.906	0.944	2.775	4.071	4.327	2.362	1.250	1.654	11
52400011		PXDZ0945-3D-167.5-1250	0.945	0.983	2.894	4.268	4.524	2.362	1.250	1.654	12
52400012		PXDZ0984-3D-170.5-1250	0.984	1.023	3.012	4.409	4.665	2.362	1.250	1.654	13

Packed: 1 pc.
Note: Driver included with body.

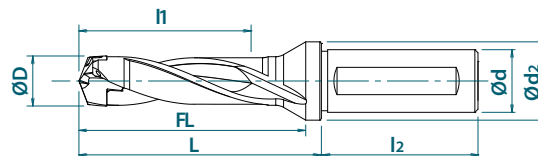


List 52400

PXD 5D (Inch)

SPEED FEED
P1162

Recommended Materials: p1162
Accessories & Inserts: p1156-1161



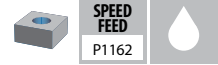
EDP No.	Body Type	Designation	Drill Dia. (inch)		Drilling Depth (inch)	Flute Length (inch)	Gage Length (inch)	Shank Length (inch)	Shank Dia. (inch)	Flange Dia. (inch)	Appl. Head
			D Min	D Max	l1	FL	L	l2	d	d2	
52400100	Cylindrical Shank	PXDZ0551-5D-141.5-0625	0.551	0.570	2.805	3.657	3.854	1.890	0.625	0.787	1
52400101		PXDZ0571-5D-144.5-0625	0.571	0.590	2.903	3.780	3.976	1.890	0.625	0.787	2
52400102		PXDZ0591-5D-149.5-0750	0.591	0.629	3.051	3.823	4.079	1.969	0.750	0.984	3
52400103		PXDZ0630-5D-155.5-0750	0.630	0.668	3.248	4.083	4.339	1.969	0.750	0.984	4
52400104		PXDZ0669-5D-162.5-0750	0.669	0.708	3.445	4.362	4.618	1.969	0.750	0.984	5
52400105		PXDZ0709-5D-174.5-1000	0.709	0.747	3.642	4.622	4.878	2.205	1.000	1.260	6
52400106		PXDZ0748-5D-180.5-1000	0.748	0.786	3.838	4.858	5.114	2.205	1.000	1.260	7
52400107		PXDZ0787-5D-186.5-1000	0.787	0.826	4.035	5.122	5.378	2.205	1.000	1.260	8
52400108		PXDZ0827-5D-196.5-1250	0.827	0.865	4.232	5.382	5.638	2.362	1.250	1.654	9
52400109		PXDZ0866-5D-202.5-1250	0.866	0.905	4.429	5.622	5.878	2.362	1.250	1.654	10
52400110		PXDZ0906-5D-208.5-1250	0.906	0.944	4.626	5.882	6.138	2.362	1.250	1.654	11
52400111		PXDZ0945-5D-215.5-1250	0.945	0.983	4.823	6.157	6.413	2.362	1.250	1.654	12
52400112		PXDZ0984-5D-220.5-1250	0.984	1.023	5.020	6.378	6.634	2.362	1.250	1.654	13

Packed: 1 pc.
Note: Driver included with body.

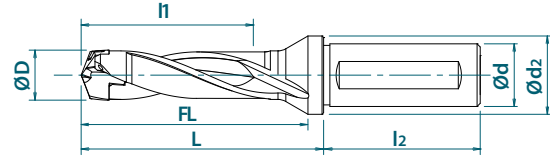


List 78310

PXD 3D (Metric)



Recommended Materials: p1162
Accessories & Inserts: p1156-1161



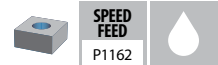
EDP No.	Body Type	Designation	Drill Dia. (mm)		Drilling Depth (mm)	Flute Length (mm)	Gage Length (mm)	Shank Length (mm)	Shank Dia. (mm)	Flange Dia. (mm)	Appl. Head
			D Min	D Max	I1	FL	L	I2	d	d2	
48173001	Cylindrical Shank	PXDZ140-3D-113.5-16	14.00	14.49	43.0	63.4	69.9	48	16	20	1
48173002		PXDZ145-3D-115.5-16	14.50	14.99	44.5	65.5	72.0	48	16	20	2
48173003		PXDZ150-3D-119.5-20	15.00	15.99	46.5	67.1	73.6	50	20	25	3
48173004		PXDZ160-3D-123.5-20	16.00	16.99	49.5	71.7	78.2	50	20	25	4
48173005		PXDZ170-3D-128.5-20	17.00	17.99	52.5	76.8	83.3	50	20	25	5
48173006		PXDZ180-3D-138.5-25	18.00	18.99	55.5	81.4	87.9	56	25	32	6
48173007		PXDZ190-3D-142.5-25	19.00	19.99	58.5	85.4	91.9	56	25	32	7
48173008		PXDZ200-3D-146.5-25	20.00	20.99	61.5	90.1	96.6	56	25	32	8
48173009		PXDZ210-3D-154.5-32	21.00	21.99	64.5	94.7	101.2	60	32	42	9
48173010		PXDZ220-3D-158.5-32	22.00	22.99	67.5	98.8	105.3	60	32	42	10
48173011		PXDZ230-3D-162.5-32	23.00	23.99	70.5	103.4	109.9	60	32	42	11
48173012		PXDZ240-3D-167.5-32	24.00	24.99	73.5	108.4	114.9	60	32	42	12
48173013		PXDZ250-3D-170.5-32	25.00	25.99	76.5	112.0	118.5	60	32	42	13

Packed: 1 pc.
Note: Driver included with body.

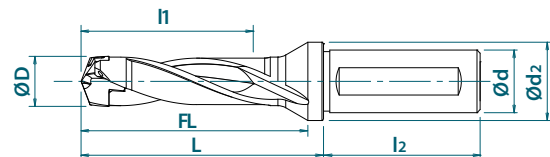


List 78310

PXD 5D (Metric)



Recommended Materials: p1162
Accessories & Inserts: p1156-1161



EDP No.	Body Type	Designation	Drill Dia. (mm)		Drilling Depth (mm)	Flute Length (mm)	Gage Length (mm)	Shank Length (mm)	Shank Dia. (mm)	Flange Dia. (mm)	Appl. Head
			D Min	D Max	I1	FL	L	I2	d	d2	
48173014	Cylindrical Shank	PXDZ140-5D-141.5-16	14.00	14.49	71.2	92.9	97.9	48	16	20	1
48173015		PXDZ145-5D-144.5-16	14.50	14.99	73.7	96.0	101.0	48	16	20	2
48173016		PXDZ150-5D-149.5-20	15.00	15.99	77.5	97.1	103.6	50	20	25	3
48173017		PXDZ160-5D-155.5-20	16.00	16.99	82.5	103.7	110.2	50	20	25	4
48173018		PXDZ170-5D-162.5-20	17.00	17.99	87.5	110.8	117.3	50	20	25	5
48173019		PXDZ180-5D-174.5-25	18.00	18.99	92.5	117.4	123.9	56	25	32	6
48173020		PXDZ190-5D-180.5-25	19.00	19.99	97.5	123.4	129.9	56	25	32	7
48173021		PXDZ200-5D-186.5-25	20.00	20.99	102.5	130.1	136.6	56	25	32	8
48173022		PXDZ210-5D-196.5-32	21.00	21.99	107.5	136.7	143.2	60	32	42	9
48173023		PXDZ220-5D-202.5-32	22.00	22.99	112.5	142.8	149.3	60	32	42	10
48173024		PXDZ230-5D-208.5-32	23.00	23.99	117.5	149.4	155.9	60	32	42	11
48173025		PXDZ240-5D-215.5-32	24.00	24.99	122.5	156.4	162.9	60	32	42	12
48173026		PXDZ250-5D-220.5-32	25.00	25.99	127.5	162.0	168.5	60	32	42	13

Packed: 1 pc.
Note: Driver included with body.

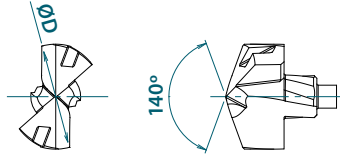




List 78PXD

NEW SIZES

PXD Exchangeable Heads (Inch & Metric)



EDP No.	Type	Designation	Head Diameter (D)			Size	Grade
			Fractional	mm	inch		
7831140	PC	PXDH1400-PC	-	14.00	0.5512	1	XP3425
52401000		PXDH5625-PC	9/16	14.29	0.5625		XP3425
7831145		PXDH1450-PC	-	14.50	0.5709	2	XP3425
52401014		PXDH5781-PC	37/64	14.68	0.5781		XP3425
7831351		PXDH1495-PC	-	14.95	0.5886	3	XP3425
7831150		PXDH1500-PC	-	15.00	0.5906		XP3425
52401001		PXDH5938-PC	19/32	15.08	0.5938	4	XP3425
7831352		PXDH1525-PC	-	15.25	0.6004		XP3425
52401015		PXDH6094-PC	39/64	15.48	0.6094	5	XP3425
7831155		PXDH1550-PC	-	15.50	0.6102		XP3425
52401002		PXDH6250-PC	5/8	15.88	0.6250	6	XP3425
7831160		PXDH1600-PC	-	16.00	0.6299		XP3425
52401016		PXDH6406-PC	41/64	16.27	0.6406	7	XP3425
7831165		PXDH1650-PC	-	16.50	0.6496		XP3425
52401003		PXDH6563-PC	21/32	16.67	0.6563	8	XP3425
7831167		PXDH1670-PC	-	16.70	0.6575		XP3425
7831170		PXDH1700-PC	-	17.00	0.6693	9	XP3425
52401017		PXDH6719-PC	43/64	17.07	0.6719		XP3425
7831353		PXDH1725-PC	-	17.25	0.6791	10	XP3425
52401004		PXDH6875-PC	11/16	17.46	0.6875		XP3425
7831175		PXDH1750-PC	-	17.50	0.6890	11	XP3425
52401018		PXDH7031-PC	45/64	17.86	0.7031		XP3425
7831180		PXDH1800-PC	-	18.00	0.7087	12	XP3425
52401005		PXDH7188-PC	23/32	18.26	0.7188		XP3425
7831185		PXDH1850-PC	-	18.50	0.7283	13	XP3425
52401019		PXDH7344-PC	47/64	18.65	0.7344		XP3425
7831187		PXDH1870-PC	-	18.70	0.7362	14	XP3425
7831190		PXDH1900-PC	-	19.00	0.7480		XP3425
52401006		PXDH7500-PC	3/4	19.05	0.7500	15	XP3425
7831354		PXDH1925-PC	-	19.25	0.7579		XP3425
52401020		PXDH7656-PC	49/64	19.45	0.7656	16	XP3425
7831195		PXDH1950-PC	-	19.50	0.7677		XP3425
52401007		PXDH7813-PC	25/32	19.85	0.7813	17	XP3425
7831200		PXDH2000-PC	-	20.00	0.7874		XP3425
52401021		PXDH7969-PC	51/64	20.24	0.7969	18	XP3425
7831205		PXDH2050-PC	-	20.50	0.8071		XP3425
52401008		PXDH8125-PC	13/16	20.64	0.8125	19	XP3425
7831207		PXDH2070-PC	-	20.70	0.8150		XP3425
7831210		PXDH2100-PC	-	21.00	0.8268	20	XP3425
52401022		PXDH8281-PC	53/64	21.03	0.8281		XP3425
7831355		PXDH2125-PC	-	21.25	0.8366	21	XP3425
52401009		PXDH8438-PC	27/32	21.43	0.8438		XP3425
7831215		PXDH2150-PC	-	21.50	0.8465	22	XP3425
52401023		PXDH8594-PC	55/64	21.83	0.8594		XP3425
7831220		PXDH2200-PC	-	22.00	0.8661	23	XP3425
52401010		PXDH8750-PC	7/8	22.23	0.8750		XP3425
7831224		PXDH2240-PC	-	22.40	0.8819	24	XP3425
7831225		PXDH2250-PC	-	22.50	0.8858		XP3425
52401024	PXDH8906-PC	57/64	22.62	0.8906	25	XP3425	

Packed: 1 pc.



List 78PXD (Continued)

NEW SIZES

PXD Exchangeable Heads (Inch & Metric)

EDP No.	Type	Designation	Head Diameter (D)			Size	Grade
			Fractional	mm	inch		
7831230	PC	PXDH2300-PC	-	23.00	0.9055	11	XP3425
52401011		PXDH9063-PC	29/32	23.02	0.9063		XP3425
7831356		PXDH2325-PC	-	23.25	0.9154		XP3425
52401025		PXDH9219-PC	59/64	23.42	0.9219		XP3425
7831235		PXDH2350-PC	-	23.50	0.9252		XP3425
52401012		PXDH9375-PC	15/16	23.81	0.9375		XP3425
7831240		PXDH2400-PC	-	24.00	0.9449	12	XP3425
52401026		PXDH9531-PC	61/64	24.21	0.9531		XP3425
7831245		PXDH2450-PC	-	24.50	0.9646		XP3425
52401013		PXDH9688-PC	31/32	24.61	0.9688		XP3425
7831250		PXDH2500-PC	-	25.00	0.9843	13	XP3425
52401027		PXDH9844-PC	63/64	25.00	0.9844		XP3425
7831254		PXDH2540-PC	1	25.40	1.0000		XP3425

Packed: 1 pc.

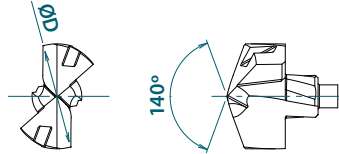




NEW SIZES

List 78PXD

PXD Exchangeable Heads (Inch & Metric)



EDP No.	Type	Designation	Head Diameter (D)			Size	Grade
			Fractional	mm	inch		
7831440	KC	PXDH1400-KC	-	14.00	0.5512	1	XP1425
52402000		PXDH5625-KC	9/16	14.29	0.5625	2	XP1425
7831445		PXDH1450-KC	-	14.50	0.5709		XP1425
52402014		PXDH5781-KC	37/64	14.68	0.5781	3	XP1425
7831450		PXDH1500-KC	-	15.00	0.5906		XP1425
52402001		PXDH5938-KC	19/32	15.08	0.5938	4	XP1425
52402015		PXDH6094-KC	39/64	15.48	0.6094		XP1425
7831455		PXDH1550-KC	-	15.50	0.6102	5	XP1425
52402002		PXDH6250-KC	5/8	15.88	0.6250		XP1425
7831460		PXDH1600-KC	-	16.00	0.6299	6	XP1425
52402016		PXDH6406-KC	41/64	16.27	0.6406		XP1425
7831465		PXDH1650-KC	-	16.50	0.6496	7	XP1425
52402003		PXDH6563-KC	21/32	16.67	0.6563		XP1425
7831467		PXDH1670-KC	-	16.70	0.6575	8	XP1425
7831470		PXDH1700-KC	-	17.00	0.6693		XP1425
52402017		PXDH6719-KC	43/64	17.07	0.6719	9	XP1425
52402004		PXDH6875-KC	11/16	17.46	0.6875		XP1425
7831475		PXDH1750-KC	-	17.50	0.6890	10	XP1425
52402018		PXDH7031-KC	45/64	17.86	0.7031		XP1425
7831480		PXDH1800-KC	-	18.00	0.7087	11	XP1425
52402005		PXDH7188-KC	23/32	18.26	0.7188		XP1425
7831485		PXDH1850-KC	-	18.50	0.7283	12	XP1425
52402019		PXDH7344-KC	47/64	18.65	0.7344		XP1425
7831487		PXDH1870-KC	-	18.70	0.7362	13	XP1425
7831490		PXDH1900-KC	-	19.00	0.7480		XP1425
52402006		PXDH7500-KC	3/4	19.05	0.7500	14	XP1425
52402020		PXDH7656-KC	49/64	19.45	0.7656		XP1425
7831495		PXDH1950-KC	-	19.50	0.7677	15	XP1425
52402007		PXDH7813-KC	25/32	19.85	0.7813		XP1425
7831500		PXDH2000-KC	-	20.00	0.7874	16	XP1425
52402021		PXDH7969-KC	51/64	20.24	0.7969		XP1425
7831505		PXDH2050-KC	-	20.50	0.8071	17	XP1425
52402008		PXDH8125-KC	13/16	20.64	0.8125		XP1425
7831507		PXDH2070-KC	-	20.70	0.8150	18	XP1425
7831510		PXDH2100-KC	-	21.00	0.8268		XP1425
52402022		PXDH8281-KC	53/64	21.03	0.8281	19	XP1425
52402009		PXDH8438-KC	27/32	21.43	0.8438		XP1425
7831515		PXDH2150-KC	-	21.50	0.8465	20	XP1425
52402023		PXDH8594-KC	55/64	21.83	0.8594		XP1425
7831520		PXDH2200-KC	-	22.00	0.8661	21	XP1425
52402010	PXDH8750-KC	7/8	22.23	0.8750	XP1425		
7831524	PXDH2240-KC	-	22.40	0.8819	22	XP1425	
7831525	PXDH2250-KC	-	22.50	0.8858		XP1425	
52402024	PXDH8906-KC	57/64	22.62	0.8906	23	XP1425	
7831530	PXDH2300-KC	-	23.00	0.9055		XP1425	
52402011	PXDH9063-KC	29/32	23.02	0.9063	24	XP1425	
52402025	PXDH9219-KC	59/64	23.42	0.9219		XP1425	
7831535	PXDH2350-KC	-	23.50	0.9252	25	XP1425	
52402012	PXDH9375-KC	15/16	23.81	0.9375		XP1425	

Packed: 1 pc.





List 78PXD

NEW
SIZES

PXD Exchangeable Heads (Inch & Metric)

EDP No.	Type	Designation	Head Diameter (D)			Size	Grade
			Fractional	mm	inch		
7831540	KC	PXDH2400-KC	-	24.00	0.9449	12	XP1425
52402026		PXDH9531-KC	61/64	24.21	0.9531		XP1425
7831545		PXDH2450-KC	-	24.50	0.9646		XP1425
52402013		PXDH9688-KC	31/32	24.61	0.9688		XP1425
7831550		PXDH2500-KC	-	25.00	0.9843	13	XP1425
52402027		PXDH9844-KC	63/64	25.00	0.9844		XP1425
7831554		PXDH2540-KC	1	25.40	1.0000		XP1425

Packed: 1 pc.

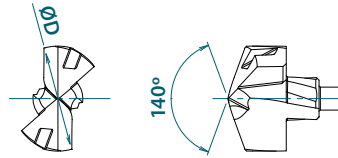




List 78PXD

NEW SIZES

PXD Exchangeable Heads (Inch & Metric)



EDP No.	Type	Designation	Head Diameter (D)			Size	Grade
			Fractional	mm	inch		
7831740	NC	PXDH1400-NC	-	14.00	0.5512	1	CF225
52403000		PXDH5625-NC	9/16	14.29	0.5625		CF225
7831745		PXDH1450-NC	-	14.50	0.5709	2	CF225
52403014		PXDH5781-NC	37/64	14.68	0.5781		CF225
7831750		PXDH1500-NC	-	15.00	0.5906	3	CF225
52403001		PXDH5938-NC	19/32	15.08	0.5938		CF225
52403015		PXDH6094-NC	39/64	15.48	0.6094		CF225
7831755		PXDH1550-NC	-	15.50	0.6102	4	CF225
52403002		PXDH6250-NC	5/8	15.88	0.6250		CF225
7831760		PXDH1600-NC	-	16.00	0.6299	5	CF225
52403016		PXDH6406-NC	41/64	16.27	0.6409		CF225
7831765		PXDH1650-NC	-	16.50	0.6496		CF225
52403003		PXDH6563-NC	21/32	16.67	0.6563	6	CF225
7831767		PXDH1670-NC	-	16.70	0.6575		CF225
7831770		PXDH1700-NC	-	17.00	0.6693	7	CF225
52403017		PXDH6719-NC	43/64	17.07	0.6719		CF225
52403004		PXDH6875-NC	11/16	17.46	0.6875		CF225
7831775		PXDH1750-NC	-	17.50	0.6890	8	CF225
52403018		PXDH7031-NC	45/64	17.86	0.7031		CF225
7831780		PXDH1800-NC	-	18.00	0.7087	9	CF225
52403005		PXDH7188-NC	23/32	18.26	0.7188		CF225
7831785		PXDH1850-NC	-	18.50	0.7283		CF225
52403019		PXDH7344-NC	47/64	18.65	0.7344	10	CF225
7831787		PXDH1870-NC	-	18.70	0.7362		CF225
7831790		PXDH1900-NC	-	19.00	0.7480	11	CF225
52403006		PXDH7500-NC	3/4	19.05	0.7500		CF225
52403020		PXDH7656-NC	49/64	19.45	0.7656		CF225
7831795		PXDH1950-NC	-	19.50	0.7677	12	CF225
52403007		PXDH7813-NC	25/32	19.85	0.7813		CF225
7831800		PXDH2000-NC	-	20.00	0.7874	13	CF225
52403021		PXDH7969-NC	51/64	20.24	0.7969		CF225
7831805		PXDH2050-NC	-	20.50	0.8071		CF225
52403008		PXDH8125-NC	13/16	20.64	0.8125	14	CF225
7831807		PXDH2070-NC	-	20.70	0.8150		CF225
7831810		PXDH2100-NC	-	21.00	0.8268	15	CF225
52403022		PXDH8281-NC	53/64	21.03	0.8281		CF225
52403009		PXDH8438-NC	27/32	21.43	0.8438		CF225
7831815		PXDH2150-NC	-	21.50	0.8465	16	CF225
52403023		PXDH8594-NC	55/64	21.83	0.8594		CF225
7831820		PXDH2200-NC	-	22.00	0.8661	17	CF225
52403010	PXDH8750-NC	7/8	22.23	0.8750	CF225		
7831824	PXDH2240-NC	-	22.40	0.8819	CF225		
7831825	PXDH2250-NC	-	22.50	0.8858	18	CF225	
52403024	PXDH8906-NC	57/64	22.62	0.8906		CF225	
7831830	PXDH2300-NC	-	23.00	0.9055	19	CF225	
52403011	PXDH9063-NC	29/32	23.02	0.9063		CF225	
52403025	PXDH9219-NC	59/64	23.42	0.9219		CF225	
7831835	PXDH2350-NC	-	23.50	0.9252	20	CF225	
52403012	PXDH9375-NC	15/16	23.81	0.9375		CF225	
7831840	PXDH2400-NC	-	24.00	0.9449	21	CF225	
52403026	PXDH9531-NC	61/64	24.21	0.9531		CF225	
7831845	PXDH2450-NC	-	24.50	0.9646		CF225	
52403013	PXDH9688-NC	31/32	24.61	0.9688	22	CF225	
7831850	PXDH2500-NC	-	25.00	0.9843		CF225	
52403027	PXDH9844-NC	63/64	25.00	0.9844	23	CF225	
7831854	PXDH2540-NC	1	25.40	1.0000		CF225	


Packed: 1 pc.





List 7808H

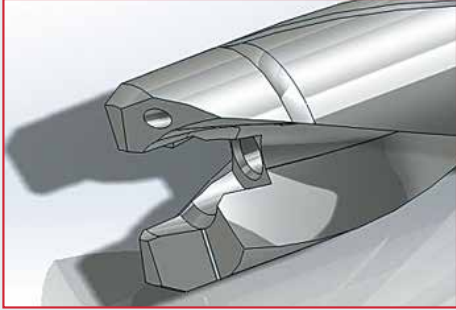



PXD Accessories

Appearance	EDP No.	Designation	Sheet Thickness (mm)	Applicable Head		
				Size	(inch)	(mm)
 Driver	7808282	PXDP1400-1890	1.5	1-6	Ø0.551-0.744	Ø14.0-18.9
	7808283	PXDP1900-2299	1.8	7-10	Ø0.748-0.901	Ø19.0-22.9
	7808284	PXDP2300-2699	2	11-13	Ø0.905-1.059	Ø23.0-26.9

Packed: 1 pc.



» Mounting Procedure

Step 1	Step 2
 <p>Clean attachment area with an air nozzle. Any leftover cutting chips may prevent the head from being mounted properly and may cause damage to the tool.</p>	 <p>Manually attach the head.</p>
Step 3	Step 4
 <p>Insert the flat metal portion of the designated driver into the groove of the head. Insert the driver firmly into the groove. If the insertion of the designated driver is too shallow, it could damage the flutes.</p>	 <p>Turn the driver clockwise and mount the head onto the body. Mount it firmly and make sure that there is no gap in the area between the head and the body.</p>





Cutting Conditions

Work Material	Mild Steel Low Carbon Steel		Carbon Steel		Alloy Steel		Cast Iron		Ductile Cast Iron		Aluminum Alloy Casting	
Speed	265 - 395 SFM		265 - 395 SFM		195 - 395 SFM		265 - 395 SFM		195 - 325 SFM		265 - 590 SFM	
Drill Dia. (mm)	Speed (RPM)	Feed (in/rev)	Speed (RPM)	Feed (in/rev)	Speed (RPM)	Feed (in/rev)	Speed (RPM)	Feed (in/rev)	Speed (RPM)	Feed (in/rev)	Speed (RPM)	Feed (in/rev)
14	2300	0.008 - 0.014	2300	0.008 - 0.014	2000	0.008 - 0.014	2300	0.008 - 0.014	1800	0.008 - 0.014	3000	0.011 - 0.016
15	2100	0.009 - 0.015	2100	0.009 - 0.015	1900	0.009 - 0.015	2100	0.009 - 0.015	1700	0.009 - 0.015	2800	0.012 - 0.018
16	2000	0.009 - 0.016	2000	0.009 - 0.016	1800	0.009 - 0.016	2000	0.009 - 0.016	1600	0.009 - 0.016	2600	0.012 - 0.019
17	1900	0.010 - 0.017	1900	0.010 - 0.017	1700	0.010 - 0.017	1900	0.010 - 0.017	1500	0.010 - 0.017	2400	0.013 - 0.020
18	1800	0.010 - 0.018	1800	0.010 - 0.018	1600	0.010 - 0.018	1800	0.010 - 0.018	1400	0.010 - 0.018	2300	0.014 - 0.021
19	1700	0.011 - 0.019	1700	0.011 - 0.019	1500	0.011 - 0.019	1700	0.011 - 0.019	1300	0.011 - 0.019	2200	0.015 - 0.022
20	1600	0.012 - 0.020	1600	0.012 - 0.020	1400	0.012 - 0.020	1600	0.012 - 0.020	1300	0.012 - 0.020	2100	0.016 - 0.024
21	1500	0.012 - 0.021	1500	0.012 - 0.021	1400	0.012 - 0.021	1500	0.012 - 0.021	1200	0.012 - 0.021	2000	0.016 - 0.025
22	1400	0.013 - 0.022	1400	0.013 - 0.022	1300	0.013 - 0.022	1400	0.013 - 0.022	1200	0.013 - 0.022	1900	0.017 - 0.026
23	1400	0.014 - 0.023	1400	0.014 - 0.023	1200	0.014 - 0.023	1400	0.014 - 0.023	1100	0.014 - 0.023	1800	0.018 - 0.027
24	1300	0.014 - 0.024	1300	0.014 - 0.024	1200	0.014 - 0.024	1300	0.014 - 0.024	1100	0.014 - 0.024	1700	0.019 - 0.028
25	1300	0.015 - 0.025	1300	0.015 - 0.025	1100	0.015 - 0.025	1300	0.015 - 0.025	1000	0.015 - 0.025	1700	0.020 - 0.029

Recommended Materials by Application

Insert Grade	Type	Coolant	Carbon Steel	Alloy Steel	Hardened Steel (Up to 35 HRC)	Cast Iron Ductile Cast Iron	Aluminum Alloy Casting	Copper Alloy
XP3425	PC	Yes	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
XP1425	KC	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>		
CF225	NC	Yes					<input checked="" type="checkbox"/>	<input type="checkbox"/>

good best



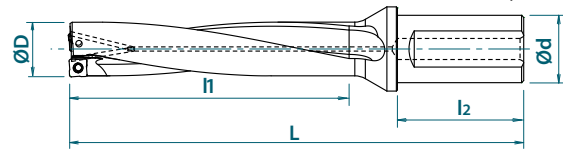


List 52502

P2D (Inch)

SPEED FEED
P1181

Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (inch)	Drilling Depth (inch)	Overall Length (inch)	Shank Dia. (inch)	Shank Length (Inch)	Applicable Insert
			D	l1	L	d	l2	
52502026	Flat Shank	P2D0594FS075A04	0.5938	1.188	4.063	0.750	1.969	XCMT04...
52502027		P2D0609FS075A04	0.6094	1.219	4.094	0.750	1.969	
52502008		P2D0625FS075A04	0.6250	1.250	4.125	0.750	1.969	
52502028		P2D0641FS075A04	0.6406	1.281	4.156	0.750	1.969	
52502009		P2D0656FS075A04	0.6563	1.313	4.187	0.750	1.969	
52502029		P2D0672FS075A05	0.6719	1.344	4.219	0.750	1.969	
52502010		P2D0688FS075A05	0.6875	1.375	4.250	0.750	1.969	
52502030		P2D0703FS075A05	0.7031	1.406	4.281	0.750	1.969	
52502031		P2D0719FS100A05	0.7188	1.438	4.549	1.000	2.205	
52502032		P2D0734FS100A05	0.7344	1.469	4.580	1.000	2.205	
52502011		P2D0750FS100A06	0.7500	1.500	4.611	1.000	2.205	
52502033		P2D0766FS100A06	0.7656	1.531	4.642	1.000	2.205	
52502034		P2D0781FS100A06	0.7813	1.563	4.674	1.000	2.205	
52502035		P2D0797FS100A06	0.7969	1.594	4.705	1.000	2.205	
52502012		P2D0812FS100A06	0.8125	1.625	4.736	1.000	2.205	
52502036		P2D0828FS100A07	0.8281	1.656	4.767	1.000	2.205	
52502037		P2D0844FS100A07	0.8439	1.688	4.799	1.000	2.205	
52502038		P2D0859FS100A07	0.8594	1.719	4.830	1.000	2.205	
52502000		P2D0875FS100A07	0.8750	1.750	4.861	1.000	2.205	
52502039		P2D0891FS100A07	0.8906	1.781	4.892	1.000	2.205	
52502040		P2D0906FS100A07	0.9063	1.813	4.924	1.000	2.205	
52502041		P2D0922FS100A07	0.9219	1.844	4.955	1.000	2.205	
52502001		P2D0937FS125A07	0.9375	1.875	5.143	1.250	2.362	
52502042		P2D0953FS125A07	0.9531	1.906	5.174	1.250	2.362	
52502043		P2D0969FS125A07	0.9688	1.938	5.206	1.250	2.362	
52502044		P2D0984FS125A08	0.9844	1.969	5.237	1.250	2.362	
52502002		P2D1000FS125A08	1.0000	2.000	5.268	1.250	2.362	
52502045		P2D1031FS125A08	1.0313	2.063	5.331	1.250	2.362	
52502003		P2D1062FS125A08	1.0625	2.125	5.393	1.250	2.362	
52502046		P2D1094FS125A08	1.0938	2.188	5.456	1.250	2.362	
52502004		P2D1125FS125A08	1.1250	2.250	5.518	1.250	2.362	
52502047		P2D1156FS125A09	1.1563	2.313	5.581	1.250	2.362	
52502005		P2D1187FS125A09	1.1875	2.375	5.643	1.250	2.362	
52502048		P2D1219FS125A09	1.2188	2.438	5.706	1.250	2.362	
52502006		P2D1250FS125A09	1.2500	2.500	5.768	1.250	2.362	
52502049		P2D1281FS150A09	1.2813	2.563	6.225	1.500	2.756	
52502007		P2D1312FS150A09	1.3125	2.625	6.287	1.500	2.756	
52502050		P2D1344FS150A10	1.3438	2.688	6.350	1.500	2.756	
52502013		P2D1375FS150A10	1.3750	2.750	6.412	1.500	2.756	
52502051		P2D1406FS150A10	1.4063	2.813	6.475	1.500	2.756	
52502014	P2D1437FS150A10	1.4375	2.875	6.537	1.500	2.756		
52502052	P2D1469FS150A10	1.4688	2.938	6.600	1.500	2.756		
52502015	P2D1500FS150A10	1.5000	3.000	6.662	1.500	2.756		
52502053	P2D1531FS150A10	1.5313	3.063	6.725	1.500	2.756		

Packed: 1 pc.

continued on next page **PXT**





List 52502 (Continued)

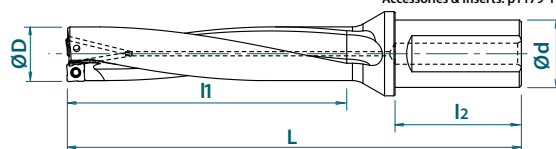
P2D (Inch)



SPEED FEED
P1181



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (inch)	Drilling Depth (inch)	Overall Length (inch)	Shank Dia. (inch)	Shank Length (Inch)	Applicable Insert
			D	l1	L	d	l2	
52502016	Flat Shank	P2D1563FS150A12	1.5625	3.125	6.787	1.500	2.756	XCMT12...
52502054		P2D1594FS150A12	1.5938	3.188	6.850	1.500	2.756	
52502017		P2D1625FS150A12	1.6250	3.250	6.912	1.500	2.756	
52502055		P2D1656FS150A12	1.6563	3.313	6.975	1.500	2.756	
52502018		P2D1688FS150A12	1.6875	3.375	7.037	1.500	2.756	
52502056		P2D1719FS150A12	1.7188	3.438	7.100	1.500	2.756	
52502019		P2D1750FS150A12	1.7500	3.500	7.162	1.500	2.756	
52502057		P2D1781FS150A13	1.7813	3.563	7.225	1.500	2.756	
52502058		P2D1813FS150A13	1.8125	3.625	7.287	1.500	2.756	
52502059		P2D1844FS150A13	1.8438	3.688	7.350	1.500	2.756	
52502020		P2D1875FS150A13	1.8750	3.750	7.412	1.500	2.756	
52502060		P2D1906FS150A13	1.9063	3.813	7.475	1.500	2.756	
52502061		P2D1938FS150A13	1.9375	3.875	7.537	1.500	2.756	
52502062		P2D1969FS150A14	1.9688	3.938	7.600	1.500	2.756	
52502021		P2D2000FS150A14	2.0000	4.000	7.664	1.500	2.756	
52502022		P2D2125FS150A14	2.1250	4.250	7.912	1.500	2.756	
52502023		P2D2250FS150A16	2.2500	4.500	8.162	1.500	2.756	
52502024		P2D2375FS150A16	2.3750	4.750	8.412	1.500	2.756	
52502025		P2D2500FS150A16	2.5000	5.000	8.662	1.500	2.756	
								XCMT14...
								XCMT16...

Packed: 1 pc.

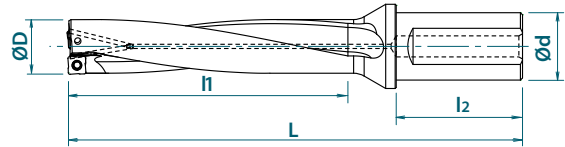


List 78031

P2D (Metric)

SPEED FEED
P1181

Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	l1	L	d	l2	
7803117	Flat Shank	P2D1500FS20M04	15.0	30	95	20	50	XCMT04...
7803118		P2D1550FS20M04	15.5	31	96	20	50	
7803119		P2D1600FS20M04	16.0	32	97	20	50	
7803120		P2D1650FS20M04	16.5	33	98	20	50	
7803121		P2D1700FS20M05	17.0	34	102	20	50	XCMT05...
7803122		P2D1750FS20M05	17.5	35	103	20	50	
7803190		P2D1750FS25M05	17.5	35	109	25	56	
7803123		P2D1800FS25M05	18.0	36	110	25	56	
7803124		P2D1850FS25M05	18.5	37	111	25	56	XCMT06...
7803125		P2D1900FS25M06	19.0	38	112	25	56	
7803126		P2D1950FS25M06	19.5	39	113	25	56	
7803127		P2D2000FS25M06	20.0	40	114	25	56	
7803128		P2D2050FS25M06	20.5	41	115	25	56	XCMT07...
7803129		P2D2100FS25M07	21.0	42	121	25	56	
7803130		P2D2150FS25M07	21.5	43	122	25	56	
7803131		P2D2200FS25M07	22.0	44	123	25	56	
7803132		P2D2250FS25M07	22.5	45	124	25	56	XCMT08...
7803133		P2D2300FS25M07	23.0	46	125	25	56	
7803191		P2D2350FS25M07	23.5	47	126	25	56	
7803134		P2D2350FS32M07	23.5	47	130	32	60	
7803192		P2D2400FS25M07	24.0	48	127	25	56	XCMT09...
7803135		P2D2400FS32M07	24.0	48	131	32	60	
7803193		P2D2450FS25M07	24.5	49	128	25	56	
7803136		P2D2450FS32M07	24.5	49	132	32	60	
7803194		P2D2500FS25M08	25.0	50	129	25	56	XCMT10...
7803137		P2D2500FS32M08	25.0	50	133	32	60	
7803195		P2D2550FS25M08	25.5	51	130	25	56	
7803138		P2D2550FS32M08	25.5	51	134	32	60	
7803139		P2D2600FS32M08	26.0	52	135	32	60	XCMT09...
7803140		P2D2650FS32M08	26.5	53	136	32	60	
7803141		P2D2700FS32M08	27.0	54	137	32	60	
7803142		P2D2800FS32M08	28.0	56	139	32	60	
7803143		P2D2850FS32M08	28.5	57	140	32	60	XCMT10...
7803144		P2D2900FS32M09	29.0	58	141	32	60	
7803145	P2D3000FS32M09	30.0	60	143	32	60		
7803146	P2D3100FS32M09	31.0	62	145	32	60		
7803196	P2D3100FS40M09	31.0	62	155	40	70	XCMT10...	
7803147	P2D3200FS32M09	32.0	64	147	32	60		
7803197	P2D3200FS40M09	32.0	64	157	40	70		
7803148	P2D3300FS40M09	33.0	66	159	40	70		
7803149	P2D3350FS40M09	33.5	67	160	40	70	XCMT10...	
7803150	P2D3400FS40M10	34.0	68	161	40	70		
7803151	P2D3500FS40M10	35.0	70	163	40	70		
7803152	P2D3600FS40M10	36.0	72	165	40	70		
7803153	P2D3700FS40M10	37.0	74	167	40	70	XCMT10...	
7803154	P2D3800FS40M10	38.0	76	169	40	70		

Packed: 1 pc.

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List 78031 (Continued)

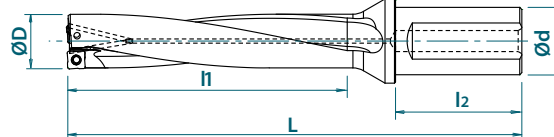
P2D (Metric)



SPEED
FEED
P1181



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	l1	L	d	l2	
7803155	Flat Shank	P2D3900FS40M12	39.0	78	178	40	70	XCMT12...
7803156		P2D4000FS40M12	40.0	80	180	40	70	
7803157		P2D4100FS40M12	41.0	82	182	40	70	
7803158		P2D4200FS40M12	42.0	84	184	40	70	
7803159		P2D4300FS40M12	43.0	86	186	40	70	
7803160		P2D4400FS40M12	44.0	88	188	40	70	XCMT13...
7803161		P2D4500FS40M13	45.0	90	190	40	70	
7803162		P2D4600FS40M13	46.0	92	192	40	70	
7803163		P2D4700FS40M13	47.0	94	194	40	70	
7803164		P2D4800FS40M13	48.0	96	196	40	70	
7803165		P2D4900FS40M13	49.0	98	198	40	70	XCMT14...
7803166		P2D5000FS40M14	50.0	100	200	40	70	
7803167		P2D5100FS40M14	51.0	102	202	40	70	
7803168		P2D5200FS40M14	52.0	104	204	40	70	
7803169		P2D5300FS40M14	53.0	106	206	40	70	
7803170		P2D5400FS40M14	54.0	108	208	40	70	XCMT16...
7803171		P2D5500FS40M14	55.0	110	210	40	70	
7803172		P2D5600FS40M14	56.0	112	212	40	70	
7803173		P2D5700FS40M16	57.0	114	214	40	70	
7803174		P2D5800FS40M16	58.0	116	216	40	70	
7803175	P2D5900FS40M16	59.0	118	218	40	70		
7803176	P2D6000FS40M16	60.0	120	220	40	70		
7803177	P2D6100FS40M16	61.0	122	222	40	70		
7803178	P2D6200FS40M16	62.0	124	224	40	70		
7803179	P2D6300FS40M16	63.0	126	226	40	70		

Packed: 1 pc.





List 52503

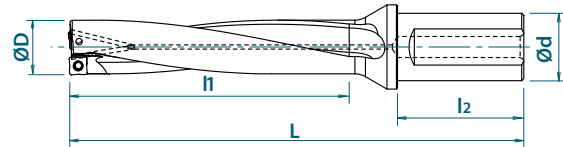
P3D (Inch)



SPEED FEED
P1181



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia.	Drilling Depth	Overall Length	Shank Dia.	Shank Length	Applicable Insert
			(inch)	(inch)	(inch)	(inch)	(inch)	
			D	l1	L	d	l2	
52503026	Flat Shank	P3D0594FS075A04	0.5938	1.781	4.656	0.750	1.969	XCMT04...
52503027		P3D0609FS075A04	0.6094	1.828	4.703	0.750	1.969	
52503008		P3D0625FS075A04	0.6250	1.875	4.750	0.750	1.969	
52503028		P3D0641FS075A04	0.6406	1.922	4.797	0.750	1.969	
52503009		P3D0656FS075A04	0.6563	1.969	4.843	0.750	1.969	
52503029		P3D0672FS075A05	0.6719	2.016	4.891	0.750	1.969	XCMT05...
52503010		P3D0688FS075A05	0.6875	2.063	4.937	0.750	1.969	
52503030		P3D0703FS075A05	0.7031	2.109	4.984	0.750	1.969	
52503031		P3D0719FS100A05	0.7188	2.156	5.267	1.000	2.205	
52503032		P3D0734FS100A05	0.7344	2.203	5.314	1.000	2.205	
52503011		P3D0750FS100A06	0.7500	2.250	5.361	1.000	2.205	XCMT06...
52503033		P3D0766FS100A06	0.7656	2.297	5.408	1.000	2.205	
52503034		P3D0781FS100A06	0.7813	2.344	5.455	1.000	2.205	
52503035		P3D0797FS100A06	0.7969	2.391	5.502	1.000	2.205	
52503012		P3D0812FS100A06	0.8125	2.438	5.548	1.000	2.205	
52503036		P3D0828FS100A07	0.8281	2.484	5.595	1.000	2.205	XCMT07...
52503037		P3D0844FS100A07	0.8438	2.531	5.642	1.000	2.205	
52503038		P3D0859FS100A07	0.8594	2.578	5.689	1.000	2.205	
52503000		P3D0875FS100A07	0.8750	2.625	5.736	1.000	2.205	
52503039		P3D0891FS100A07	0.8906	2.672	5.783	1.000	2.205	
52503040		P3D0906FS100A07	0.9063	2.719	5.830	1.000	2.205	XCMT08...
52503041		P3D0922FS100A07	0.9219	2.766	5.877	1.000	2.205	
52503001		P3D0937FS125A07	0.9375	2.813	6.080	1.250	2.362	
52503042		P3D0953FS125A07	0.9531	2.859	6.127	1.250	2.362	
52503043		P3D0969FS125A07	0.9688	2.906	6.174	1.250	2.362	
52503044		P3D0984FS125A08	0.9844	2.953	6.221	1.250	2.362	XCMT09...
52503002		P3D1000FS125A08	1.0000	3.000	6.268	1.250	2.362	
52503045		P3D1031FS125A08	1.0313	3.094	6.362	1.250	2.362	
52503003		P3D1062FS125A08	1.0625	3.188	6.455	1.250	2.362	
52503046		P3D1094FS125A08	1.0938	3.281	6.549	1.250	2.362	
52503004		P3D1125FS125A08	1.1250	3.375	6.643	1.250	2.362	XCMT10...
52503047		P3D1156FS125A09	1.1563	3.469	6.737	1.250	2.362	
52503005		P3D1187FS125A09	1.1875	3.563	6.830	1.250	2.362	
52503048		P3D1219FS125A09	1.2188	3.656	6.924	1.250	2.362	
52503006		P3D1250FS125A09	1.2500	3.750	7.018	1.250	2.362	
52503049	P3D1281FS150A09	1.2813	3.844	7.506	1.500	2.756	XCMT10...	
52503007	P3D1312FS150A09	1.3125	3.938	7.599	1.500	2.756		
52503050	P3D1344FS150A10	1.3438	4.031	7.693	1.500	2.756		
52503013	P3D1375FS150A10	1.3750	4.125	7.787	1.500	2.756		
52503051	P3D1406FS150A10	1.4063	4.219	7.881	1.500	2.756		
52503014	P3D1437FS150A10	1.4375	4.313	7.974	1.500	2.756	XCMT10...	
52503052	P3D1469FS150A10	1.4688	4.406	8.068	1.500	2.756		
52503015	P3D1500FS150A10	1.5000	4.500	8.162	1.500	2.756		
52503053	P3D1531FS150A10	1.5313	4.594	8.256	1.500	2.756		

Packed: 1 pc.

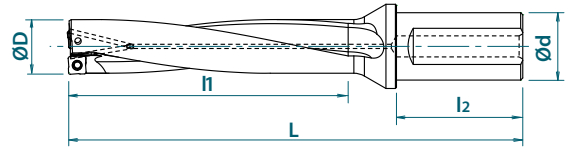
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List 52503 (Continued)

P3D (Inch)



SPEED FEED
P1181

Recommended Materials: p1183
Accessories & Inserts: p1179-1180

EDP No.	Body Type	Designation	Drill Dia. (inch)	Drilling Depth (inch)	Overall Length (inch)	Shank Dia. (inch)	Shank Length (inch)	Applicable Insert
			D	l1	L	d	l2	
52503016	Flat Shank	P3D1563FS150A12	1.5625	4.688	8.349	1.500	2.756	XCMT12...
52503054		P3D1594FS150A12	1.5938	4.781	8.443	1.500	2.756	
52503017		P3D1625FS150A12	1.6250	4.875	8.537	1.500	2.756	
52503055		P3D1656FS150A12	1.6563	4.969	8.631	1.500	2.756	
52503018		P3D1688FS150A12	1.6875	5.063	8.724	1.500	2.756	
52503056		P3D1719FS150A12	1.7188	5.156	8.818	1.500	2.756	
52503019		P3D1750FS150A12	1.7500	5.250	8.912	1.500	2.756	
52503057		P3D1781FS150A13	1.7813	5.344	9.006	1.500	2.756	
52503058		P3D1813FS150A13	1.8125	5.438	9.100	1.500	2.756	
52503059		P3D1844FS150A13	1.8438	5.531	9.193	1.500	2.756	
52503020		P3D1875FS150A13	1.8750	5.625	9.287	1.500	2.756	
52503060		P3D1906FS150A13	1.9063	5.719	9.381	1.500	2.756	
52503061		P3D1938FS150A13	1.9375	5.813	9.475	1.500	2.756	
52503062		P3D1969FS150A14	1.9688	5.906	9.568	1.500	2.756	
52503021		P3D2000FS150A14	2.0000	6.000	9.662	1.500	2.756	
52503022		P3D2125FS150A14	2.1250	6.375	10.037	1.500	2.756	
52503023		P3D2250FS150A16	2.2500	6.750	10.412	1.500	2.756	
52503024		P3D2375FS150A16	2.3750	7.125	10.787	1.500	2.756	
52503025		P3D2500FS150A16	2.5000	7.500	11.162	1.500	2.756	
								XCMT14...
								XCMT16...

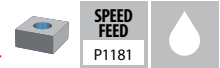
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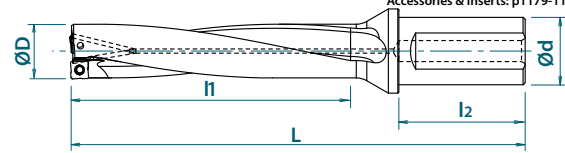


List 78032

P3D (Metric)



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert	
			D	l1	L	d	l2		
7803217	Flat Shank	P3D1500FS20M04	15.0	45	110	20	50	XCMT04...	
7803218		P3D1550FS20M04	15.5	47	112	20	50		
7803219		P3D1600FS20M04	16.0	48	113	20	50		
7803220		P3D1650FS20M04	16.5	50	115	20	50		
7803221		P3D1700FS20M05	17.0	51	119	20	50		
7803222		P3D1750FS20M05	17.5	53	121	20	50		
7803290		P3D1750FS25M05	17.5	53	127	25	56	XCMT05...	
7803223		P3D1800FS25M05	18.0	54	128	25	56		
7803224		P3D1850FS25M05	18.5	56	130	25	56		
7803225		P3D1900FS25M06	19.0	57	131	25	56	XCMT06...	
7803226		P3D1950FS25M06	19.5	59	133	25	56		
7803227		P3D2000FS25M06	20.0	60	134	25	56		
7803228		P3D2050FS25M06	20.5	62	136	25	56		
7803229		P3D2100FS25M07	21.0	63	142	25	56		
7803230		P3D2150FS25M07	21.5	65	144	25	56		
7803231		P3D2200FS25M07	22.0	66	145	25	56	XCMT07...	
7803232		P3D2250FS25M07	22.5	68	147	25	56		
7803233		P3D2300FS25M07	23.0	69	148	25	56		
7803291		P3D2350FS25M07	23.5	71	150	25	56		
7803234		P3D2350FS32M07	23.5	71	154	32	60		
7803292		P3D2400FS25M07	24.0	72	151	25	56		
7803235		P3D2400FS32M07	24.0	72	155	32	60		
7803293		P3D2450FS25M07	24.5	74	153	25	56		
7803236		P3D2450FS32M07	24.5	74	157	32	60		
7803294		P3D2500FS25M08	25.0	75	154	25	56		XCMT08...
7803237		P3D2500FS32M08	25.0	75	158	32	60		
7803295		P3D2550FS25M08	25.5	77	156	25	56		
7803238		P3D2550FS32M08	25.5	77	160	32	60		
7803239		P3D2600FS32M08	26.0	78	161	32	60		
7803240		P3D2650FS32M08	26.5	80	163	32	60		
7803241		P3D2700FS32M08	27.0	81	164	32	60		
7803300		P3D2750FS32M08	27.5	83	166	32	60		
7803242		P3D2800FS32M08	28.0	84	167	32	60		
7803243		P3D2850FS32M08	28.5	86	169	32	60		
7803244		P3D2900FS32M09	29.0	87	170	32	60	XCMT09...	
7803301		P3D2950FS32M09	29.5	89	172	32	60		
7803245		P3D3000FS32M09	30.0	90	173	32	60		
7803302		P3D3050FS32M09	30.5	92	175	32	60		
7803246		P3D3100FS32M09	31.0	93	176	32	60		
7803296		P3D3100FS40M09	31.0	93	186	40	70		
7803303		P3D3150FS32M09	31.5	95	178	32	60		
7803247		P3D3200FS32M09	32.0	96	179	32	60		
7803297	P3D3200FS40M09	32.0	96	189	40	70			
7803304	P3D3250FS40M09	32.5	98	191	40	70			
7803248	P3D3300FS40M09	33.0	99	192	40	70			
7803249	P3D3350FS40M09	33.5	101	194	40	70			

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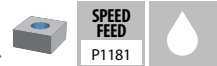
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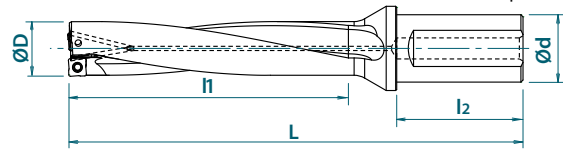


List 78032 (Continued)

P3D (Metric)



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	l1	L	d	l2	
7803250	Flat Shank	P3D3400FS40M10	34.0	102	195	40	70	XCMT10...
7803305		P3D3450FS40M10	34.5	104	197	40	70	
7803251		P3D3500FS40M10	35.0	105	198	40	70	
7803306		P3D3550FS40M10	35.5	107	200	40	70	
7803252		P3D3600FS40M10	36.0	108	201	40	70	
7803253		P3D3700FS40M10	37.0	111	204	40	70	
7803307		P3D3750FS40M10	37.5	113	206	40	70	
7803254		P3D3800FS40M10	38.0	114	207	40	70	
7803255		P3D3900FS40M12	39.0	117	217	40	70	XCMT12...
7803256		P3D4000FS40M12	40.0	120	220	40	70	
7803308		P3D4050FS40M12	40.5	122	222	40	70	
7803257		P3D4100FS40M12	41.0	123	223	40	70	
7803258		P3D4200FS40M12	42.0	126	226	40	70	
7803259		P3D4300FS40M12	43.0	129	229	40	70	
7803260		P3D4400FS40M12	44.0	132	232	40	70	
7803261		P3D4500FS40M13	45.0	135	235	40	70	
7803262		P3D4600FS40M13	46.0	138	238	40	70	
7803263		P3D4700FS40M13	47.0	141	241	40	70	
7803264		P3D4800FS40M13	48.0	144	244	40	70	
7803265		P3D4900FS40M13	49.0	147	247	40	70	XCMT14...
7803266		P3D5000FS40M14	50.0	150	250	40	70	
7803309		P3D5050FS40M14	50.5	152	252	40	70	
7803267		P3D5100FS40M14	51.0	153	253	40	70	
7803268		P3D5200FS40M14	52.0	156	256	40	70	
7803269		P3D5300FS40M14	53.0	159	259	40	70	
7803270		P3D5400FS40M14	54.0	162	262	40	70	
7803271		P3D5500FS40M14	55.0	165	265	40	70	
7803272		P3D5600FS40M14	56.0	168	268	40	70	
7803273		P3D5700FS40M16	57.0	171	271	40	70	
7803274		P3D5800FS40M16	58.0	174	274	40	70	
7803275		P3D5900FS40M16	59.0	177	277	40	70	
7803276		P3D6000FS40M16	60.0	180	280	40	70	
7803277	P3D6100FS40M16	61.0	183	283	40	70		
7803278	P3D6200FS40M16	62.0	186	286	40	70		
7803279	P3D6300FS40M16	63.0	189	289	40	70		

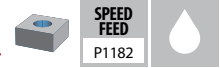
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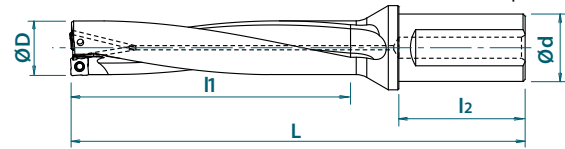


List 52504

P4D (Inch)



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (inch)	Drilling Depth (inch)	Overall Length (inch)	Shank Dia. (inch)	Shank Length (inch)	Applicable Insert
			D	l1	L	d	l2	
52504026	Flat Shank	P4D0594FS075A04	0.5938	2.375	5.250	0.750	1.969	XCMT04...
52504027		P4D0609FS075A04	0.6094	2.438	5.313	0.750	1.969	
52504008		P4D0625FS075A04	0.6250	2.500	5.375	0.750	1.969	
52504028		P4D0641FS075A04	0.6406	2.563	5.438	0.750	1.969	
52504009		P4D0656FS075A04	0.6563	2.625	5.500	0.750	1.969	
52504029		P4D0672FS075A05	0.6719	2.688	5.563	0.750	1.969	XCMT05...
52504010		P4D0688FS075A05	0.6875	2.750	5.625	0.750	1.969	
52504030		P4D0703FS075A05	0.7031	2.813	5.688	0.750	1.969	
52504031		P4D0719FS100A05	0.7188	2.875	5.986	1.000	2.205	
52504032		P4D0734FS100A05	0.7344	2.938	6.049	1.000	2.205	
52504011		P4D0750FS100A06	0.7500	3.000	6.111	1.000	2.205	XCMT06...
52504033		P4D0766FS100A06	0.7656	3.063	6.174	1.000	2.205	
52504034		P4D0781FS100A06	0.7813	3.125	6.236	1.000	2.205	
52504035		P4D0797FS100A06	0.7969	3.188	6.299	1.000	2.205	
52504012		P4D0812FS100A06	0.8125	3.250	6.361	1.000	2.205	
52504036		P4D0828FS100A07	0.8281	3.313	6.424	1.000	2.205	XCMT07...
52504037		P4D0844FS100A07	0.8438	3.375	6.486	1.000	2.205	
52504038		P4D0859FS100A07	0.8594	3.438	6.549	1.000	2.205	
52504000		P4D0875FS100A07	0.8750	3.500	6.611	1.000	2.205	
52504039		P4D0891FS100A07	0.8906	3.563	6.674	1.000	2.205	
52504040		P4D0906FS100A07	0.9063	3.625	6.736	1.000	2.205	XCMT08...
52504041		P4D0922FS100A07	0.9219	3.688	6.799	1.000	2.205	
52504001		P4D0937FS125A07	0.9375	3.750	7.018	1.250	2.362	
52504042		P4D0953FS125A07	0.9531	3.813	7.081	1.250	2.362	
52504043		P4D0969FS125A07	0.9688	3.875	7.143	1.250	2.362	
52504044		P4D0984FS125A08	0.9844	3.938	7.206	1.250	2.362	XCMT09...
52504002		P4D1000FS125A08	1.0000	4.000	7.268	1.250	2.362	
52504045		P4D1031FS125A08	1.0313	4.125	7.393	1.250	2.362	
52504003		P4D1062FS125A08	1.0625	4.250	7.518	1.250	2.362	
52504046		P4D1094FS125A08	1.0938	4.375	7.643	1.250	2.362	
52504004		P4D1125FS125A08	1.1250	4.500	7.768	1.250	2.362	XCMT10...
52504047		P4D1156FS125A09	1.1563	4.625	7.893	1.250	2.362	
52504005		P4D1187FS125A09	1.1875	4.750	8.018	1.250	2.362	
52504048		P4D1219FS125A09	1.2188	4.875	8.143	1.250	2.362	
52504006		P4D1250FS125A09	1.2500	5.000	8.268	1.250	2.362	
52504049		P4D1281FS150A09	1.2813	5.125	8.393	1.500	2.756	XCMT10...
52504007		P4D1312FS150A09	1.3125	5.250	8.518	1.500	2.756	
52504050		P4D1344FS150A10	1.3438	5.375	8.643	1.500	2.756	
52504013		P4D1375FS150A10	1.3750	5.500	8.768	1.500	2.756	
52504051		P4D1406FS150A10	1.4063	5.625	8.893	1.500	2.756	
52504014		P4D1437FS150A10	1.4375	5.750	9.018	1.500	2.756	
52504052		P4D1469FS150A10	1.4688	5.875	9.143	1.500	2.756	
52504015		P4D1500FS150A10	1.5000	6.000	9.268	1.500	2.756	
52504053		P4D1531FS150A10	1.5313	6.125	9.393	1.500	2.756	

Packed: 1 pc.

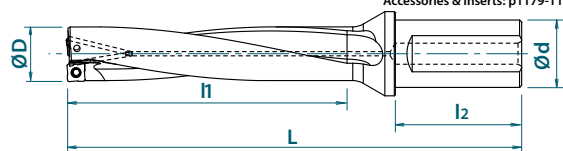
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List 52504 (Continued)

P4D (Inch)



SPEED FEED
P1182

Recommended Materials: p1183
Accessories & Inserts: p1179-1180

EDP No.	Body Type	Designation	Drill Dia. (inch)	Drilling Depth (inch)	Overall Length (inch)	Shank Dia. (inch)	Shank Length (inch)	Applicable Insert
			D	l1	L	d	l2	
52504016	Flat Shank	P4D1563FS150A12	1.5625	6.250	9.912	1.500	2.756	XCMT12...
52504054		P4D1594FS150A12	1.5938	6.375	10.037	1.500	2.756	
52504017		P4D1625FS150A12	1.6250	6.500	10.162	1.500	2.756	
52504055		P4D1656FS150A12	1.6563	6.625	10.287	1.500	2.756	
52504018		P4D1688FS150A12	1.6875	6.750	10.412	1.500	2.756	
52504056		P4D1719FS150A12	1.7188	6.875	10.537	1.500	2.756	
52504019		P4D1750FS150A12	1.7500	7.000	10.662	1.500	2.756	XCMT13...
52504057		P4D1781FS150A13	1.7813	7.125	10.787	1.500	2.756	
52504058		P4D1813FS150A13	1.8125	7.250	10.912	1.500	2.756	
52504059		P4D1844FS150A13	1.8438	7.375	11.037	1.500	2.756	
52504020		P4D1875FS150A13	1.8750	7.500	11.162	1.500	2.756	
52504060		P4D1906FS150A13	1.9063	7.625	11.287	1.500	2.756	
52504061		P4D1938FS150A13	1.9375	7.750	11.412	1.500	2.756	XCMT14...
52504062		P4D1969FS150A14	1.9688	7.875	11.537	1.500	2.756	
52504021		P4D2000FS150A14	2.0000	8.000	11.662	1.500	2.756	
52504022		P4D2125FS150A14	2.1250	8.500	12.162	1.500	2.756	
52504023		P4D2250FS150A16	2.2500	9.000	12.662	1.500	2.756	XCMT16...
52504024		P4D2375FS150A16	2.3750	9.500	13.162	1.500	2.756	
52504025		P4D2500FS150A16	2.5000	10.000	13.662	1.500	2.756	

Packed: 1 pc.





List 78033

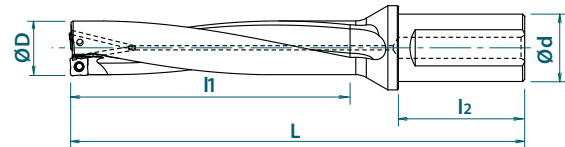
P4D (Metric)



SPEED FEED
P1182



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	l1	L	d	l2	
7803317	Flat Shank	P4D1500FS20M04	15.0	60	135	20	50	XCMT04...
7803318		P4D1550FS20M04	15.5	62	127	20	50	
7803319		P4D1600FS20M04	16.0	64	129	20	50	
7803320		P4D1650FS20M04	16.5	66	131	20	50	
7803321		P4D1700FS20M05	17.0	68	136	20	50	XCMT05...
7803322		P4D1750FS20M05	17.5	70	138	20	50	
7803390		P4D1750FS25M05	17.5	70	144	25	56	
7803323		P4D1800FS25M05	18.0	72	146	25	56	
7803324		P4D1850FS25M05	18.5	74	148	25	56	XCMT06...
7803325		P4D1900FS25M06	19.0	76	150	25	56	
7803326		P4D1950FS25M06	19.5	78	152	25	56	
7803327		P4D2000FS25M06	20.0	80	154	25	56	
7803328		P4D2050FS25M06	20.5	82	156	25	56	XCMT07...
7803329		P4D2100FS25M07	21.0	84	163	25	56	
7803330		P4D2150FS25M07	21.5	86	165	25	56	
7803331		P4D2200FS25M07	22.0	88	167	25	56	
7803332		P4D2250FS25M07	22.5	90	169	25	56	XCMT08...
7803333		P4D2300FS25M07	23.0	92	171	25	56	
7803391		P4D2350FS25M07	23.5	94	173	25	56	
7803334		P4D2350FS32M07	23.5	94	177	32	60	
7803392		P4D2400FS25M07	24.0	96	175	25	56	XCMT09...
7803335		P4D2400FS32M07	24.0	96	179	32	60	
7803393		P4D2450FS25M07	24.5	98	177	25	56	
7803336		P4D2450FS32M07	24.5	98	181	32	60	
7803394		P4D2500FS25M08	25.0	100	179	25	56	XCMT10...
7803337		P4D2500FS32M08	25.0	100	183	32	60	
7803395		P4D2550FS25M08	25.5	102	181	25	56	
7803338		P4D2550FS32M08	25.5	102	185	32	60	
7803339		P4D2600FS32M08	26.0	104	187	32	60	XCMT09...
7803340		P4D2650FS32M08	26.5	106	189	32	60	
7803341		P4D2700FS32M08	27.0	108	191	32	60	
7803342		P4D2800FS32M08	28.0	112	195	32	60	
7803343		P4D2850FS32M08	28.5	114	197	32	60	XCMT10...
7803344		P4D2900FS32M09	29.0	116	199	32	60	
7803345		P4D3000FS32M09	30.0	120	203	32	60	
7803346		P4D3100FS32M09	31.0	124	207	32	60	
7803396		P4D3100FS40M09	31.0	124	217	40	70	XCMT10...
7803347		P4D3200FS32M09	32.0	128	211	32	60	
7803397		P4D3200FS40M09	32.0	128	221	40	70	
7803348		P4D3300FS40M09	33.0	132	225	40	70	
7803349	P4D3350FS40M09	33.5	134	227	40	70	XCMT10...	
7803350	P4D3400FS40M10	34.0	136	229	40	70		
7803351	P4D3500FS40M10	35.0	140	233	40	70		
7803352	P4D3600FS40M10	36.0	144	237	40	70		
7803353	P4D3700FS40M10	37.0	148	241	40	70	XCMT10...	
7803354	P4D3800FS40M10	38.0	152	245	40	70		

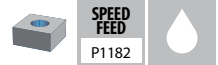
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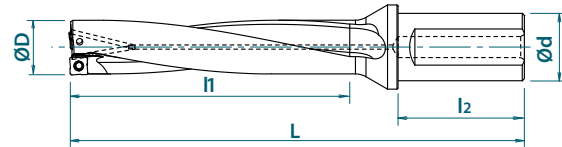


List 78033 (Continued)

P4D (Metric)



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	l1	L	d	l2	
7803355	Flat Shank	P4D3900FS40M12	39.0	156	256	40	70	XCMT12...
7803356		P4D4000FS40M12	40.0	160	260	40	70	
7803357		P4D4100FS40M12	41.0	164	264	40	70	
7803358		P4D4200FS40M12	42.0	168	268	40	70	
7803359		P4D4300FS40M12	43.0	172	272	40	70	
7803360		P4D4400FS40M12	44.0	176	276	40	70	
7803361		P4D4500FS40M13	45.0	180	280	40	70	XCMT13...
7803362		P4D4600FS40M13	46.0	184	284	40	70	
7803363		P4D4700FS40M13	47.0	188	288	40	70	
7803364		P4D4800FS40M13	48.0	192	292	40	70	
7803365		P4D4900FS40M13	49.0	196	296	40	70	
7803366		P4D5000FS40M14	50.0	200	300	40	70	
7803367		P4D5100FS40M14	51.0	204	304	40	70	XCMT14...
7803368		P4D5200FS40M14	52.0	208	308	40	70	
7803369		P4D5300FS40M14	53.0	212	312	40	70	
7803370		P4D5400FS40M14	54.0	216	316	40	70	
7803371		P4D5500FS40M14	55.0	220	320	40	70	
7803372		P4D5600FS40M14	56.0	224	324	40	70	
7803373		P4D5700FS40M16	57.0	228	328	40	70	XCMT16...
7803374		P4D5800FS40M16	58.0	232	332	40	70	
7803375		P4D5900FS40M16	59.0	236	336	40	70	
7803376		P4D6000FS40M16	60.0	240	340	40	70	
7803377		P4D6100FS40M16	61.0	244	344	40	70	
7803378		P4D6200FS40M16	62.0	248	348	40	70	
7803379		P4D6300FS40M16	63.0	252	352	40	70	

Packed: 1 pc.



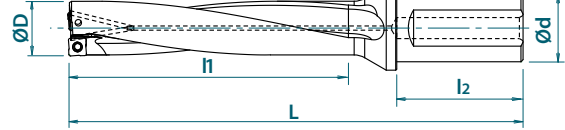


List 52505

P5D (Inch)

SPEED FEED
P1183

Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia.	Drilling Depth	Overall Length	Shank Dia.	Shank Length	Applicable Insert
			(inch)	(inch)	(inch)	(inch)	(inch)	
			D	l1	L	d	l2	
52505026	Flat Shank	P5D0594FS075A04	0.5938	2.969	5.844	0.750	1.969	XCMT04...
52505027		P5D0609FS075A04	0.6094	3.047	5.922	0.750	1.969	
52505008		P5D0625FS075A04	0.6250	3.125	6.000	0.750	1.969	
52505028		P5D0641FS075A04	0.6406	3.203	6.078	0.750	1.969	
52505009		P5D0656FS075A04	0.6563	3.281	6.156	0.750	1.969	
52505029		P5D0672FS075A05	0.6719	3.359	6.234	0.750	1.969	
52505010		P5D0688FS075A05	0.6875	3.438	6.312	0.750	1.969	
52505030		P5D0703FS075A05	0.7031	3.516	6.391	0.750	1.969	XCMT05...
52505031		P5D0719FS100A05	0.7188	3.594	6.705	1.000	2.205	
52505032		P5D0734FS100A05	0.7344	3.672	6.783	1.000	2.205	
52505011		P5D0750FS100A06	0.7500	3.750	6.861	1.000	2.205	
52505033		P5D0766FS100A06	0.7656	3.828	6.939	1.000	2.205	
52505034		P5D0781FS100A06	0.7813	3.906	7.017	1.000	2.205	XCMT06...
52505035		P5D0797FS100A06	0.7969	3.984	7.095	1.000	2.205	
52505012		P5D0812FS100A06	0.8125	4.063	7.173	1.000	2.205	
52505036		P5D0828FS100A07	0.8281	4.141	7.252	1.000	2.205	
52505037		P5D0844FS100A07	0.8438	4.219	7.330	1.000	2.205	
52505038		P5D0859FS100A07	0.8594	4.297	7.408	1.000	2.205	
52505000		P5D0875FS100A07	0.8750	4.375	7.485	1.000	2.205	
52505039		P5D0891FS100A07	0.8906	4.453	7.564	1.000	2.205	XCMT07...
52505040		P5D0906FS100A07	0.9063	4.531	7.642	1.000	2.205	
52505041		P5D0922FS100A07	0.9219	4.609	7.720	1.000	2.205	
52505001		P5D0937FS125A07	0.9375	4.688	7.955	1.250	2.362	
52505042		P5D0953FS125A07	0.9531	4.766	8.034	1.250	2.362	
52505043		P5D0969FS125A07	0.9688	4.844	8.112	1.250	2.362	
52505044		P5D0984FS125A08	0.9844	4.922	8.190	1.250	2.362	
52505002		P5D1000FS125A08	1.0000	5.000	8.268	1.250	2.362	
52505045		P5D1031FS125A08	1.0313	5.156	8.424	1.250	2.362	XCMT08...
52505003		P5D1062FS125A08	1.0625	5.313	8.580	1.250	2.362	
52505046		P5D1094FS125A08	1.0938	5.469	8.737	1.250	2.362	
52505004		P5D1125FS125A08	1.1250	5.625	8.893	1.250	2.362	
52505047		P5D1156FS125A09	1.1563	5.781	9.049	1.250	2.362	
52505005		P5D1187FS125A09	1.1875	5.938	9.205	1.250	2.362	
52505048		P5D1219FS125A09	1.2188	6.094	9.362	1.250	2.362	XCMT09...
52505006		P5D1250FS125A09	1.2500	6.250	9.518	1.250	2.362	
52505049		P5D1281FS150A09	1.2813	6.406	10.068	1.500	2.756	
52505007		P5D1312FS150A09	1.3125	6.563	10.224	1.500	2.756	
52505050		P5D1344FS150A10	1.3438	6.719	10.381	1.500	2.756	
52505013		P5D1375FS150A10	1.3750	6.875	10.537	1.500	2.756	
52505051		P5D1406FS150A10	1.4063	7.031	10.693	1.500	2.756	
52505014		P5D1437FS150A10	1.4375	7.188	10.849	1.500	2.756	XCMT10...
52505052		P5D1469FS150A10	1.4688	7.344	11.006	1.500	2.756	
52505015		P5D1500FS150A10	1.5000	7.500	11.162	1.500	2.756	
52505053		P5D1531FS150A10	1.5313	7.656	11.318	1.500	2.756	

Packed: 1 pc.

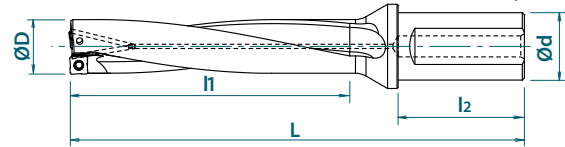
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List 52505 (Continued)

P5D (Inch)



Recommended Materials: p1183
Accessories & Inserts: p1179-1180

EDP No.	Body Type	Designation	Drill Dia. (inch)	Drilling Depth (inch)	Overall Length (inch)	Shank Dia. (inch)	Shank Length (inch)	Applicable Insert
			D	l1	L	d	l2	
52505016	Flat Shank	P5D1563FS150A12	1.5625	7.813	11.474	1.500	2.756	XCMT12...
52505054		P5D1594FS150A12	1.5938	7.969	11.631	1.500	2.756	
52505017		P5D1625FS150A12	1.6250	8.125	11.787	1.500	2.756	
52505055		P5D1656FS150A12	1.6563	8.281	11.943	1.500	2.756	
52505018		P5D1688FS150A12	1.6875	8.438	12.099	1.500	2.756	
52505056		P5D1719FS150A12	1.7188	8.594	12.256	1.500	2.756	XCMT13...
52505019		P5D1750FS150A12	1.7500	8.750	12.412	1.500	2.756	
52505057		P5D1781FS150A13	1.7813	8.906	12.568	1.500	2.756	
52505058		P5D1813FS150A13	1.8125	9.063	12.725	1.500	2.756	
52505059		P5D1844FS150A13	1.8438	9.219	12.881	1.500	2.756	
52505020		P5D1875FS150A13	1.8750	9.375	13.037	1.500	2.756	XCMT14...
52505060		P5D1906FS150A13	1.9063	9.531	13.193	1.500	2.756	
52505061		P5D1938FS150A13	1.9375	9.688	13.350	1.500	2.756	
52505062		P5D1969FS150A14	1.9688	9.844	13.506	1.500	2.756	
52505021		P5D2000FS150A14	2.0000	10.000	13.662	1.500	2.756	
52505022		P5D2125FS150A14	2.1250	10.625	14.287	1.500	2.756	XCMT16...
52505023		P5D2250FS150A16	2.2500	11.250	14.912	1.500	2.756	
52505024		P5D2375FS150A16	2.3750	11.875	15.537	1.500	2.756	
52505025		P5D2500FS150A16	2.5000	12.500	16.162	1.500	2.756	

Packed: 1 pc.



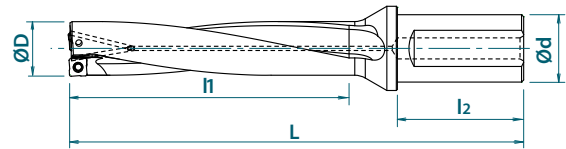


List 78027

P5D (Metric)



Recommended Materials: p1183
Accessories & Inserts: p1179-1180



EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	l1	L	d	l2	
7802717	Flat Shank	P5D1500FS20M04	15.0	75	140	20	50	XCMT04...
7802718		P5D1550FS20M04	15.5	78	143	20	50	
7802719		P5D1600FS20M04	16.0	80	145	20	50	
7802720		P5D1650FS20M04	16.5	83	148	20	50	
7802721		P5D1700FS20M05	17.0	85	153	20	50	XCMT05...
7802722		P5D1750FS20M05	17.5	88	156	20	50	
7802790		P5D1750FS25M05	17.5	88	162	25	56	
7802723		P5D1800FS25M05	18.0	90	164	25	56	XCMT06...
7802724		P5D1850FS25M05	18.5	93	167	25	56	
7802725		P5D1900FS25M06	19.0	95	169	25	56	
7802726		P5D1950FS25M06	19.5	98	172	25	56	XCMT07...
7802727		P5D2000FS25M06	20.0	100	174	25	56	
7802728		P5D2050FS25M06	20.5	103	177	25	56	
7802729		P5D2100FS25M07	21.0	105	184	25	56	XCMT08...
7802730		P5D2150FS25M07	21.5	108	187	25	56	
7802731		P5D2200FS25M07	22.0	110	189	25	56	
7802732		P5D2250FS25M07	22.5	113	192	25	56	XCMT09...
7802733		P5D2300FS25M07	23.0	115	194	25	56	
7802791		P5D2350FS25M07	23.5	118	197	25	56	
7802734		P5D2350FS32M07	23.5	118	201	32	60	XCMT10...
7802792		P5D2400FS25M07	24.0	120	199	25	56	
7802735		P5D2400FS32M07	24.0	120	203	32	60	
7802793		P5D2450FS25M07	24.5	123	202	25	56	XCMT09...
7802736		P5D2450FS32M07	24.5	123	206	32	60	
7802794		P5D2500FS25M08	25.0	125	204	25	56	
7802737		P5D2500FS32M08	25.0	125	208	32	60	XCMT10...
7802795		P5D2550FS25M08	25.5	128	207	25	56	
7802738		P5D2550FS32M08	25.5	128	211	32	60	
7802739		P5D2600FS32M08	26.0	130	213	32	60	XCMT09...
7802740		P5D2650FS32M08	26.5	133	216	32	60	
7802741		P5D2700FS32M08	27.0	135	218	32	60	
7802742		P5D2800FS32M08	28.0	140	223	32	60	XCMT10...
7802743		P5D2850FS32M08	28.5	143	226	32	60	
7802744		P5D2900FS32M09	29.0	145	228	32	60	
7802745		P5D3000FS32M09	30.0	150	233	32	60	XCMT10...
7802746		P5D3100FS32M09	31.0	155	238	32	60	
7802796		P5D3100FS40M09	31.0	155	248	40	70	
7802747		P5D3200FS32M09	32.0	160	243	32	60	XCMT10...
7802797		P5D3200FS40M09	32.0	160	253	40	70	
7802748		P5D3300FS40M09	33.0	165	258	40	70	
7802749		P5D3350FS40M09	33.5	168	261	40	70	XCMT10...
7802750		P5D3400FS40M10	34.0	170	263	40	70	
7802751		P5D3500FS40M10	35.0	175	268	40	70	
7802752		P5D3600FS40M10	36.0	180	273	40	70	XCMT10...
7802753		P5D3700FS40M10	37.0	185	278	40	70	
7802754	P5D3800FS40M10	38.0	190	283	40	70		

Packed: 1 pc.

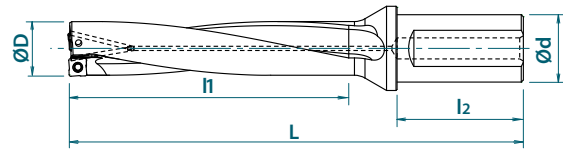
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List 78027 (Continued)

P5D (Metric)



SPEED FEED
P1183

Recommended Materials: p1183
Accessories & Inserts: p1179-1180

EDP No.	Body Type	Designation	Drill Dia. (mm)	Drilling Depth (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	l1	L	d	l2	
7802755	Flat Shank	P5D3900FS40M12	39.0	195	295	40	70	XCMT12...
7802756		P5D4000FS40M12	40.0	200	300	40	70	
7802757		P5D4100FS40M12	41.0	205	305	40	70	
7802758		P5D4200FS40M12	42.0	210	310	40	70	
7802759		P5D4300FS40M12	43.0	215	315	40	70	
7802760		P5D4400FS40M12	44.0	220	320	40	70	
7802761		P5D4500FS40M13	45.0	225	325	40	70	XCMT13...
7802762		P5D4600FS40M13	46.0	230	330	40	70	
7802763		P5D4700FS40M13	47.0	235	335	40	70	
7802764		P5D4800FS40M13	48.0	240	340	40	70	
7802765		P5D4900FS40M13	49.0	245	345	40	70	
7802766		P5D5000FS40M14	50.0	250	350	40	70	
7802767		P5D5100FS40M14	51.0	255	355	40	70	
7802768		P5D5200FS40M14	52.0	260	360	40	70	
7802769		P5D5300FS40M14	53.0	265	365	40	70	
7802770		P5D5400FS40M14	54.0	270	370	40	70	
7802771		P5D5500FS40M14	55.0	275	375	40	70	XCMT16...
7802772		P5D5600FS40M14	56.0	280	380	40	70	
7802773		P5D5700FS40M16	57.0	285	385	40	70	
7802774		P5D5800FS40M16	58.0	290	390	40	70	
7802775		P5D5900FS40M16	59.0	295	395	40	70	
7802776		P5D6000FS40M16	60.0	300	400	40	70	
7802777		P5D6100FS40M16	61.0	305	405	40	70	
7802778		P5D6200FS40M16	62.0	310	410	40	70	
7802779		P5D6300FS40M16	63.0	315	415	40	70	

Packed: 1 pc.

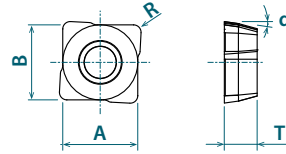




**NEW
SIZES**

List 78P5D

PD Inserts




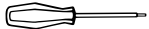
Designation	No. of Cutting Edges	Insert Size				EDP Number					
		A x B (mm)	T (mm)	α	R (mm)	XP9020	XC9015	XP1010	CK110		
XCMT042204ER-DM	4	5 x 5	2.2	8°	0.4	7823064	7829064	-	-		
XCMT042204ER-DR						-	-	7823164	-		
XCMT042204ER-DN						-	-	-	7823264		
XCMT052404ER-DM		5.83 x 5.83	2.4			7823065	7829065	-	-	-	-
XCMT052404ER-DR						-	-	7823165	-		
XCMT052404ER-DN						-	-	-	7823265		
XCMT062706ER-DM		6.46 x 6.46	2.7			7823066	7829066	-	-	-	-
XCMT062706ER-DR						-	-	7823166	-		
XCMT062706ER-DN						-	-	-	7823266		
XCMT073106ER-DM		7.42 x 7.42	3.1			7823067	7829067	-	-	-	-
XCMT073106ER-DR						-	-	7823167	-		
XCMT073106ER-DN						-	-	-	7823267		
XCMT083508ER-DM		8.71 x 8.71	3.5			7823068	7829068	-	-	-	-
XCMT083508ER-DR						-	-	7823168	-		
XCMT083508ER-DN						-	-	-	7823268		
XCMT094008ER-DM		10.04 x 10.04	4.0			7823069	7829069	-	-	-	-
XCMT094008ER-DR						-	-	7823169	-		
XCMT094008ER-DN						-	-	-	7823269		
XCMT104608ER-DM		10.89 x 10.89	4.6			7823097	7829097	-	-	-	-
XCMT104608ER-DR						-	-	7823197	-		
XCMT104608ER-DN						-	-	-	7823297		
XCMT125010ER-DM		12.57 x 12.57	5.0			7823071	7829071	-	-	-	-
XCMT125010ER-DR						-	-	7823171	-		
XCMT125010ER-DN						-	-	-	7823271		
XCMT135212ER-DM		14.05 x 14.05	5.2			7823072	7829072	-	-	-	-
XCMT135212ER-DR						-	-	7823172	-		
XCMT135212ER-DN						-	-	-	7823272		
XCMT145612ER-DM		15.58 x 15.58	5.6			7823073	7829073	-	-	-	-
XCMT145612ER-DR						-	-	7823173	-		
XCMT145612ER-DN						-	-	-	7823273		
XCMT165912ER-DM		17.28 x 17.28	5.8			7823075	7829075	-	-	-	-
XCMT165912ER-DR						-	-	7823175	-		
XCMT165912ER-DN	-			-	-	7823275					

Packed: 10 pcs.



List 7808H

PD Accessories

Appearance	EDP Number	Designation	Applicable Insert	Recommended Tightening Torque	
 Clamping Screw	7808139	FS20543P (Torx 6IP)	XCMT04... XCMT05...	0.7 Nm	
	7808138	FS22550P (Torx 7IP)	XCMT06...	1.0 Nm	
	7808136	FS25560P (Torx 8IP)	XCMT07...	1.6 Nm	
	7808135	FS30570P (Torx 9IP)	XCMT08... XCMT09...	2.2 Nm	
	7808137	FS35586P (Torx 15IP)	XCMT10... XCMT12...	3.2 Nm	
	7808114	FS45510P (Torx 20IP)	XCMT13... XCMT14... XCMT16...	5.0 Nm	
	 Wrench	7808223	6IP-D (Torx 6IP)	XCMT04... XCMT05...	
		7808224	7IP-D (Torx 7IP)	XCMT06...	
		7808225	8IP-D (Torx 8IP)	XCMT07...	
		7808226	9IP-D (Torx 9IP)	XCMT08... XCMT09...	
7808228		15IP-D (Torx 15IP)	XCMT10... XCMT12...		
7808229		20IP-D (Torx 20IP)	XCMT13... XCMT14... XCMT16...		

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions (2D & 3D)

Work Material	Tensile Strength - Hardness	Drilling Speed Vc (SFM)	Feed Rate, f (in/rev)							
			Drilling Depth 2D, 3D							
			Ø0.591-0.650 (15-16.5mm)	Ø0.669-0.728 (17-18.5mm)	Ø0.748-0.807 (19-20.5mm)	Ø0.827-0.965 (21-24.5mm)	Ø0.984-1.122 (25-28.5mm)	Ø1.142-1.319 (29-33.5mm)	Ø1.339-2.500 (34-63mm)	
P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2)	~180 HB	650 (500 - 800)	0.003 (0.0015 - 0.0055)	0.0035 (0.0015 - 0.0063)	0.0039 (0.0015 - 0.007)	0.0055 (0.0015 - 0.008)	0.007 (0.0024 - 0.010)	0.008 (0.003 - 0.012)	0.008 (0.003 - 0.014)	
	~280 HB	500 (330 - 720)	0.003 (0.0015 - 0.0055)	0.0035 (0.0015 - 0.0063)	0.0039 (0.0015 - 0.007)	0.0055 (0.0015 - 0.0075)	0.007 (0.0024 - 0.010)	0.008 (0.003 - 0.012)	0.008 (0.003 - 0.014)	
	~280 HB	330 (260 - 500)	0.0024 (0.0015 - 0.004)	0.0027 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.0045 (0.0015 - 0.006)	0.0055 (0.0024 - 0.008)	0.007 (0.003 - 0.010)	0.007 (0.003 - 0.010)	
M Stainless Steels (304, 420)	~250 HB	430 (260 - 600)	0.0027 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.0035 (0.0015 - 0.0045)	0.004 (0.0015 - 0.006)	0.005 (0.0024 - 0.008)	0.0063 (0.003 - 0.010)	0.006 (0.003 - 0.010)	
K Cast Iron (No. 35 B) Ductile Cast Iron (60-40-18)	~350 N/mm ²	650 (500 - 920)	0.003 (0.0015 - 0.0055)	0.0039 (0.0015 - 0.0063)	0.0045 (0.0015 - 0.008)	0.0063 (0.003 - 0.010)	0.008 (0.0024 - 0.012)	0.008 (0.003 - 0.012)	0.008 (0.003 - 0.014)	
	~800 N/mm ²	530 (330 - 720)	0.003 (0.0015 - 0.0045)	0.0035 (0.0015 - 0.0055)	0.0039 (0.0015 - 0.007)	0.0055 (0.0015 - 0.008)	0.007 (0.0024 - 0.010)	0.007 (0.003 - 0.010)	0.007 (0.003 - 0.010)	
N Aluminum Alloys (6061, 7075)	~13% Si	650 (330 - 2600)	0.003 (0.0015 - 0.0045)	0.004 (0.0015 - 0.0063)	0.0045 (0.0015 - 0.008)	0.0063 (0.0015 - 0.010)	0.008 (0.0024 - 0.012)	0.008 (0.003 - 0.012)	0.008 (0.003 - 0.012)	
S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V)	-	100 (50 - 160)	0.0015 (0.0008 - 0.0024)	0.002 (0.0012 - 0.0024)	0.002 (0.0012 - 0.0024)	0.0023 (0.0015 - 0.0032)	0.003 (0.0024 - 0.004)	0.004 (0.0024 - 0.0045)	0.004 (0.0024 - 0.0045)	
	-	200 (100 - 330)	0.002 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0032 (0.0015 - 0.006)	0.004 (0.0024 - 0.008)	0.0055 (0.003 - 0.008)	0.0055 (0.003 - 0.008)	
H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2)	40 - 43 Hrc	330 (200 - 400)	0.0024 (0.0016 - 0.004)	0.0024 (0.0016 - 0.0047)	0.0027 (0.0016 - 0.0047)	0.003 (0.0016 - 0.0047)	0.004 (0.0024 - 0.006)	0.004 (0.0024 - 0.006)	0.004 (0.0024 - 0.006)	
	43 - 48 Hrc	260 (165 - 330)	0.002 (0.0015 - 0.003)	0.002 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	
	50 - 55 Hrc	200 (130 - 260)	0.002 (0.0015 - 0.003)	0.002 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	





Cutting Conditions (4D)

Work Material	Tensile Strength – Hardness	Drilling Speed Vc (SFM)	Feed Rate, f (in/rev)							
			Drilling Depth 4D							
			Ø0.591-0.650 (15-16.5mm)	Ø0.669-0.728 (17-18.5mm)	Ø0.748-0.807 (19-20.5mm)	Ø0.827-0.965 (21-24.5mm)	Ø0.984-1.122 (25-28.5mm)	Ø1.142-1.319 (29-33.5mm)	Ø1.339-2.500 (34-63mm)	
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	650 (500 - 800)	0.003 (0.0015 - 0.0055)	0.003 (0.0015 - 0.0063)	0.0035 (0.0015 - 0.007)	0.0045 (0.0015 - 0.006)	0.007 (0.0024 - 0.010)	0.008 (0.003 - 0.010)	0.008 (0.003 - 0.012)
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	500 (330 - 720)	0.003 (0.0015 - 0.0055)	0.003 (0.0015 - 0.0063)	0.0035 (0.0015 - 0.007)	0.0045 (0.0015 - 0.006)	0.007 (0.0024 - 0.010)	0.008 (0.003 - 0.010)	0.008 (0.003 - 0.012)
	Die Steels (H13, D2)	~280 HB	330 (260 - 500)	0.0024 (0.0015 - 0.004)	0.0027 (0.0015 - 0.004)	0.003 (0.0015 - 0.0045)	0.004 (0.0015 - 0.0052)	0.0055 (0.0024 - 0.008)	0.007 (0.003 - 0.010)	0.007 (0.003 - 0.010)
M	Stainless Steels (304, 420)	~250 HB	430 (260 - 600)	0.0024 (0.0015 - 0.003)	0.0027 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.0052 (0.0024 - 0.008)	0.0063 (0.003 - 0.008)	0.0063 (0.003 - 0.008)
K	Cast Iron (No. 35 B)	~350 N/mm ²	650 (500 - 920)	0.003 (0.0015 - 0.0055)	0.0035 (0.0015 - 0.0063)	0.004 (0.0015 - 0.008)	0.0045 (0.0015 - 0.006)	0.008 (0.0024 - 0.012)	0.008 (0.003 - 0.012)	0.008 (0.003 - 0.012)
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	530 (330 - 720)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.0045)	0.0035 (0.0015 - 0.006)	0.0045 (0.0015 - 0.006)	0.006 (0.0024 - 0.010)	0.007 (0.003 - 0.010)	0.007 (0.003 - 0.010)
N	Aluminum Alloys (6061, 7075)	~13% Si	650 (330 - 2600)	0.0027 (0.0015 - 0.0045)	0.0035 (0.0015 - 0.0045)	0.0045 (0.0015 - 0.008)	0.0055 (0.0015 - 0.008)	0.008 (0.0024 - 0.012)	0.008 (0.003 - 0.012)	0.008 (0.003 - 0.012)
S	Heat Resistant Alloys (Inconel 718)	-	100 (50 - 160)	0.0015 (0.0008 - 0.0024)	0.0015 (0.0008 - 0.0024)	0.0015 (0.0008 - 0.0024)	0.002 (0.0015 - 0.0032)	0.0027 (0.0024 - 0.004)	0.003 (0.0024 - 0.0045)	0.003 (0.0024 - 0.0045)
	Titanium Alloy (Ti-6Al-4V)	-	200 (100 - 330)	0.002 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.003 (0.0015 - 0.004)	0.004 (0.0024 - 0.008)	0.005 (0.003 - 0.008)	0.005 (0.003 - 0.008)
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HrC	330 (200 - 400)	0.0024 (0.0016 - 0.004)	0.0024 (0.0016 - 0.004)	0.0024 (0.0016 - 0.004)	0.003 (0.0016 - 0.0047)	0.003 (0.0024 - 0.0047)	0.004 (0.0024 - 0.0051)	0.004 (0.0024 - 0.0051)
	Die Cast Steels (A2, S7)	43 - 48 HrC	260 (165 - 330)	0.002 (0.0015 - 0.003)	0.002 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)
	Hardened Steels (D2)	50 - 55 HrC	200 (130 - 260)	0.002 (0.0015 - 0.003)	0.002 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)





Cutting Conditions (5D)

Work Material	Tensile Strength – Hardness	Drilling Speed Vc (SFM)	Feed Rate, f (in/rev)						
			Drilling Depth 5D						
			Ø0.591-0.650 (15-16.5mm)	Ø0.669-0.728 (17-18.5mm)	Ø0.748-0.807 (19-20.5mm)	Ø0.827-0.965 (21-24.5mm)	Ø0.984-1.122 (25-28.5mm)	Ø1.142-1.319 (29-33.5mm)	Ø1.339-2.500 (34-63mm)
P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2)	~180 HB	650 (500 - 800)	0.0024 (0.0015 - 0.0035)	0.003 (0.0015 - 0.0045)	0.003 (0.0015 - 0.0055)	0.0045 (0.0015 - 0.006)	0.006 (0.0024 - 0.008)	0.007 (0.003 - 0.008)	0.007 (0.003 - 0.010)
	~280 HB	500 (330 - 720)	0.0024 (0.0015 - 0.0035)	0.003 (0.0015 - 0.0045)	0.003 (0.0015 - 0.0055)	0.0045 (0.0015 - 0.006)	0.006 (0.0024 - 0.008)	0.007 (0.003 - 0.008)	0.007 (0.003 - 0.010)
	~280 HB	330 (260 - 500)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0027 (0.0015 - 0.004)	0.004 (0.0015 - 0.0052)	0.0045 (0.0024 - 0.006)	0.006 (0.003 - 0.007)	0.0063 (0.003 - 0.0087)
M Stainless Steels (304, 420)	~250 HB	430 (260 - 600)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0027 (0.0015 - 0.0035)	0.003 (0.0015 - 0.004)	0.004 (0.0024 - 0.006)	0.0045 (0.003 - 0.007)	0.0045 (0.003 - 0.008)
K Cast Iron (No. 35 B) Ductile Cast Iron (60-40-18)	~350 N/mm ²	650 (500 - 920)	0.0024 (0.0015 - 0.004)	0.003 (0.0015 - 0.0045)	0.003 (0.0015 - 0.005)	0.005 (0.0015 - 0.006)	0.006 (0.0024 - 0.006)	0.007 (0.003 - 0.008)	0.007 (0.003 - 0.010)
	~800 N/mm ²	530 (330 - 720)	0.0024 (0.0015 - 0.0035)	0.003 (0.0015 - 0.0045)	0.003 (0.0015 - 0.0045)	0.004 (0.0015 - 0.0052)	0.005 (0.0024 - 0.006)	0.006 (0.003 - 0.007)	0.007 (0.003 - 0.010)
N Aluminum Alloys (6061, 7075)	~13% Si	650 (330 - 2600)	0.0024 (0.0015 - 0.004)	0.0035 (0.0015 - 0.0045)	0.004 (0.0015 - 0.006)	0.005 (0.0015 - 0.006)	0.006 (0.0024 - 0.010)	0.008 (0.003 - 0.012)	0.006 (0.003 - 0.007)
S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V)	-	100 (50 - 160)	0.0015 (0.0008 - 0.0024)	0.0015 (0.0008 - 0.0024)	0.0015 (0.0008 - 0.0024)	0.0015 (0.0008 - 0.0024)	0.0027 (0.0024 - 0.003)	0.0027 (0.0024 - 0.003)	0.0027 (0.0024 - 0.003)
	-	200 (100 - 330)	0.002 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.004)	0.004 (0.0024 - 0.006)	0.004 (0.003 - 0.006)	0.004 (0.003 - 0.006)
H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2)	40 - 43 Hrc	330 (200 - 400)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.0024 (0.0015 - 0.003)	0.003 (0.0015 - 0.004)	0.003 (0.0024 - 0.0047)	0.004 (0.0024 - 0.0047)	0.004 (0.0024 - 0.0047)
	43 - 48 Hrc	260 (165 - 330)	0.002 (0.0015 - 0.0027)	0.002 (0.0015 - 0.0027)	0.0024 (0.0015 - 0.0027)	0.0024 (0.0015 - 0.003)	0.0027 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)
	50 - 55 Hrc	200 (130 - 260)	0.002 (0.0015 - 0.0027)	0.002 (0.0015 - 0.0027)	0.0024 (0.0015 - 0.0027)	0.0024 (0.0015 - 0.003)	0.0027 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)	0.003 (0.0015 - 0.004)

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XP9020	DM	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
XC9015	DM	Yes	<input checked="" type="checkbox"/>					
XP1010	DR	Yes	<input type="checkbox"/>		<input checked="" type="checkbox"/>			
CK110	DN	Yes				<input checked="" type="checkbox"/>		

DM: Steel & Stainless Steel DR: Cast Iron DN: Non-Ferrous

good best

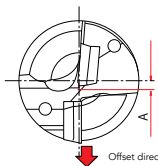




Maximum Offset for Drilling on Lathe

Drill Diameter (Inch)	Maximum Offset (Inch)	Max Diameter (Inch)
0.5938	0.0157	0.6252
0.6094	0.0118	0.6330
0.6250	0.0078	0.6406
0.6406	0.0078	0.6562
0.6563	0.0078	0.6719
0.6719	0.0196	0.7111
0.6875	0.0157	0.7189
0.7031	0.0157	0.7345
0.7188	0.0157	0.7502
0.7344	0.0118	0.7580
0.7500	0.0196	0.7892
0.7656	0.0157	0.7970
0.7813	0.0157	0.8127
0.7969	0.0118	0.8205
0.8125	0.0118	0.8361
0.8281	0.0269	0.8819
0.8438	0.0230	0.8898
0.8594	0.0210	0.9014
0.8750	0.0200	0.9150
0.8906	0.0190	0.9286
0.9063	0.0173	0.9409
0.9219	0.0133	0.9485
0.9375	0.0124	0.9623
0.9531	0.0078	0.9687
0.9688	0.0039	0.9766
0.9844	0.0287	1.0418
1.0000	0.0248	1.0496
1.0313	0.0220	1.0753
1.0625	0.0173	1.0971
1.0938	0.0141	1.1220
1.1250	0.0039	1.1328
1.1563	0.0295	1.2153
1.1875	0.0277	1.2429
1.2188	0.0218	1.2624
1.2500	0.0188	1.2876
1.2813	0.0169	1.3151
1.3125	0.0078	1.3281
1.3438	0.0393	1.4224
1.3750	0.0315	1.4380
1.4063	0.0236	1.4535
1.4375	0.0275	1.4925
1.4688	0.0196	1.5080
1.5000	0.0118	1.5236
1.5313	0.0039	1.5391
1.5625	0.0315	1.6255
1.5938	0.0275	1.6488
1.6250	0.0275	1.6800
1.6563	0.0236	1.7035
1.6875	0.0157	1.7189
1.7188	0.0118	1.7424
1.7500	0.0078	1.7656
1.7813	0.0314	1.8441
1.8125	0.0275	1.8675
1.8438	0.0196	1.8830
1.8750	0.0196	1.9142
1.9063	0.0157	1.9377
1.9375	0.0078	1.9531
1.9688	0.0433	2.0554
2.0000	0.0354	2.0708
2.1250	0.0157	2.1564
2.2500	0.0433	2.3366
2.3750	0.0275	2.4300
2.5000	0	2.5000

Drill Diameter (mm)	Maximum Offset (mm)	Max Diameter (mm)
15.0	0.4	15.8
15.5	0.3	16.1
16.0	0.3	16.6
16.5	0.3	17.1
17.0	0.6	18.2
17.5	0.5	18.5
18.0	0.5	19.0
18.5	0.4	19.3
19.0	0.6	20.2
19.5	0.5	20.5
20.0	0.4	20.8
20.5	0.4	21.3
21.0	0.6	22.2
21.5	0.6	22.7
22.0	0.5	23.0
22.5	0.5	23.5
23.0	0.4	23.8
23.5	0.3	24.1
24.0	0.3	24.6
24.5	0.2	24.9
25.0	0.7	26.4
25.5	0.6	26.7
26.0	0.5	27.0
26.5	0.5	27.5
27.0	0.4	27.8
27.5	0.4	28.3
28.0	0.3	28.6
28.5	0.2	28.9
29.0	0.8	30.6
29.5	0.8	31.1
30.0	0.7	31.4
30.5	0.7	31.9
31.0	0.6	32.2
31.5	0.5	32.5
32.0	0.5	33.0
32.5	0.4	33.3
33.0	0.4	33.8
33.5	0.2	33.9
34.0	1.1	36.2
34.5	0.9	36.3
35.0	0.8	36.6
35.5	0.7	36.9
36.0	0.8	37.6
37.0	0.6	38.2
37.5	0.4	38.3
38.0	0.3	38.6
39.0	1.0	41.0
40.0	0.9	41.8
40.5	0.8	42.1
41.0	0.8	42.6
42.0	0.6	43.2
43.0	0.5	44.0
44.0	0.3	44.6
45.0	0.9	46.8
46.0	0.8	47.6
47.0	0.7	48.4
48.0	0.5	49.0
49.0	0.3	49.6
50.0	1.1	52.2
50.5	1.0	52.5
51.0	1.0	53.0
52.0	0.8	53.6
53.0	0.7	54.4
54.0	0.6	55.2
55.0	0.4	55.8
56.0	0.1	56.2
57.0	1.1	59.2
58.0	1.0	60.0
59.0	0.9	60.8
60.0	0.8	61.6
61.0	0.6	62.2
62.0	0.4	62.8
63.0	0.2	63.4



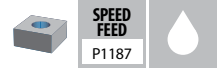
Maximum Offset Amount, A, for Drilling on a lathe.



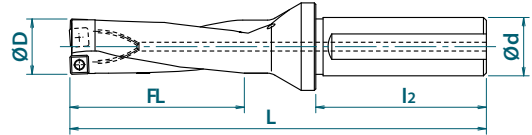


List 78001

PHP (Metric)



Recommended Materials: p1187
Accessories & Inserts: p1186



EDP No.	Body Type	Designation	Drill Dia. (mm)	Flute Length (mm)	Overall Length (mm)	Shank Dia. (mm)	Shank Length (mm)	Applicable Insert
			D	FL	L	d	l2	
7800100	Flat Shank	PHP140FS20M04-3D	14.0	42	116	20	50	SCMT04...
7800101		PHP145FS20M04-3D	14.5	45	119	20	50	
7800102		PHP150FS20M04-3D	15.0	45	119	20	50	
7800103		PHP155FS20M04-3D	15.5	48	122	20	50	
7800104		PHP160FS20M04-3D	16.0	48	122	20	50	
7800105		PHP165FS20M05-3D	16.5	51	125	20	50	SCMT05...
7800106		PHP170FS20M05-3D	17.0	51	125	20	50	
7800107		PHP175FS25M05-3D	17.5	54	134	25	56	
7800108		PHP180FS25M05-3D	18.0	54	134	25	56	
7800109		PHP185FS25M06-3D	18.5	57	137	25	56	SCMT06...
7800110		PHP190FS25M06-3D	19.0	57	137	25	56	
7800111		PHP195FS25M06-3D	19.5	60	140	25	56	
7800112		PHP200FS25M06-3D	20.0	60	140	25	56	
7800113		PHP205FS25M06-3D	20.5	63	143	25	56	SCMT07...
7800114		PHP210FS25M06-3D	21.0	63	143	25	56	
7800115		PHP215FS25M07-3D	21.5	66	146	25	56	
7800116		PHP220FS25M07-3D	22.0	66	146	25	56	
7800117		PHP225FS25M07-3D	22.5	69	149	25	56	SCMT08...
7800118		PHP230FS25M07-3D	23.0	69	149	25	56	
7800119		PHP235FS32M07-3D	23.5	72	156	32	60	
7800120		PHP240FS32M07-3D	24.0	72	156	32	60	
7800121		PHP245FS32M08-3D	24.5	75	159	32	60	SCMT10...
7800122		PHP250FS32M08-3D	25.0	75	159	32	60	
7800123		PHP255FS32M08-3D	25.5	78	162	32	60	
7800124		PHP260FS32M08-3D	26.0	78	162	32	60	
7800125		PHP265FS32M08-3D	26.5	81	165	32	60	SCMT12...
7800126		PHP270FS32M08-3D	27.0	81	165	32	60	
7800127		PHP280FS32M08-3D	28.0	84	168	32	60	
7800128		PHP290FS32M10-3D	29.0	87	171	32	60	
7800130		PHP300FS32M10-3D	30.0	90	179	32	60	SCMT12...
7800131		PHP310FS32M10-3D	31.0	93	182	32	60	
7800132		PHP320FS32M10-3D	32.0	96	185	32	60	
7800133		PHP330FS40M10-3D	33.0	99	196	40	68	
7800134		PHP340FS40M12-3D	34.0	102	199	40	68	SCMT12...
7800135		PHP350FS40M12-3D	35.0	105	202	40	68	
7800136		PHP360FS40M12-3D	36.0	108	205	40	68	
7800137		PHP370FS40M12-3D	37.0	111	218	40	68	
7800138		PHP380FS40M12-3D	38.0	114	221	40	68	
7800139		PHP390FS40M12-3D	39.0	117	224	40	68	
7800140		PHP400FS40M12-3D	40.0	120	227	40	68	

Packed: 1 pc.

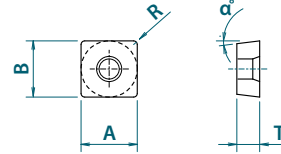
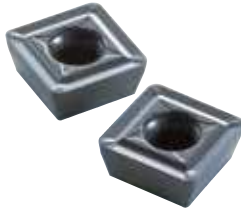
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PHP

PHP Inserts



Designation	No. of Cutting Edges	Insert Size				EDP Number	
		A x B (mm)	T (mm)	α	R (mm)	XP9040	XC9025
SCMT042204-DM	4	4.8 x 4.8	2.2	7°	0.4	7818001	7817001
SCMT052404-DM		5.4 x 5.4	2.4			7818002	7817002
SCMT062806-DM		6.2 x 6.2	2.8		0.6	7818003	7817003
SCMT073206-DM		7.2 x 7.2	3.2			7818004	7817004
SCMT083608-DM		8.6 x 8.6	3.6		0.8	7818005	7817005
SCMT104208-DM		10.0 x 10.0	4.2			7818006	7817006
SCMT125008-DM		12.3 x 12.3	5.0			7818007	7817007

Packed: 10 pcs.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



List 7808H

PHP Accessories

Appearance	EDP No.	Designation	Applicable Insert	Recommended Tightening Torque
	7808100	FS18538 (Torx 6)	SCMT04...	0.7 Nm
	7808102	FS20540 (Torx 6)	SCMT05...	0.7 Nm
	7808104	FS22550 (Torx 7)	SCMT06...	1.0 Nm
	7808108	FS25560 (Torx 8)	SCMT07...	1.6 Nm
	7808110	FS30573 (Torx 8)	SCMT08...	1.6 Nm
	7808111	FS35572 (Torx 15)	SCMT10...	3.2 Nm
	7808113	FS45510 (Torx 20)	SCMT12...	5.0 Nm
	7808203	T6-D (Torx 6)	SCMT04... SCMT05...	
	7808204	T7-D (Torx 7)	SCMT06... SCMT07...	
	7808205	T8-D (Torx 8)	SCMT08... SCMT10...	
	7808208	T15-D (Torx 15)	SCMT10... SCMT12...	
	7808209	T20-D (Torx 20)	SCMT12...	

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.

Note: Wrench sold separately.

This item is stocked overseas. Please contact OSG for availability and delivery.





Cutting Conditions

Work Material	Tensile Strength - Hardness	Drilling Speed Vc (SFM)	Feed Rate f (in/rev)				
			Ø14-20.5mm	Ø21-28mm	Ø29-34mm	Ø35-40mm	
P Mild Steels, Carbon Steels (1010, 1018)	~180 HB	655 (495 - 820)	0.004 (0.002 - 0.005)	0.005 (0.004 - 0.007)	0.007 (0.005 - 0.008)	0.010 (0.008 - 0.011)	
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	525 (330 - 720)	0.004 (0.002 - 0.005)	0.005 (0.004 - 0.007)	0.007 (0.005 - 0.008)	0.010 (0.008 - 0.011)
	Die Steels (H13, D2)	~280 HB	460 (265 - 590)	0.003 (0.002 - 0.005)	0.005 (0.002 - 0.006)	0.006 (0.004 - 0.007)	0.006 (0.004 - 0.008)
M Stainless Steels (304, 420)	~250 HB	495 (330 - 590)	0.003 (0.002 - 0.005)	0.004 (0.002 - 0.005)	0.006 (0.004 - 0.007)	0.007 (0.006 - 0.008)	
K Cast Iron (No. 35 B)	~350 N/mm ²	495 (330 - 590)	0.004 (0.002 - 0.005)	0.005 (0.004 - 0.007)	0.007 (0.005 - 0.008)	0.010 (0.008 - 0.011)	
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	425 (265 - 495)	0.004 (0.002 - 0.005)	0.005 (0.003 - 0.006)	0.006 (0.004 - 0.008)	0.008 (0.006 - 0.010)
N Aluminum Alloys (6061, 7075)	~13% Si	720 (330 - 2625)	0.004 (0.002 - 0.008)	0.005 (0.004 - 0.010)	0.007 (0.005 - 0.012)	0.010 (0.008 - 0.014)	
S Heat Resistant Alloys (Inconel 718)	-	100 (50 - 165)	0.002 (0.001 - 0.003)	0.002 (0.001 - 0.004)	0.003 (0.002 - 0.005)	0.004 (0.002 - 0.006)	
	Titanium Alloy (Ti-6Al-4V)	-	195 (100 - 330)	0.002 (0.002 - 0.003)	0.003 (0.002 - 0.005)	0.004 (0.003 - 0.006)	0.005 (0.004 - 0.006)

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XP9040	DM	Yes	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>	
XC9025	DM	Yes	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>		

DM: Center Cutting Drill

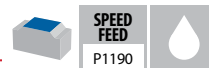
good best





List 52700

PAS Bore (Inch)



Recommended Materials: p1190
Accessories & Inserts: p1189



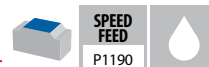
EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	Effective Dia.	No. of Teeth	Tool Height	Flange Dia.	Bore Dia.	Keyway Width	Keyway Depth	Applicable Insert
					D	D1		H	D2	d3	a	b	
52700000	Bore	Normal	PAS15R200A075-4	1	2.590	2.000	4	1.772	1.772	0.750	0.315	0.197	SNKU15...
52700001			PAS15R250A075-5	1	3.090	2.500	5	1.772	1.968	0.750	0.315	0.197	
52700002			PAS15R300A100-6	1	3.590	3.000	6	1.968	2.362	1.000	0.375	0.236	
52700003			PAS15R400A125-7	2	4.590	4.000	7	1.968	2.756	1.250	0.500	0.315	
52700004			PAS15R500A150-8	2	5.590	5.000	8	2.480	3.543	1.500	0.625	0.394	
52700005			PAS15R600A150-9	2	6.590	6.000	9	2.480	3.740	1.500	0.625	0.394	

Packed: 1 pc.



List 78020

PAS Bore (Metric)



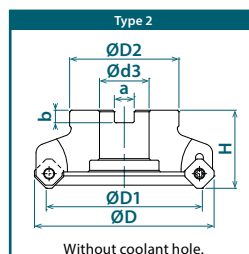
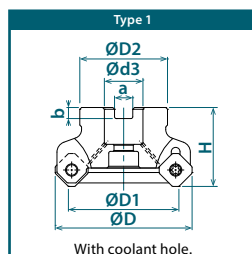
Recommended Materials: p1190
Accessories & Inserts: p1189



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	Effective Dia.	No. of Teeth	Tool Height	Flange Dia.	Bore Dia.	Keyway Width	Keyway Depth	Applicable Insert
					D	D1		H	D2	d3	a	b	
7802000	Bore	Normal	PAS15R050M22-4	1	65	50	4	45	45	22	10.4	6.3	SNKU15...
7802001			PAS15R063M22-5	1	78	63	5	45	50	22	10.4	6.3	
7802002			PAS15R080M25.4-6	1	95	80	6	50	60	25.4	9.5	6	
7802003			PAS15R100M31.7-7	2	115	100	7	50	70	31.75	12.7	8	
7802004			PAS15R125M38.1-8	2	140	125	8	63	90	38.1	15.9	10	

Packed: 1 pc.

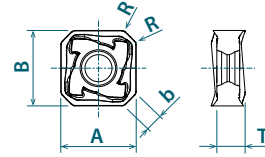
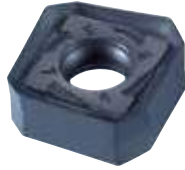
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PAS

PAS Inserts



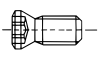
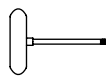
Designation	No. of Cutting Edges	Insert Size					EDP Number				
		AxB (mm)	T (mm)	R (mm)	b (mm)	Aa Max (mm)	XC3025	XP3035	XP2040	XC1015	XC5040
SNKU1505AZER-GM	8	15.88 x 15.88	7.18	1.0	3.65	6.5	7819061	7814061	7813061	-	-
SNKU1505AZER-GR							-	-	-	7812060	-
SNKU1505AZER-SM							-	-	-	-	52700006

Packed: 10 pcs.



List 7808H

PAS Accessories

Appearance	EDP No.	Designation	Applicable Cutter		Recommended Tightening Torque
			(mm)	(inch)	
 Clamping Screw	7808131	FS45513P (Torx 20IP)	PAS BORE Ø50-125	PAS BORE Ø2-6"	5.0 Nm
 Wrench	7808000	20IP-T (Torx 20IP)	PAS BORE Ø50-125	PAS BORE Ø2-6"	

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

Work Material		Tensile Strength - Hardness	Insert Size		
			SNKU15...		
			Face Milling		
			Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)	Depth of Cut Aa (in)
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (330 - 820)	0.007 (0.006 - 0.014)	0.120
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (330 - 820)	0.007 (0.006 - 0.014)	0.120
	Die Steels (H13, D2)	~280 HB	495 (260 - 655)	0.006 (0.004 - 0.012)	0.120
M	Stainless Steels (304, 420)	~250 HB	395 (260 - 590)	0.005 (0.003 - 0.010)	0.120
K	Cast Iron (No. 35 B)	~300 N/mm ²	590 (330 - 1150)	0.008 (0.006 - 0.014)	0.160
	Ductile Cast Iron (60-40-18)	~600 N/mm ²	590 (330 - 885)	0.008 (0.004 - 0.012)	0.120
S	Heat Resistant Alloys (Inconel 718)	-	115 (85 - 200)	0.004 (0.002 - 0.006)	0.040
	Titanium Alloy (Ti-6Al-4V)	-	130 (100 - 400)	0.005 (0.003 - 0.008)	0.060
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	330 (195 - 495)	0.005 (0.003 - 0.008)	0.060
	Die Cast Steels (A2, S7)	43 - 48 HRC	260 (130 - 395)	0.004 (0.002 - 0.006)	0.020
	Hardened Steels (D2)	50 - 55 HRC	195 (130 - 295)	0.003 (0.002 - 0.006)	0.020

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XC3025	GM	-	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XP3035	GM	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XP2040	GM	-	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>
		Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XC1015	GR	-			<input checked="" type="checkbox"/>			
XC5040	SM	Yes		<input type="checkbox"/>			<input checked="" type="checkbox"/>	

GM: Medium Cutting GR: Rough Cutting SM: Heat Resistant Alloy

good best





List 52800

PAO Bore (Inch)



SPEED
FEED
P1195

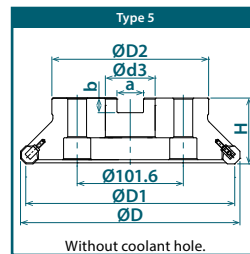
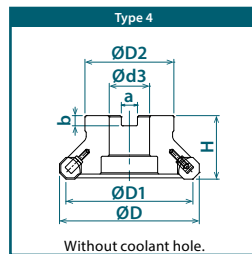
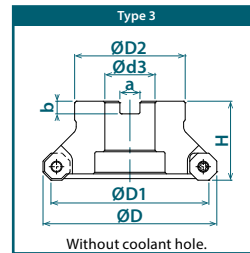
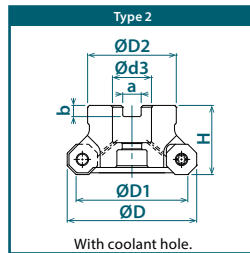
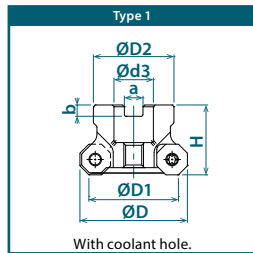


Recommended Materials: p1195
Accessories & Inserts: p1193-1194



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	Effective Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert
					D	D1		H	D2	d3	a	b	
52800000	Bore	Normal	PAO06R200A075-5	1	2.401	2.000	5	1.575	1.772	0.750	0.315	0.197	OZKU06... / XAHT06...
52800001			PAO06R250A075-7	2	2.901	2.500	7	1.575	1.968	0.750	0.315	0.197	
52800002			PAO06R300A100-8	2	3.401	3.000	8	1.968	2.362	1.000	0.375	0.236	
52800003			PAO06R400A125-10	3	4.401	4.000	10	1.968	2.756	1.250	0.500	0.315	
52800004			PAO06R500A150-12	3	5.401	5.000	12	2.480	3.543	1.500	0.625	0.394	
52800005		PAO06R600A150-13	3	6.401	6.000	13	2.480	3.740	1.500	0.625	0.394		
52800006		PAO06R400A125W-14	Close	4	4.401	4.000	14	1.968	2.756	1.250	0.500	0.315	
52800007		PAO06R500A150W-17		4	5.401	5.000	17	2.480	3.543	1.500	0.625	0.394	
52800008		PAO06R600A150W-20		4	6.401	6.000	20	2.480	3.740	1.500	0.625	0.394	
52800009		PAO06R800A250W-25		5	8.401	8.000	25	2.480	5.118	2.500	1.000	0.551	

Packed: 1pc.



List 78120

PAO Bore (Metric)

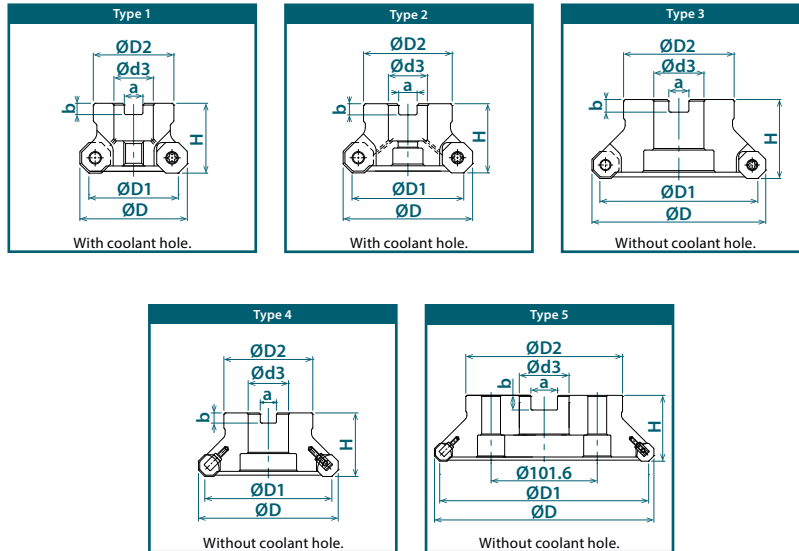
SPEED FEED
 P1195

Recommended Materials: p1195
 Accessories & Inserts: p1193-1194



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D	D1		H	D2	d3	a	b	
7802020	Bore	Normal	PAO06R050M22-5	1	60.2	50	5	40	45	22	10.4	6.3	OZKU06... / XAHT06...
7802021			PAO06R063M22-7	2	73.2	63	7	40	50	22	10.4	6.3	
7802022			PAO06R080M25.4-8	2	90.2	80	8	50	60	25.4	9.5	6	
7802023			PAO06R100M31.7-10	3	110.2	100	10	50	70	31.75	12.7	8	
7802024			PAO06R125M38.1-12	3	135.2	125	12	63	90	38.1	15.9	10	
7802089		PAO06R100M31.7W-14	4	110.2	100	14	50	70	31.75	12.7	8		
7802091		PAO06R125M38.1W-17	4	135.2	125	17	63	90	38.1	15.9	10		
7802093		PAO06R160M50.8W-20	4	170.2	160	20	63	100	50.8	19.0	11		
7802095		PAO06R200M47.6W-25	5	210.2	200	25	63	150	47.625	25.4	14		

Packed: 1 pc.
 Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PAO

NEW SIZES

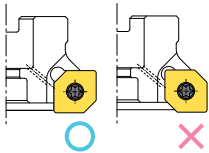
PAO Inserts



Designation	No. of Cutting Edges	Insert Size							EDP Number									
		B (mm)	T (mm)	l (mm)	α	R (mm)	b (mm)	Aa Max (mm)	XC3020	XP3025	XC3030	XP3035	XP2025	XP2040	XC1015	XP1020	XC5040	
OZKU060508SR-GL	16	17.1	5.66	6	3°	0.8	2	3.5	7827063	7828063	7825063	7814063	7826063	7813063	-	-	-	
OZKU060508SR-GM									7827062	7828062	7825062	7814062	7826062	7813062	7812062	7821062	-	-
OZKU060508SR-GR									-	-	-	-	-	-	7812086	7821086	-	-
OZKU060508ER-SM									-	-	-	-	-	-	-	-	-	7816085
XAHT060525SR-GM	2	-	5.56	10	-	2.5	-	-	-	-	7814064	-	-	7812064	-	-		

Packed: 10 pcs.


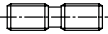

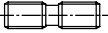
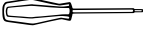
Correct orientation of wiper insert:





List 7808H

PAO Accessories

Appearance	EDP No.	Designation	Applicable Cutter		Recommended Tightening Torque
			(mm)	(inch)	
 Clamping Screw	7808130	FS50614 (Torx 20)	PAO BORE Ø50-125	PAO BORE Ø2-6"	5.0 Nm
 Power Screw	7808151	PS1031 (M10x31)	PAO BORE Ø50	PAO BORE Ø2"	20.0 Nm
 Wedge	7808141	W12F-06N (M6)	PAO BORE(W) Ø100-200	PAO BORE(W) Ø4-8"	
 Wedge Clamping Screw	7808140	WS0621T (M6x21)	PAO BORE(W) Ø100-200	PAO BORE(W) Ø4-8"	4.0 Nm
 Wrench	7808208	T15-D (Torx 15)	PAO BORE(W) Ø100-200	PAO BORE(W) Ø4-8"	
	7808209	T20-D (Torx 20)	PAO BORE Ø50-125	PAO BORE Ø2-6"	

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wedge = 10 pcs.;
Wedge Clamping Screw = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

Work Material	Tensile Strength - Hardness	Insert Size			
		OZKU06... / XAHT06...			
		Face Milling			Depth of Cut Aa (in)
Milling Speed Vc (SFM)	Feed Per Tooth fz (in/t)				
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (330 - 820)	0.010 (0.008 - 0.020)	0.080
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (330 - 820)	0.010 (0.008 - 0.020)	0.080
	Die Steels (H13, D2)	~280 HB	495 (260 - 655)	0.010 (0.006 - 0.016)	0.080
M	Stainless Steels (304, 420)	~250 HB	395 (260 - 590)	0.008 (0.006 - 0.016)	0.080
K	Cast Iron (No. 35 B)	~300 N/mm ²	655 (330 - 1150)	0.012 (0.008 - 0.020)	0.080
	Ductile Cast Iron (60-40-18)	~600 N/mm ²	590 (330 - 885)	0.011 (0.006 - 0.016)	0.080
S	Heat Resistant Alloys (718 Inconel)	-	115 (85 - 200)	0.005 (0.002 - 0.008)	0.040
	Titanium Alloy (Ti-6Al-4V)	-	130 (100 - 400)	0.006 (0.004 - 0.010)	0.060
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	330 (195 - 495)	0.006 (0.004 - 0.010)	0.060
	Die Cast Steels (A2, S7)	43 - 48 HRC	260 (130 - 395)	0.005 (0.002 - 0.008)	0.020
	Hardened Steels (D2)	50 - 55 HRC	195 (130 - 295)	0.004 (0.002 - 0.008)	0.020

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XC3020	GL / GM	-	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XP3025	GL / GM	Yes	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XC3030	GL / GM	-	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XP3035	GL / GM	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XP2025	GL / GM	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XP2040	GL / GM	-	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>
		Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XC1015	GM / GR	-			<input checked="" type="checkbox"/> *			
XP1020	GM / GR	-			<input checked="" type="checkbox"/> **			
XC5040	SM	Yes		<input type="checkbox"/>			<input checked="" type="checkbox"/>	

GM: Medium Cutting GR: Rough Cutting SM: Heat Resistant Alloy

*: XC1015 best recommended for grey cast iron

** : XP1020 best recommended for ductile cast iron

good best



List 78013

PSE SA/FA (Inch)



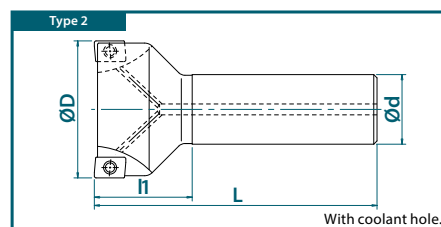
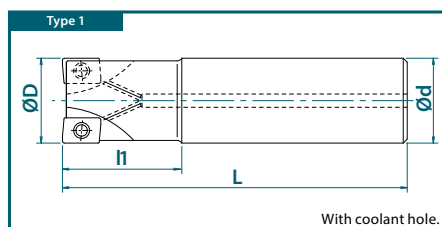
Recommended Materials: p1205
Accessories & Inserts: p1203-1204
Maximum Ramping Angle: p1206



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	No. of Teeth	Shank Dia.	Overall Length	Neck Length	Applicable Insert	
					(inch) D		(inch) d	(inch) L	(inch) L1		
7801300	Cylindrical Shank Short	Normal	PSE11R063SA063-2S	1	0.625	2	0.625	3.543	0.984	ZD_T11...	
7801301			PSE11R075SA075-3S	1	0.750	3	0.750	3.937	1.181		
7801302			PSE11R100SA100-3S	1	1.000	3	1.000	4.724	1.378		
7801303			PSE11R125SA125-3S	1	1.250	3	1.250	5.118	1.772		
7801304			PSE11R100SA100-4S	1	1.000	4	1.000	4.724	1.378		
7801305		Close	PSE11R125SA125-5S	1	1.250	5	1.250	5.118	1.772		
7801306			PSE15R100SA100-2S	1	1.000	2	1.000	4.724	1.378		
7801307			Normal	PSE15R125SA125-2S	1	1.250	2	1.250	5.118	1.772	
7801308				PSE15R150SA125-3S	2	1.500	3	1.250	5.512	1.969	
7801309				PSE15R125SA125-3S	1	1.250	3	1.250	5.118	1.772	
7801310	Close	PSE15R150SA125-4S	2	1.500	4	1.250	5.512	1.969			
7801336		Cylindrical Shank Long	Normal	PSE11R063SA063-2L	1	0.625	2	0.625	5.906	1.969	ZD_T11...
7801337	PSE11R075SA075-3L			1	0.750	3	0.750	6.299	2.362		
7801338	PSE11R100SA100-3L			1	1.000	3	1.000	6.693	2.756		
7801339	PSE11R125SA125-3L			1	1.250	3	1.250	7.480	3.543		
7801340	PSE11R100SA100-4L			1	1.000	4	1.000	6.693	2.756		
7801341	Close		PSE11R125SA125-5L	1	1.250	5	1.250	7.480	3.543		
7801342			PSE15R100SA100-2L	1	1.000	2	1.000	6.693	2.756		
7801343			Normal	PSE15R125SA125-2L	1	1.250	2	1.250	7.480	3.543	
7801344				PSE15R150SA125-3L	2	1.500	3	1.250	7.480	1.969	
7801345				PSE15R125SA125-3L	1	1.250	3	1.250	7.480	3.543	
7801346	Close	PSE15R150SA125-4L	2	1.500	4	1.250	7.480	1.969			
7801320		Weldon Shank Short	Normal	PSE11R063FA063-2S	1	0.625	2	0.625	3.205	1.299	ZD_T11...
7801321	PSE11R075FA075-3S			1	0.750	3	0.750	3.583	1.551		
7801323	PSE11R100FA100-3S			1	1.000	3	1.000	3.831	1.551		
7801324	Close			PSE11R100FA100-4S	1	1.000	4	1.000	3.831	1.551	
7801325				PSE11R125FA125-5S	1	1.250	5	1.250	4.378	2.098	
7801330	Normal		PSE15R100FA100-2S	1	1.000	2	1.000	3.830	1.550		
7801332			PSE15R125FA125-2S	1	1.250	2	1.250	4.380	2.100		
7801333			Close	PSE15R125FA125-3S	1	1.250	3	1.250	4.380	2.100	
7801334				PSE15R150FA125-3S	2	1.500	3	1.250	4.380	2.100	
7801335			PSE15R150FA125-4S	2	1.500	4	1.250	4.380	2.100		
7801347	Weldon Shank Long	Normal	PSE11R063FA063-2L	1	0.625	2	0.625	3.874	1.969	ZD_T11...	
7801348			PSE11R075FA075-3L	1	0.750	3	0.750	4.394	2.362		
7801349			PSE11R100FA100-3L	1	1.000	3	1.000	5.035	2.756		
7801350			Close	PSE11R100FA100-4L	1	1.000	4	1.000	5.035		2.756
7801351				PSE11R125FA125-5L	1	1.250	5	1.250	5.823		3.543
7801352		Normal	PSE15R100FA100-2L	1	1.000	2	1.000	5.035	2.756		
7801353			PSE15R125FA125-2L	1	1.250	2	1.250	5.823	3.543		
7801354			Close	PSE15R125FA125-3L	1	1.250	3	1.250	5.823	3.543	
7801355				PSE15R150FA125-3L	2	1.500	3	1.250	5.823	2.100	
7801356			Close	PSE15R150FA125-4L	2	1.500	4	1.250	5.823	2.100	

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).





List 78011

PSE SS (Metric)



Recommended Materials: p1205
Accessories & Inserts: p1203-1204
Maximum Ramping Angle: p1206



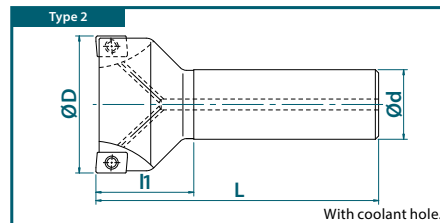
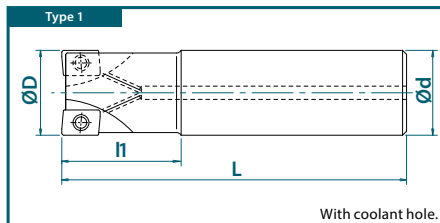
EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D		d	L	L1	
7801101	Cylindrical Shank Short	Normal	PSE11R020SS20-2S	1	20	2	20	100	30	ZD_T11...
7801102			PSE11R025SS25-3S	1	25	3	25	120	35	
7801103			PSE11R032SS32-3S	1	32	3	32	130	45	
7801100			PSE11R016SS16-2S	1	16	2	16	90	25	
7801116			PSE11R018SS16-2S	2	18	2	16	90	25	
7801115			PSE11R020SS20-3S	1	20	3	20	100	30	
7801117		PSE11R022SS20-3S	2	22	3	20	110	30		
7801104		PSE11R025SS25-4S	1	25	4	25	120	35		
7801118		PSE11R028SS25-4S	2	28	4	25	120	35		
7801119		PSE11R030SS32-4S	1	30	4	32	130	45		
7801105		PSE11R032SS32-5S	1	32	5	32	125	40		
7801120		PSE11R035SS32-5S	2	35	5	32	130	35		
7801121	Cylindrical Shank Long	Close	PSE11R016SS16-2L	1	16	2	16	150	50	
7801139			PSE11R017SS16-2L	2	17	2	16	150	25	
7801122			PSE11R018SS16-2L	2	18	2	16	150	25	
7801123			PSE11R020SS20-3L	1	20	3	20	160	60	
7801140			PSE11R021SS20-3L	2	21	3	20	160	30	
7801124			PSE11R022SS20-3L	2	22	3	20	160	30	
7801125		PSE11R025SS25-3L	1	25	3	25	170	70		
7801141		PSE11R026SS25-3L	2	26	3	25	170	35		
7801126		PSE11R028SS25-3L	2	28	3	25	170	35		
7801127		PSE11R030SS32-3L	1	30	3	32	190	90		
7801128		PSE11R032SS32-3L	1	32	3	32	190	90		
7801142		PSE11R033SS32-3L	2	33	3	32	190	35		
7801129	PSE11R035SS32-3L	2	35	3	32	190	35			
7801107	Cylindrical Shank Short	Normal	PSE15R032SS32-2S	1	32	2	32	130	45	
7801108			PSE15R040SS32-3S	2	40	3	32	140	50	
7801109			PSE15R050SS32-3S	2	50	3	32	130	45	
7801110			PSE15R063SS32-4S	2	63	4	32	130	45	
7801106			PSE15R025SS25-2S	1	25	2	25	120	35	
7801130			PSE15R028SS25-2S	2	28	2	25	120	35	
7801131		PSE15R030SS32-3S	1	30	3	32	130	45		
7801111		PSE15R032SS32-3S	1	32	3	32	130	45		
7801132		PSE15R035SS32-3S	2	35	3	32	130	35		
7801112		PSE15R040SS32-4S	2	40	4	32	140	50		
7801113		PSE15R050SS32-5S	2	50	5	32	130	45		
7801114		PSE15R063SS32-6S	2	63	6	32	130	45		

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

continued on next page

This item is stocked overseas. Please contact OSG for availability and delivery.





List 78011 (Continued)

PSE SS (Metric)



Recommended Materials: p1205
Accessories & Inserts: p1203-1204
Maximum Ramping Angle: p1206



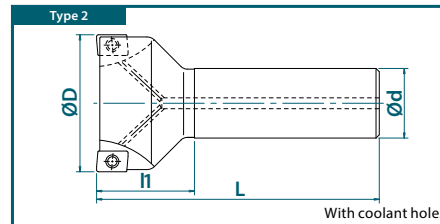
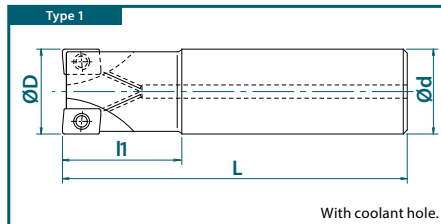
EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D		d	L	L1	
7801133	Cylindrical Shank Long	Close	PSE15R025SS25-2L	1	25	2	25	170	70	ZDKT15...
7801143			PSE15R026SS25-2L	2	26	2	25	170	35	
7801134			PSE15R028SS25-2L	2	28	2	25	170	35	
7801135			PSE15R030SS32-3L	1	30	3	32	190	90	
7801136			PSE15R032SS32-3L	1	32	3	32	190	90	
7801144			PSE15R033SS32-3L	2	33	3	32	190	45	
7801137			PSE15R035SS32-3L	2	35	3	32	190	45	
7801138			Normal	PSE15R040SS32-3L	2	40	3	32	190	

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



This item is stocked overseas. Please contact OSG for availability and delivery.





List 78012

PSE Bore (Inch)



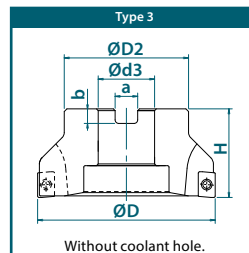
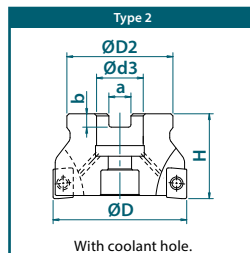
Recommended Materials: p1205
Accessories & Inserts: p1203-1204
Maximum Ramping Angle: p1206



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Hole Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert	
					D		H	D2	d3	a	b		
7801200	Bore	Normal	PSE11R200A075-5	2	2.000	5	1.575	1.772	0.750	0.315	0.197	ZD_T11...	
7801201			PSE11R250A075-6	2	2.500	6	1.575	1.968	0.750	0.315	0.197		
7801202			PSE11R300A100-7	2	3.000	7	1.968	2.362	1.000	0.375	0.236		
7801203			PSE11R200A075-7	2	2.000	7	1.575	1.772	0.750	0.315	0.197		
7801204			Close	PSE11R250A075-8	2	2.500	8	1.575	1.968	0.750	0.315		0.197
7801205				PSE11R300A100-10	2	3.000	10	1.968	2.362	1.000	0.375		0.236
7801206		Normal	PSE15R200A075-3	2	2.000	3	1.575	1.772	0.750	0.315	0.197	ZDKT15...	
7801207			PSE15R250A075-4	2	2.500	4	1.575	1.968	0.750	0.315	0.197		
7801208			PSE15R300A100-5	2	3.000	5	1.968	2.362	1.000	0.375	0.236		
7801209			PSE15R400A150-7	3	4.000	7	1.968	2.756	1.500	0.625	0.394		
7801210			PSE15R500A150-8	3	5.000	8	2.480	3.543	1.500	0.625	0.394		
7801216			PSE15R600A150-10	3	6.000	10	2.480	3.740	1.500	0.625	0.394		
7801211	Close	PSE15R200A075-5	2	2.000	5	1.575	1.772	0.750	0.315	0.197	ZDKT15...		
7801212		PSE15R250A075-6	2	2.500	6	1.575	1.968	0.750	0.315	0.197			
7801213		PSE15R300A100-8	2	3.000	8	1.968	2.362	1.000	0.375	0.236			
7801214		PSE15R400A150-10	3	4.000	10	1.968	2.756	1.500	0.625	0.394			
7801215		PSE15R500A150-11	3	5.000	11	2.480	3.543	1.500	0.625	0.394			
7801217		PSE15R600A150-12	3	6.000	12	2.480	3.740	1.500	0.625	0.394			

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



List 78010

PSE Bore (Metric)



Recommended Materials: p1205
Accessories & Inserts: p1203-1204
Maximum Ramping Angle: p1206

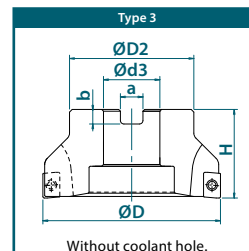
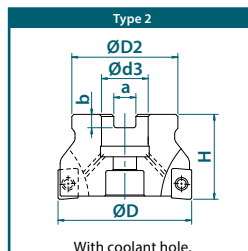
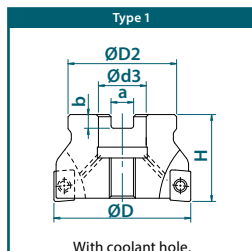


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Hole Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D		H	D2	d3	a	b	
7801000	Bore	Normal	PSE11R040M16-4	1	40	4	40	38	16	8.4	5.6	ZD_T11...
7801001			PSE11R050M22-5	1	50	5	40	45	22	10.4	6.3	
7801002			PSE11R063M22-6	2	63	6	40	50	22	10.4	6.3	
7801003			PSE11R080M27-7	2	80	7	50	60	27	12.4	7	
7801020			PSE11R080M25.4-7	2	80	7	50	60	25.4	9.5	6	
7801004			PSE11R040M16-6	1	40	6	40	38	16	8.4	5.6	
7801005		PSE11R050M22-7	1	50	7	40	45	22	10.4	6.3		
7801006		PSE11R063M22-8	2	63	8	40	50	22	10.4	6.3		
7801007		PSE11R080M27-10	2	80	10	50	60	27	12.4	7		
7801021		PSE11R080M25.4-10	2	80	10	50	60	25.4	9.5	6		
7801008		PSE15R040M16-3	1	40	3	40	38	16	8.4	5.6		
7801009		PSE15R050M22-3	1	50	3	40	45	22	10.4	6.3		
7801010		PSE15R063M22-4	2	63	4	40	50	22	10.4	6.3		
7801011		PSE15R080M27-5	2	80	5	50	60	27	12.4	7		
7801022		PSE15R080M25.4-5	2	80	5	50	60	25.4	9.5	6		
7801012		PSE15R100M32-7	2	100	7	50	70	32	14.4	8		
7801023		PSE15R100M31.7-7	3	100	7	50	70	31.75	12.7	8		
7801024		PSE15R125M38.1-8	3	125	8	63	90	38.1	15.9	10		
7801014		PSE15R040M16-4	1	40	4	40	38	16	8.4	5.6		
7801015		PSE15R050M22-5	1	50	5	40	45	22	10.4	6.3		
7801016		PSE15R063M22-6	2	63	6	40	50	22	10.4	6.3		
7801017		PSE15R080M27-8	2	80	8	50	60	27	12.4	7		
7801025		PSE15R080M25.4-8	2	80	8	50	60	25.4	9.5	6		
7801018		PSE15R100M32-10	2	100	10	50	70	32	14.4	8		
7801026		PSE15R100M31.7-10	3	100	10	50	70	31.75	12.7	8		
7801027		PSE15R125M38.1-11	3	125	11	63	90	38.1	15.9	10		

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.



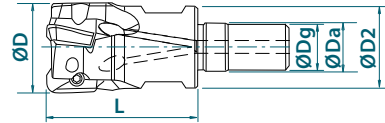


List 52601

PSE ASF (Inch)



Recommended Materials: p1205
 Accessories & Inserts: p1203-1204
 Maximum Ramping Angle: p1206
 SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D		Da	Dg	L	D2		
52601000	Screw Fit Head	PSE11R063ASF8-2	0.625	2	0.335	M8	1.063	0.571	10	ZD_T11...
52601001		PSE11R075ASF10-3	0.750	3	0.413	M10	1.299	0.709	14	
52601002		PSE11R100ASF12-3	1.000	3	0.492	M12	1.378	0.905	17	
52601003		PSE11R125ASF16-3	1.250	3	0.669	M16	1.575	1.102	22	ZDKT15...
52601004		PSE15R100ASF12-2	1.000	2	0.492	M12	1.378	0.905	17	
52601005		PSE15R125ASF16-3	1.250	3	0.669	M16	1.575	1.102	22	
52601006	PSE15R150ASF16-4	1.500	4	0.669	M16	1.575	1.102	22		

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected.

The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



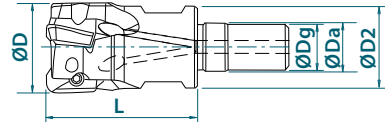


List 78016

PSE SF (Metric)



Recommended Materials: p1205
Accessories & Inserts: p1203-1204
Maximum Ramping Angle: p1206
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D		Da	Dg	L	D2		
7801600	Screw Fit Head	PSE11R016SF8-2	16	2	8.5	M8	27	14.5	10	ZD_T11...
7801612		PSE11R017SF8-2	17	2	8.5	M8	27	14.5	10	
7801613		PSE11R018SF8-2	18	2	8.5	M8	27	14.5	10	
7801601		PSE11R020SF10-3	20	3	10.5	M10	33	18	14	
7801614		PSE11R021SF10-3	21	3	10.5	M10	33	18	14	
7801615		PSE11R022SF10-3	22	3	10.5	M10	33	18	14	
7801602		PSE11R025SF12-4	25	4	12.5	M12	35	23	17	
7801616		PSE11R026SF12-3	26	3	12.5	M12	35	23	17	
7801603		PSE11R028SF12-4	28	4	12.5	M12	35	23	17	
7801604		PSE11R032SF16-5	32	5	17	M16	40	28	22	
7801617		PSE11R033SF16-3	33	3	17	M16	40	28	22	
7801605		PSE11R035SF16-5	35	5	17	M16	40	28	22	
7801606		PSE11R040SF16-6	40	6	17	M16	40	28	22	
7801607		PSE15R025SF12-2	25	2	12.5	M12	35	23	17	
7801618		PSE15R026SF12-2	26	2	12.5	M12	35	23	17	
7801608		PSE15R028SF12-2	28	2	12.5	M12	35	23	17	
7801609		PSE15R032SF16-3	32	3	17	M16	40	28	22	
7801619		PSE15R033SF16-3	33	3	17	M16	40	28	22	
7801610	PSE15R035SF16-3	35	3	17	M16	40	28	22		
7801611	PSE15R040SF16-4	40	4	17	M16	40	28	22		
										ZDKT15...

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected.

The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.

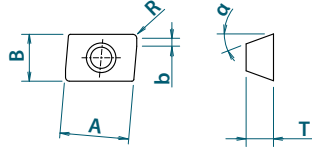




List 78PSE

NEW SIZES

PSE/PSEL Inserts



Designation	No. of Cutting Edges	Insert Size						EDP Number															
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	Aa Max (mm)	CK010	XC3020	XP3025	XC3030	XP3035	XP2025	XP2040	XC1015	XC5035	XC5040	XP6015					
ZDKT11T302FR-NM	2	11x6.8	3.8	15°	0.2	2.0	10	7811048	-	-	-	-	-	-	-	-	-	-	-				
ZDKT11T304FR-NM					0.4	1.8		7811049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDKT11T308FR-NM					0.8	1.4		7811023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T302FR-NM					0.2	2.0		7811010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T304FR-NM					0.4	1.8		7811024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T308FR-NM					0.8	1.4		7811014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T312FR-NM			1.2		1.4	7811015		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T316FR-NM			1.6		1.4	7811017		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T320FR-NM			2.0		1.4	7811018		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T325FR-NM			2.5		1.4	7811019		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T332FR-NM			3.2		0.8	7811020		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T340FR-NM			4.0		-	7811021		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T350FR-NM			5.0		-	7811022		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDKT11T304SR-GL			0.4		1.8	-		-	-	7825024	7814024	-	-	-	-	-	-	-	-	-	-	-	
ZDKT11T308SR-GL			0.8		1.4	-		-	-	7827026	7828026	7825026	7814026	7826026	7813026	-	-	-	-	-	-	-	
ZDKT11T312SR-GL			1.2		1.0	-		-	-	-	-	-	-	-	7813034	-	-	-	-	-	-	-	
ZDKT11T320SR-GL			2.0		2.1	-		-	-	7825035	7814035	-	-	-	7813035	-	-	-	-	-	-	-	
ZDKT11T332SR-GL			3.2		1.5	-		-	-	-	-	-	-	-	7813036	-	-	-	-	-	-	-	
ZDKT11T304SR-GM			0.4	1.8	-	-	-	7827025	7828025	7825025	7814025	7826025	7813025	7812025	-	-	-	-	-	-			
ZDKT11T308SR-GM			0.8	1.4	-	-	-	7827032	7828032	7825032	7814032	7826032	7813032	-	-	-	-	-	-	-			
ZDKT11T312SR-GM			1.2	1.0	-	-	-	-	-	-	7814053	-	7813053	-	-	-	-	-	-	-			
ZDKT11T320SR-GM			2.0	2.1	-	-	-	-	-	7814038	-	7813038	-	-	-	-	-	-	-	-			
ZDKT11T325SR-GM			2.5	1.6	-	-	-	7825039	7814039	-	-	-	-	-	-	-	-	-	-	-			
ZDKT11T330SR-GM			3.0	1.5	-	-	-	-	-	7814054	-	7813054	-	-	-	-	-	-	-	-			
ZDKT11T340SR-GM			4.0	-	-	-	-	-	-	7814055	-	7813055	-	-	-	-	-	-	-	-			
ZDKT11T308SR-GR			0.8	1.4	-	-	-	7827033	7828033	7825033	7814033	-	7813033	7812033	-	-	-	-	-	-			
ZDKT11T308SR-HR			0.8	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7824035			
ZDKT11T304ER-SM			0.4	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816034	-			
ZDKT11T308ER-SM			0.8	1.4	-	-	-	-	-	-	-	-	-	-	7815031	7816031	-	-	-	-			
ZDKT11T312ER-SM			1.2	1.1	-	-	-	-	-	-	-	-	-	-	-	7816040	-	-	-	-			
ZDKT11T316ER-SM			1.6	0.8	-	-	-	-	-	-	-	-	-	-	7815027	7816027	-	-	-	-			
ZDKT11T320ER-SM			2.0	0.3	-	-	-	-	-	-	-	-	-	-	-	-	7816041	-	-	-			
ZDKT11T325ER-SM			2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	7816042	-	-	-			
ZDKT11T332ER-SM			3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	7816043	-	-	-			
ZDKT11T340ER-SM			4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	7816044	-	-	-			
ZDKT150508FR-NM			0.8	1.6	-	-	-	7811046	-	-	-	-	-	-	-	-	-	-	-	-			
ZDKT150508SR-GL	0.8	1.6	-	-	-	-	7827057	7828057	7825057	7814057	7826057	7813057	-	-	-	-	-	-					
ZDKT150508SR-GM	0.8	1.6	-	-	-	-	7827028	7828028	7825029	7814029	7826029	7813028	7812029	-	-	-	-	-					
ZDKT150512SR-GM	1.2	1.2	-	-	-	-	-	-	7814077	-	7813077	-	-	-	-	-	-	-					
ZDKT150516SR-GM	1.6	0.8	-	-	-	-	-	-	7814078	-	7813078	-	-	-	-	-	-	-					
ZDKT150520SR-GM	2.0	2.1	-	-	-	-	-	-	7814079	-	7813079	-	-	-	-	-	-	-					
ZDKT150530SR-GM	3.0	1.9	-	-	-	-	-	-	7814080	-	7813080	-	-	-	-	-	-	-					
ZDKT150540SR-GM	4.0	1.1	-	-	-	-	-	-	7814081	-	7813081	-	-	-	-	-	-	-					
ZDKT150550SR-GM	5.0	0.7	-	-	-	-	-	-	7814082	-	7813082	-	-	-	-	-	-	-					
ZDKT150508SR-GR	0.8	1.6	-	-	-	-	-	7827058	7828058	7825058	7814058	-	7813058	7812058	-	-	-	-					
ZDKT150508SR-HR	0.8	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7824036					
ZDKT150508ER-SM	0.8	1.6	-	-	-	-	-	-	-	-	-	-	-	7815056	7816056	-	-	-					


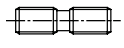

Packed: 10 pcs.





List 7808H

PSE Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter		Recommended Tightening Torque
				(mm)	(inch)	
 Clamping Screw	7808107	FS25656P (Torx 8IP)	ZD_T11...	PSE SS/SF Ø16-35	PSE11 SA/FA/ASF Ø.625-1.25"	1.6 Nm
	7808109	FS25673P (Torx 8IP)		PSE BORE Ø40-80	PSE11 BORE Ø2-3"	1.6 Nm
	7808115	FS35686P (Torx 15IP)	ZDKT15...	PSE SS/SF Ø25-63 PSE BORE Ø40-125	PSE SA/FA/ASF Ø1-1.5" PSE15 BORE Ø2-6"	3.2 Nm
 Power Screw	7808150	PS0830 (M8x30)	ZD_T11... ZDKT15...	PSE BORE Ø40	n/a	15.0 Nm
	7808151	PS1031 (M10x31)	ZD_T11... ZDKT15...	PSE BORE Ø50	n/a	20.0 Nm
 Wrench	7808225	8IP-D (Torx 8IP)	ZD_T11...	PSE SS/SF Ø16-35 PSE BORE Ø40-80	PSE11 SA/FA/ASF Ø.625-1.25" PSE11 BORE Ø2-3"	
	7808228	15IP-D (Torx 15IP)	ZDKT15...	PSE SS/SF Ø25-63 PSE BORE Ø40-125	PSE15 SA/FA/ASF Ø1-1.5" PSE15 BORE Ø2-6"	

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

Work Material		Tensile Strength - Hardness	Insert Size							
			ZD T11...				ZDKT15...			
			Side Milling Aa: 0.394" • Ar: 0.2D		Face Milling Aa: 0.118" • Ar: 1.0D		Side Milling Aa: 0.551" • Ar: 0.2D		Face Milling Aa: 0.197" • Ar: 1.0D	
			Milling Speed Vc (SFM)	Feed Per Tooth fz (in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz (in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz (in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz (in/t)
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (330 - 820)	0.010 (0.008 - 0.020)	590 (330 - 820)	0.005 (0.002 - 0.008)	590 (330 - 820)	0.012 (0.008 - 0.024)	590 (330 - 820)	0.006 (0.002 - 0.010)
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (330 - 820)	0.008 (0.006 - 0.016)	590 (330 - 820)	0.004 (0.002 - 0.008)	590 (330 - 820)	0.010 (0.006 - 0.020)	590 (330 - 820)	0.005 (0.002 - 0.008)
	Die Steels (H13, D2)	~280 HB	495 (260 - 655)	0.008 (0.006 - 0.016)	495 (260 - 655)	0.004 (0.002 - 0.007)	495 (260 - 655)	0.010 (0.006 - 0.020)	495 (260 - 655)	0.005 (0.002 - 0.008)
M	Stainless Steels(Dry) (304SS, 420SS)	~250 HB	495 (260 - 655)	0.007 (0.006 - 0.016)	495 (260 - 655)	0.004 (0.004 - 0.007)	495 (260 - 655)	0.008 (0.006 - 0.018)	495 (260 - 655)	0.005 (0.004 - 0.008)
	Stainless Steels(Wet) (304SS, 420SS)	~250 HB	260 (195 - 395)	0.007 (0.006 - 0.016)	260 (195 - 395)	0.004 (0.004 - 0.007)	260 (195 - 395)	0.008 (0.006 - 0.018)	260 (195 - 395)	0.005 (0.004 - 0.008)
K	Cast Iron (FC250)	~350 N/mm ²	590 (330 - 985)	0.010 (0.006 - 0.020)	590 (330 - 985)	0.005 (0.002 - 0.008)	590 (330 - 985)	0.012 (0.008 - 0.024)	590 (330 - 985)	0.006 (0.002 - 0.010)
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	590 (330 - 820)	0.006 (0.004 - 0.016)	590 (330 - 820)	0.005 (0.002 - 0.008)	590 (330 - 820)	0.008 (0.006 - 0.020)	590 (330 - 820)	0.006 (0.002 - 0.010)
N	Aluminum Alloys (6061, 7075)	~13% Si	985 (655 - 4920)	0.012 (0.008 - 0.020)	985 (655 - 4920)	0.006 (0.004 - 0.010)	985 (655 - 4920)	0.014 (0.008 - 0.024)	985 (655 - 4920)	0.007 (0.004 - 0.012)
S	Heat Resistant Alloys (Inconel 718)	-	115 (85 - 195)	0.006 (0.004 - 0.012)	115 (85 - 195)	0.004 (0.002 - 0.006)	115 (85 - 195)	0.008 (0.004 - 0.012)	115 (85 - 195)	0.004 (0.002 - 0.006)
	Titanium Alloy (Ti-6Al-4V)	-	130 (100 - 395)	0.007 (0.004 - 0.014)	130 (100 - 395)	0.004 (0.004 - 0.010)	130 (100 - 395)	0.009 (0.004 - 0.014)	130 (100 - 395)	0.004 (0.004 - 0.010)
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	330 (130 - 495)	0.007 (0.004 - 0.012)	330 (130 - 495)	0.004 (0.003 - 0.008)	330 (130 - 495)	0.008 (0.004 - 0.014)	330 (130 - 495)	0.005 (0.003 - 0.010)
	Die Cast Steels (A2, S7)	43 - 48 HRC	260 (130 - 395)	0.005 (0.003 - 0.008)	260 (130 - 395)	0.003 (0.002 - 0.006)	260 (130 - 395)	0.006 (0.003 - 0.010)	260 (130 - 395)	0.004 (0.002 - 0.008)
	Hardened Steels (D2)	50 - 55 HRC	195 (130 - 295)	0.004 (0.002 - 0.008)	195 (130 - 295)	0.002 (0.002 - 0.004)	195 (130 - 295)	0.005 (0.002 - 0.008)	195 (130 - 295)	0.003 (0.002 - 0.005)

Recommended Materials by Application

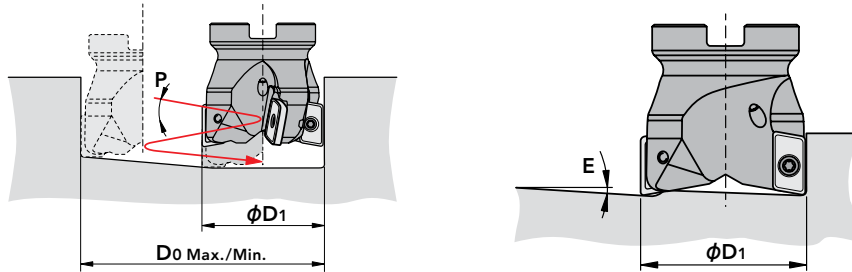
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XP3025	GL / GM / GR	Yes	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XC3030	GL / GM / GR	-	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XP3035	GL / GM / GR	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XP2025	GL / GM	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XP2040	GL / GM / GR	-	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>
		Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XC1015	GM / GR	-			<input checked="" type="checkbox"/>			
XC5035	SM	-		<input checked="" type="checkbox"/>				
		Yes		<input type="checkbox"/>			<input type="checkbox"/>	
XC5040	SM	Yes		<input type="checkbox"/>			<input checked="" type="checkbox"/>	
XP6015	HR	-	<input type="checkbox"/>		<input type="checkbox"/>			<input checked="" type="checkbox"/>

GL:Light Cutting GM:Medium Cutting GR:Rough Cutting NM:Aluminum SM:Heat Resistant Alloy HR: Hardened Steel

good best



Maximum Ramping Angle (E) & Helical Angle (P)



Insert Size	ZD_T11...				ZDKT15...			
Diameter (inch)	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle
D1	E	D ₀ Min.	D ₀ Max.	P	E	D ₀ Min.	D ₀ Max.	P
0.625	10.8°	0.935	1.187	9.5°	-	-	-	-
0.750	9.8°	1.185	1.437	7.0°	-	-	-	-
1.000	7.4°	1.685	1.927	4.4°	9.5°	1.488	1.921	7.4°
1.250	4.8°	2.158	2.437	3.2°	6.8°	1.988	2.421	5.0°
1.500	2.9°	2.685	2.937	2.2°	5.1°	2.488	2.921	3.2°
2.000	2.1°	3.685	3.937	1.6°	2.4°	3.488	3.921	2.4°
2.500	1.8°	4.685	4.937	1.4°	2.3°	4.488	4.921	1.4°
3.000	1.4°	5.685	5.937	1.0°	2.0°	5.488	5.921	1.3°
4.000	-	-	-	-	1.4°	7.488	7.921	1.0°
5.000	-	-	-	-	0.8°	9.488	9.921	0.8°
6.000	-	-	-	-	0.7°	11.488	11.921	0.6°





List 53000

PSEL SA/FA (Inch)



Recommended Materials: p1213
Accessories & Inserts: p1210-1211

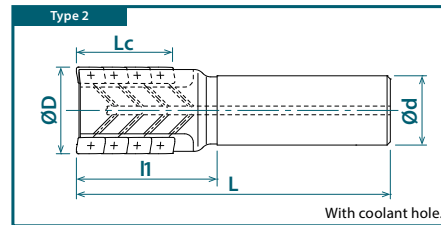
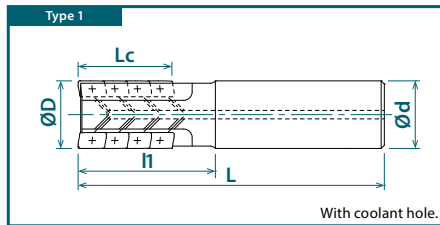


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (inch)	Shank Dia. (inch)	Overall Length (inch)	Neck Length (inch)	Applicable Insert
					D				Lc	d	L	L1	
53000000	Cylindrical Shank Short	Normal	PSEL11R100SA100-2-27	1	1.000	2	3	6	1.063	1.000	4.921	1.968	ZD_T11...
53000001			PSEL11R125SA125-2-37	1	1.250	2	4	8	1.457	1.250	5.512	2.362	
53000002			PSEL11R125SA125-3-45	1	1.250	3	5	15	1.791	1.250	5.512	2.362	
53000003			PSEL11R150SA125-3-37	2	1.500	3	4	12	1.457	1.250	5.512	2.362	
53000004			PSEL11R150SA125-4-45	2	1.500	4	5	20	1.791	1.250	5.512	2.362	
53000005			PSEL15R150SA125-2-38	2	1.500	2	3	6	1.496	1.250	5.512	2.362	
53000006	Weldon Shank Short	Normal	PSEL11R100FA100-2-27	1	1.000	2	3	6	1.063	1.000	4.248	1.968	ZD_T11...
53000007			PSEL11R125FA125-2-37	1	1.250	2	4	8	1.457	1.250	4.642	2.362	
53000008			PSEL11R125FA125-3-45	1	1.250	3	5	15	1.791	1.250	4.642	2.362	
53000009			PSEL11R150FA125-3-37	2	1.500	3	4	12	1.457	1.250	4.642	2.362	
53000010			PSEL11R150FA125-4-45	2	1.500	4	5	20	1.791	1.250	4.642	2.362	
53000011			PSEL15R150FA125-2-38	2	1.500	2	3	6	1.496	1.250	4.642	2.362	

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected.

The body corner should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).





List 78029

PSEL SS (Metric)



Recommended Materials: p1213
Accessories & Inserts: p1210-1211

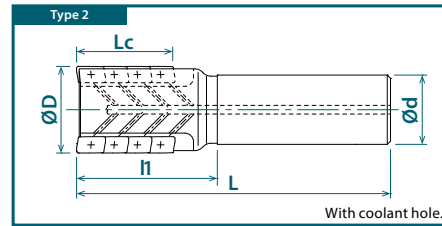
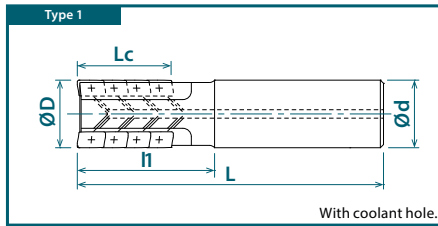


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (mm)	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D				Lc	d	L	L1	
7802900	Cylindrical Shank	Normal	PSEL11R025SS25-2-27	1	25	2	3	6	27.0	25	125	50	ZD_T11...
7802901			PSEL11R032SS32-2-37	1	32	2	4	8	37.0	32	140	60	
7802902			PSEL11R032SS32-3-45	1	32	3	5	15	45.5	32	140	60	
7802903			PSEL11R040SS42-3-37	1	40	3	4	12	37.0	42	140	60	
7802904			PSEL11R040SS42-4-45	1	40	4	5	20	45.5	42	140	60	ZDKT15...
7802905			PSEL15R040SS42-2-38	1	40	2	3	6	38.0	42	140	60	
7802906			PSEL15R050SS42-3-50	2	50	3	4	12	50.5	42	144	64	

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.





List 53001

PSEL Bore (Inch)



Recommended Materials: p1213
Accessories & Inserts: p1210-1211



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (inch)	Tool Height (inch)	Flange Dia. (inch)	Bore Hole Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert
					D				Lc	H	D2	d3	a	b	
53001000	Bore	Normal	PSEL15R200A075-3-50	1	2.000	3	4	12	1.988	2.913	1.772	0.750	0.315	0.197	ZDKT15...
53001001			PSEL15R250A100-4-50	1	2.500	4	4	16	1.988	2.913	2.362	1.000	0.375	0.236	
53001002			PSEL15R300A100-4-63	1	3.000	4	5	20	2.480	3.464	2.362	1.000	0.375	0.236	

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



List 78028

PSEL Bore (Metric)



Recommended Materials: p1213
Accessories & Inserts: p1210-1211

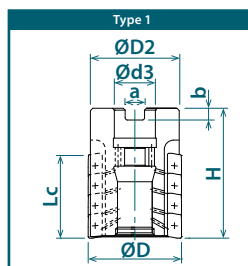


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (mm)	Tool Height (mm)	Flange Dia. (mm)	Bore Hole Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D				Lc	H	D2	d3	a	b	
7802850	Bore	Normal	PSEL15R050M22-3-50	1	50	3	4	12	50.5	74	45	22	10.4	6.3	ZDKT15...
7802851			PSEL15R063M27-3-50	1	63	3	4	12	50.5	74	60	27	12.4	7	
7802852			PSEL15R080M32-4-63	1	80	4	5	20	63	88	76	32	14.4	8	

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.

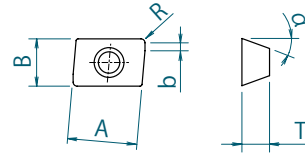




NEW SIZES

List 78PSE

PSE/PSEL Inserts



Designation	No. of Cutting Edges	Insert Size					EDP Number															
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	Aa Max (mm)	CK010	XC3020	XP3025	XC3030	XP3035	XP2025	XP2040	XC1015	XC5035	XC5040	XP6015				
ZDKT11T302FR-NM	2	11x6.8	3.8	15°	0.2	2.0	7811048	-	-	-	-	-	-	-	-	-	-	-	-			
ZDKT11T304FR-NM					0.4	1.8	7811049	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDKT11T308FR-NM					0.8	1.4	7811023	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T302FR-NM					0.2	2.0	7811010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T304FR-NM					0.4	1.8	7811024	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T308FR-NM					0.8	1.4	7811014	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T312FR-NM					1.2	1.4	7811015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ZDHT11T316FR-NM			1.6		1.4	7811017	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T320FR-NM			2.0		1.4	7811018	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T325FR-NM			2.5		1.4	7811019	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T332FR-NM			3.2		0.8	7811020	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T340FR-NM			4.0		-	7811021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDHT11T350FR-NM			5.0		-	7811022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
ZDKT11T304SR-GL			0.4		1.8	-	-	-	7825024	7814024	-	-	-	-	-	-	-	-	-	-	-	
ZDKT11T308SR-GL		0.8	1.4	-	7827026	7828026	7825026	7814026	7826026	7813026	-	-	-	-	-	-	-	-	-			
ZDKT11T312SR-GL		1.2	1.0	-	-	-	-	-	-	7813034	-	-	-	-	-	-	-	-	-			
ZDKT11T320SR-GL		2.0	2.1	-	-	-	7825035	7814035	-	7813035	-	-	-	-	-	-	-	-	-			
ZDKT11T332SR-GL		3.2	1.5	-	-	-	-	-	-	7813036	-	-	-	-	-	-	-	-	-			
ZDKT11T304SR-GM		0.4	1.8	-	7827025	7828025	7825025	7814025	7826025	7813025	7812025	-	-	-	-	-	-	-	-			
ZDKT11T308SR-GM		0.8	1.4	-	7827032	7828032	7825032	7814032	7826032	7813032	-	-	-	-	-	-	-	-	-			
ZDKT11T312SR-GM		1.2	1.0	-	-	-	-	7814053	-	7813053	-	-	-	-	-	-	-	-	-			
ZDKT11T320SR-GM		2.0	2.1	-	-	-	-	7814038	-	7813038	-	-	-	-	-	-	-	-	-			
ZDKT11T325SR-GM		2.5	1.6	-	-	-	7825039	7814039	-	-	-	-	-	-	-	-	-	-	-			
ZDKT11T330SR-GM		3.0	1.5	-	-	-	-	7814054	-	7813054	-	-	-	-	-	-	-	-	-			
ZDKT11T340SR-GM		4.0	-	-	-	-	-	7814055	-	7813055	-	-	-	-	-	-	-	-	-			
ZDKT11T308SR-GR		0.8	1.4	-	7827033	7828033	7825033	7814033	-	7813033	7812033	-	-	-	-	-	-	-	-			
ZDKT11T308SR-HR		0.8	1.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7824035			
ZDKT11T304ER-SM		0.4	1.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816034	-			
ZDKT11T308ER-SM	0.8	1.4	-	-	-	-	-	-	-	-	-	-	-	7815031	-	-	7816031	-				
ZDKT11T312ER-SM	1.2	1.1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816040	-				
ZDKT11T316ER-SM	1.6	0.8	-	-	-	-	-	-	-	-	-	-	-	7815027	-	-	7816027	-				
ZDKT11T320ER-SM	2.0	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816041	-				
ZDKT11T325ER-SM	2.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816042	-				
ZDKT11T332ER-SM	3.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816043	-				
ZDKT11T340ER-SM	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7816044	-				
ZDKT150508FR-NM	0.8	1.6	7811046	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
ZDKT150508SR-GL	0.8	1.6	-	7827057	7828057	7825057	7814057	7826057	7813057	-	-	-	-	-	-	-	-	-				
ZDKT150508SR-GM	0.8	1.6	-	7827028	7828028	7825029	7814029	7826029	7813028	7812029	-	-	-	-	-	-	-	-				
ZDKT150512SR-GM	1.2	1.2	-	-	-	-	7814077	-	7813077	-	-	-	-	-	-	-	-	-				
ZDKT150516SR-GM	1.6	0.8	-	-	-	-	7814078	-	7813078	-	-	-	-	-	-	-	-	-				
ZDKT150520SR-GM	2.0	2.1	-	-	-	-	7814079	-	7813079	-	-	-	-	-	-	-	-	-				
ZDKT150530SR-GM	3.0	1.9	-	-	-	-	7814080	-	7813080	-	-	-	-	-	-	-	-	-				
ZDKT150540SR-GM	4.0	1.1	-	-	-	-	7814081	-	7813081	-	-	-	-	-	-	-	-	-				
ZDKT150550SR-GM	5.0	0.7	-	-	-	-	7814082	-	7813082	-	-	-	-	-	-	-	-	-				
ZDKT150508SR-GR	0.8	1.6	-	7827058	7828058	7825058	7814058	-	7813058	7812058	-	-	-	-	-	-	-	-				
ZDKT150508SR-HR	0.8	1.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7824036				
ZDKT150508ER-SM	0.8	1.6	-	-	-	-	-	-	-	-	-	-	-	7815056	7816056	-	-	-				

Packed: 10 pcs.



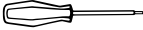
Note: For the 2nd and subsequent steps, use an insert with R0.8 or smaller.





List 7808H

PSEL Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter		Recommended Tightening Torque
				(mm)	(inch)	
 Clamping Screw	7808107	FS25656P (Torx 8IP)	ZD_T11...	PSEL SS Ø25	PSEL11 SA/FA Ø1"	1.6 Nm
	7808109	FS25673P (Torx 8IP)		PSEL SS Ø32-40	PSEL11 SA/FA Ø1.25-1.5"	1.6 Nm
	7808115	FS35686P (Torx 15IP)	ZDKT15...	PSEL SS Ø40-50 PSEL BORE Ø50-80	PSEL15 SA/FA Ø1.5" PSEL BORE Ø2-3"	3.2 Nm
 Coolant Cap Bolt	7808132	OCB-M20-08		PSEL BORE Ø50	PSEL BORE Ø2"	
	7808133	OCB-M24-10		PSEL BORE Ø63	PSEL BORE Ø2.5"	
	7808134	OCB-M30-14		PSEL BORE Ø80	PSEL BORE Ø3"	
 Wrench	7808225	8IP-D (Torx 8IP)	ZD_T11...	PSEL SS Ø25-40	PSEL11 SA/FA Ø1-1.5"	
	7808228	15IP-D (Torx 15IP)	ZDKT15...	PSEL SS Ø40-50 PSEL BORE Ø50-80	PSEL15 SA/FA Ø1.5" PSEL BORE Ø2-3"	

Packed: Clamping Screws = 10 pcs.; Coolant Cap Bolt = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

Work Material		Tensile Strength - Hardness	Insert Size			
			ZD T11...		ZDKT15...	
			Side Milling Aa: 1.1-1.5D • Ar: 0.1D Max		Side Milling Aa: 1.1-1.5D • Ar: 0.1D Max	
			Milling Speed V _c (SFM)	Feed Per Tooth f _z (in/t)	Milling Speed V _c (SFM)	Feed Per Tooth f _z (in/t)
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	525 (330 - 655)	0.010 (0.008 - 0.016)	525 (330 - 655)	0.012 (0.008 - 0.016)
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	495 (330 - 655)	0.008 (0.006 - 0.012)	495 (330 - 655)	0.010 (0.006 - 0.012)
	Die Steels (H13, D2)	~280 HB	425 (260 - 590)	0.008 (0.006 - 0.012)	425 (260 - 590)	0.010 (0.006 - 0.012)
M	Stainless Steels(Dry) (304SS, 420SS)	~250 HB	495 (330 - 655)	0.005 (0.004 - 0.012)	495 (330 - 655)	0.006 (0.004 - 0.012)
	Stainless Steels(Wet) (304SS, 420SS)	~250 HB	260 (195 - 395)	0.005 (0.004 - 0.012)	260 (195 - 395)	0.006 (0.004 - 0.012)
K	Cast Iron (FC250)	~350 N/mm ²	525 (330 - 985)	0.008 (0.008 - 0.014)	525 (330 - 985)	0.010 (0.008 - 0.014)
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	525 (330 - 820)	0.006 (0.008 - 0.012)	525 (330 - 820)	0.008 (0.008 - 0.012)
N	Aluminum Alloys (6061, 7075)	~13% Si	985 (655 - 3280)	0.010 (0.004 - 0.016)	985 (655 - 3280)	0.012 (0.004 - 0.016)
S	Heat Resistant Alloys (Inconel 718)	-	115 (85 - 195)	0.006 (0.004 - 0.012)	115 (85 - 195)	0.007 (0.004 - 0.012)
	Titanium Alloy (Ti-6Al-4V)	-	130 (100 - 395)	0.006 (0.004 - 0.012)	130 (100 - 395)	0.007 (0.004 - 0.012)
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	330 (130 - 495)	0.006 (0.004 - 0.012)	330 (130 - 495)	0.007 (0.004 - 0.012)
	Die Cast Steels (A2, S7)	43 - 48 HRC	195 (130 - 395)	0.005 (0.002 - 0.008)	195 (130 - 395)	0.006 (0.002 - 0.008)



Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
CK010	NM	Yes				<input type="checkbox"/>		
XC3020	GL / GM / GR	-	<input type="checkbox"/>		<input type="checkbox"/>			
XP3025	GL / GM / GR	Yes	<input type="checkbox"/>		<input type="checkbox"/>			
XC3030	GL / GM / GR	-	<input type="checkbox"/>		<input type="checkbox"/>			
XP3035	GL / GM / GR	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XP2025	GL / GM	Yes	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	
XP2040	GL / GM / GR	-	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>
		Yes	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>	
XC1015	GM / GR	-			<input type="checkbox"/>			
XC5035	SM	-		<input type="checkbox"/>				
		Yes		<input type="checkbox"/>			<input type="checkbox"/>	
XC5040	SM	Yes		<input type="checkbox"/>			<input type="checkbox"/>	
XP6015	HR	-	<input type="checkbox"/>		<input type="checkbox"/>			<input type="checkbox"/>

GL:Light Cutting GM:Medium Cutting
GR: Rough Cutting NM:Aluminum
SM: Heat Resistant Alloy HR: Hardened Steel

good best

Cutting Conditions Adjustment Ratio

Depth of Cut Aa	Width of Cut Ar Max	Milling Speed Ratio	Feed Rate Ratio
< 0.2D	1D	0.8	0.5
0.25-0.3D	0.7D	0.8	0.6
0.4-0.5D	0.5D	0.9	0.7
0.6-0.7D	0.3D	0.9	0.8
0.8-1.0D	0.2D	1.0	0.9
1.1-1.5D	0.1D	1.0	1.0

Ex: For Ø1.250" PSEL with ZDKT11 inserts, Aa = 1.150",
side milling in 1050 carbon steel:
Vc = 492 SFM x 1.0 = 492 SFM
fz = 0.008 in/t x 0.9 = 0.007 in/t
Ar = 0.2 x 1.250" = 0.250" Max



List 52900

PSF SA/FA (Inch)



Recommended Materials: p1217
Accessories & Inserts: p1216



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Shank Dia. (inch)	Overall Length (inch)	Neck Length (inch)	Applicable Insert
					D		d	L	L1	
52900000	Cylindrical Shank Short	Normal	PSF09R100SA100-3S	1	1.000	3	1.000	4.724	1.378	SD_T09...
52900001			PSF09R125SA125-4S	1	1.250	4	1.250	5.118	1.772	
52900002			PSF09R150SA125-5S	2	1.500	5	1.250	5.512	1.969	
52900004	Weldon Shank Short	Normal	PSF09R100FA100-3S	1	1.000	3	1.000	3.831	1.551	
52900005			PSF09R125FA125-4S	1	1.250	4	1.250	4.378	2.098	
52900006			PSF09R150FA125-5S	2	1.500	5	1.250	4.378	2.098	

Packed: 1 pc.



List 78030

PSF SS (Metric)



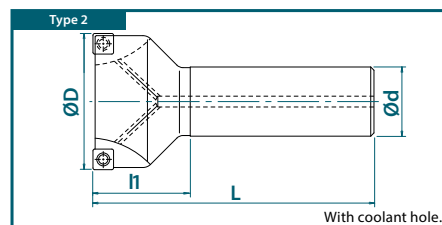
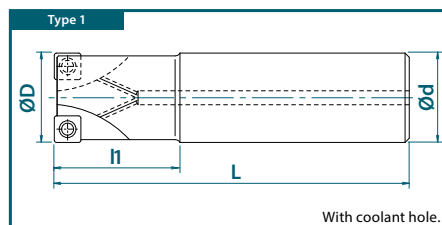
Recommended Materials: p1217
Accessories & Inserts: p1216



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D		d	L	L1	
7803001	Cylindrical Shank Short	Normal	PSF09R025SS25-3S	1	25	3	25	120	35	SD_T09...
7803002			PSF09R032SS32-4S	1	32	4	32	130	45	
7803003			PSF09R040SS32-5S	2	40	5	32	140	50	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 52901

PSF Bore (Inch)



Recommended Materials: p1217
Accessories & Inserts: p1216



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Hole Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert
					D		H	D2	d3	a	b	
52901000	Bore	Normal	PSF09R200A075-6	1	2.000	6	1.575	1.772	0.750	0.315	0.197	SD_T09...
52901001			PSF09R250A075-7	1	2.500	7	1.575	1.968	0.750	0.315	0.197	
52901002			PSF09R300A100-9	1	3.000	9	1.968	2.362	1.000	0.375	0.236	

Packed: 1 pc.



List 78130

PSF Bore (Metric)



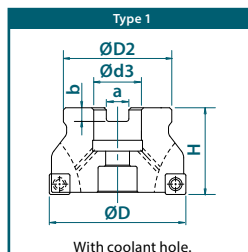
Recommended Materials: p1217
Accessories & Inserts: p1216



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Hole Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D		H	D2	d3	a	b	
7803011	Bore	Normal	PSF09R050M22-6	1	50	6	40	45	22	10.4	6.3	SD_T09...
7803012			PSF09R063M22-7	1	63	7	40	50	22	10.4	6.3	
7803013			PSF09R080M25.4-9	1	80	9	50	60	25.4	9.5	6	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

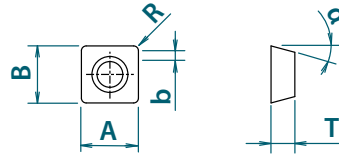




NEW SIZES

List 78PSF

PSF/PSFL Inserts



Designation	No. of Cutting Edges	Insert Size					EDP Number					
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	CK010	XC3030	XP3035	XP2040	XC1015	XC5040
SDHT09T308FR-NM	4	9.07 x 9.07	3.97	15°	0.8	2.5	7811076	-	-	-	-	-
SDKT09T308SR-GL							-	7825073	7814073	7813073	-	7816073
SDKT09T308SR-GM							-	7825074	7814074	7813074	-	-
SDKT09T308SR-GR							-	-	-	-	7812075	-
SDHT120508FR-NM							-	-	-	-	-	-
SDKT120508SR-GL		12.38 x 12.38	5	1.2	7811625	-	-	-	7813623	-	7816620	
SDKT120508SR-GM					-	7825622	7814621	-	-	-		
SDKT120508SR-GR					-	-	-	-	-	-		
					-	-	-	-	-	7812624	-	
					-	-	-	-	-	-	-	

Packed: 10 pcs.



List 7808H

PSF Accessories

Appearance	EDP No.	Designation	Applicable Cutter		Recommended Tightening Torque
			(mm)	(inch)	
 Clamping Screw	7808110	FS30573 (Torx 8)	PSF SS Ø25-40 PSF BORE Ø50-80	PSF SA/FA Ø1-1.5" PSF BORE Ø2-3"	1.6 Nm
 Wrench	7808205	T8-D (Torx 8)	PSF SS Ø25-40 PSF BORE Ø50-80	PSF SA/FA Ø1-1.5" PSF BORE Ø2-3"	

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

Work Material		Tensile Strength – Hardness	Insert Size		
			SD T09...		
			Face Milling • Side Milling		
			Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)	Depth of Cut Aa (in)
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (330 - 820)	0.005 (0.002 - 0.008)	0.120
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (330 - 820)	0.005 (0.002 - 0.008)	0.120
	Die Steels (H13, D2)	~280 HB	495 (260 - 655)	0.004 (0.002 - 0.007)	0.120
M	Stainless Steels(Dry) (304SS, 420SS)	~250 HB	495 (260 - 655)	0.004 (0.002 - 0.007)	0.080
	Stainless Steels(Wet) (304SS, 420SS)	~250 HB	260 (195 - 395)	0.004 (0.002 - 0.007)	0.080
K	Cast Iron (FC250)	~350 N/mm ²	590 (330 - 1150)	0.005 (0.002 - 0.008)	0.120
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	590 (330 - 885)	0.005 (0.002 - 0.008)	0.120
N	Aluminum Alloys (6061, 7075)	~13% Si	985 (655 - 4920)	0.006 (0.004 - 0.010)	0.120
S	Heat Resistant Alloys (Inconel 718)	-	115 (85 - 195)	0.004 (0.002 - 0.006)	0.060
	Titanium Alloy (Ti-6Al-4V)	-	130 (100 - 395)	0.004 (0.002 - 0.007)	0.060
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	295 (130 - 495)	0.004 (0.003 - 0.008)	0.060
	Die Cast Steels (A2, S7)	43 - 48 HRC	230 (130 - 395)	0.003 (0.002 - 0.006)	0.020
	Hardened Steels (D2)	50 - 55 HRC	165 (130 - 295)	0.002 (0.002 - 0.004)	0.020

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
CK010	NM	Yes				<input type="checkbox"/>		
XC3030	GL/GM	-	<input type="checkbox"/>		<input type="checkbox"/>			
XP3035	GL/GM	-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XP2040	GL/GM	-	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>
		Yes	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>		
XC1015	GR	-			<input type="checkbox"/>			
XC5040	GL	Yes		<input type="checkbox"/>			<input type="checkbox"/>	

GL:Light Cutting GM:Medium Cutting GR: Rough Cutting NM:Aluminum

good best



List 53200

PSFL SA/FA (Inch)



Recommended Materials: p1221
Accessories & Inserts: p1220



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	No. of Inserts Per Tooth	Total No. of Inserts	Length of Cut (inch)	Shank Dia. (inch)	Overall Length (inch)	Neck Length (inch)	Applicable Insert
					D				Lc	d	L	L1	
53200000	Cylindrical Shank	Normal	PSFL09R125SA125-2-36	1	1.250	2	5	10	1.417	1.250	5.512	2.362	SD_T09...
53200001			PSFL09R150SA125-3-43	2	1.500	3	6	18	1.693	1.250	5.512	2.362	
53200002	Weldon Shank	Normal	PSFL09R125FA125-2-36	1	1.250	2	5	10	1.417	1.250	4.642	2.362	
53200003			PSFL09R150FA125-3-43	2	1.500	3	6	18	1.693	1.250	4.642	2.362	

Packed: 1 pc.



List 78037

PSFL SS (Metric)



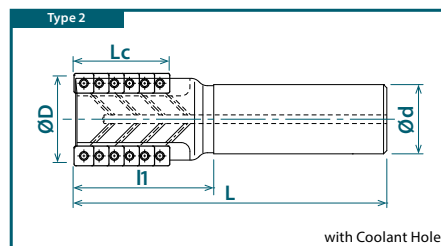
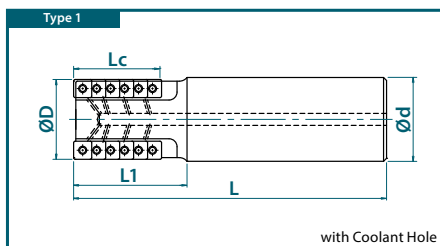
Recommended Materials: p1221
Accessories & Inserts: p1220



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	No. of Inserts Per Tooth	Total No. of Inserts	Length of Cut (mm)	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D				Lc	d	L	L1	
7803700	Cylindrical Shank	Normal	PSFL09R032SS32-2-36	1	32	2	5	10	36	32	140	60	SD_T09...
7803701			PSFL09R040SS42-3-43	1	40	3	6	18	43	42	140	60	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 53201

PSFL Bore (Inch)

NEW

Recommended Materials: p1221
Accessories & Inserts: p1220



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	No. of Inserts Per Tooth	Total No. of Inserts	Length of Cut (inch)	Tool Height (inch)	Flange Dia. (Inch)	Bore Dia. (Inch)	Keyway Width (Inch)	Keyway Depth (Inch)	Applicable Insert
					D				Lc	H	D2	d3	a	b	
53201000	Bore	Normal	PSFL09R200A075-4-57	1	2.000	4	8	32	2.244	3.000	1.941	0.750	0.315	0.197	SD_T09...
53201001			PSFL09R200A075-4-78	1	2.000	4	11	44	3.071	4.000	1.941	0.750	0.315	0.197	
53201002			PSFL12R250A100-4-70	1	2.500	4	7	28	2.756	3.500	2.402	1.000	0.375	0.236	SD_T12...
53201003			PSFL12R250A100-4-110	1	2.500	4	11	44	4.331	5.000	2.402	1.000	0.375	0.236	
53201004			PSFL12R300A125-5-80	1	3.000	5	8	40	3.150	4.000	2.890	1.250	0.500	0.315	
53201005			PSFL12R300A125-5-120	1	3.000	5	12	60	4.724	5.500	2.890	1.250	0.500	0.315	
53201006			PSFL12R400A125-6-130	1	4.000	6	13	78	5.118	6.000	3.882	1.250	0.500	0.315	

Packed: 1 pc.



List 78137

PSFL Bore (Metric)

NEW

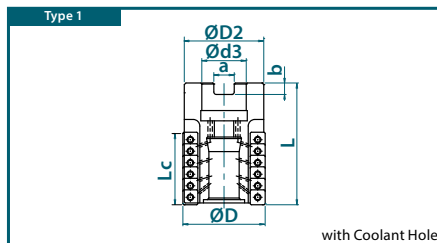
Recommended Materials: p1221
Accessories & Inserts: p1220



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	No. of Inserts Per Tooth	Total No. of Inserts	Length of Cut (mm)	Tool Height (mm)	Flange Dia. (mm)	Bore Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D				Lc	H	D2	d3	a	b	
7803702	Bore	Normal	PSFL09R050M22-4-50	1	50	4	7	28	50	75	48.5	22	10.4	6.3	SD_T09...
7803703			PSFL09R050M22-4-78	1	50	4	11	44	78	100	48.5	22	10.4	6.3	
7803706			PSFL12R063M27-4-60	1	63	4	6	24	60	85	60.5	27	12.4	7	SD_T12...
7803707			PSFL12R063M27-4-100	1	63	4	10	40	100	125	60.5	27	12.4	7	
7803708			PSFL12R080M32-5-70	1	80	5	7	35	70	95	77.3	32	14.4	8	
7803709			PSFL12R080M32-5-110	1	80	5	11	55	110	143	77.3	32	14.4	8	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

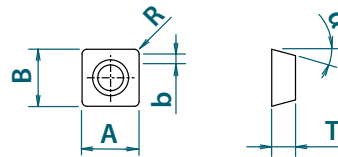




NEW SIZES

List 78PSF

PSF/PSFL Inserts



Designation	No. of Cutting Edges	Insert Size					EDP Number						
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	CK010	XC3030	XP3035	XP2040	XC1015	XC5040	
SDHT09T308FR-NM	4	9.07 x 9.07	3.97	15°	0.8	2.5	7811076	-	-	-	-	-	
SDKT09T308SR-GL							-	7825073	7814073	7813073	-	7816073	
SDKT09T308SR-GM							-	7825074	7814074	7813074	-	-	
SDKT09T308SR-GR							-	-	-	-	7812075	-	
SDHT120508FR-NM		12.38 x 12.38	5			1.2	7811625	-	-	-	-	-	-
SDKT120508SR-GL							-	-	7813623	-	7816620		
SDKT120508SR-GM							-	7825622	7814621	-	-		
SDKT120508SR-GR							-	-	-	-	7812624	-	

Packed: 10 pcs.



List 7808H

PSFL Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter		Recommended Tightening Torque
				(mm)	(inch)	
	7808110	FS30573 (Torx 8)	SD_T09...	PSFL SS Ø32-40 PSFL BORE Ø50	PSFL SA/FA Ø1.25-1.5" PSFL BORE Ø2"	1.6 Nm
	7808129	FS40511 (Torx 15)	SD_T12...	PSFL BORE Ø63-80	PSFL BORE Ø2.5-4"	5.0 Nm
	7808132	OCB-M20-08		PSFL BORE Ø50	PSFL BORE Ø2"	
	7808133	OCB-M24-10		PSFL BORE Ø63	PSFL BORE Ø2.5"	
	7808134	OCB-M30-14		PSFL BORE Ø80	PSFL BORE Ø3-4"	
	7808205	T8-D (Torx 8)	SD_T09...	PSFL SS Ø32-40 PSFL BORE Ø50	PSFL SA/FA Ø1.25-1.5" PSFL BORE Ø2"	
	7808208	T15-D (Torx 15)	SD_T12...	PSFL BORE Ø63-80	PSFL BORE Ø2.5-4"	

Packed: Clamping Screws = 10 pcs.; Coolant Cap Bolt = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

Work Material	Tensile Strength - Hardness	Insert Size		Insert Size	
		SD_T09...		SD_T12...	
		Face Milling • Side Milling		Face Milling • Side Milling	
		Milling Speed Vc (SFM)	Feed Per Tooth fz (in/t)	Milling Speed Vc (SFM)	Feed Per Tooth fz (in/t)
P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2)	~180 HB	525 (330 - 655)	0.010 (0.008 - 0.016)	525 (330 - 655)	0.012 (0.008 - 0.016)
	~280 HB	495 (330 - 655)	0.008 (0.006 - 0.012)	495 (330 - 655)	0.010 (0.006 - 0.012)
	~280 HB	425 (265 - 590)	0.008 (0.006 - 0.012)	425 (265 - 590)	0.010 (0.006 - 0.012)
M Stainless Steels(Dry) (304SS, 420SS) Stainless Steels(Wet) (304SS, 420SS)	~250 HB	495 (330 - 655)	0.005 (0.004 - 0.012)	495 (330 - 655)	0.006 (0.004 - 0.012)
	~250 HB	265 (200 - 395)	0.005 (0.004 - 0.012)	265 (200 - 395)	0.006 (0.004 - 0.012)
K Cast Iron (FC250) Ductile Cast Iron (60-40-18)	~350 N/mm ²	525 (330 - 985)	0.008 (0.006 - 0.014)	525 (330 - 985)	0.010 (0.008 - 0.016)
	~800 N/mm ²	525 (330 - 820)	0.008 (0.006 - 0.012)	525 (330 - 820)	0.008 (0.006 - 0.014)
N Aluminum Alloys (6061, 7075)	~13% Si	985 (655 - 3280)	0.010 (0.004 - 0.016)	985 (655 - 3280)	0.012 (0.004 - 0.016)
S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V)	-	115 (85 - 195)	0.006 (0.003 - 0.012)	115 (85 - 195)	0.007 (0.004 - 0.012)
	-	130 (100 - 395)	0.006 (0.003 - 0.012)	130 (100 - 395)	0.007 (0.004 - 0.012)
H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2)	40 - 43 HRC	330 (130 - 490)	0.006 (0.003 - 0.012)	330 (130 - 490)	0.007 (0.004 - 0.012)
	43 - 48 HRC	200 (130 - 395)	0.005 (0.002 - 0.008)	200 (130 - 395)	0.006 (0.002 - 0.012)
	50 - 55 HRC	165 (130 - 295)	0.004 (0.002 - 0.006)	165 (130 - 295)	0.004 (0.002 - 0.006)

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
CK010	NM	Yes				<input checked="" type="checkbox"/>		
XC3030	GL/GM	-	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XP3035	GL/GM	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XP2040	GL/GM	-	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>
		Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XC1015	GR	-			<input checked="" type="checkbox"/>			
XC5040	GL	Yes		<input type="checkbox"/>			<input checked="" type="checkbox"/>	

GL:Light Cutting GM:Medium Cutting GR: Rough Cutting NM:Aluminum

good best

Cutting Conditions Adjustment Ratio

Depth of Cut	Width of Cut	Milling Speed Ratio	Feed Rate Ratio
Aa	Ar Max		
< 0.2D	1D	0.8	0.5
0.25-0.3D	0.7D	0.8	0.6
0.4-0.5D	0.5D	0.9	0.7
0.6-0.7D	0.3D	0.9	0.8
0.8-1.0D	0.2D	1.0	0.9
1.1-1.5D	0.1D	1.0	1.0

Ex: For Ø1.250" PSFL with SDMT09 inserts, Aa = 1.150", side milling in 1050 carbon steel:
Vc = 495 SFM x 1.0 = 495 SFM
fz = 0.008 in/t x 0.9 = 0.007 in/t
Ar = 0.2 x 1.250" = 0.250" Max



List 53100

PSTW Bore (Inch)

NEW SIZES



SPEED FEED
P1225

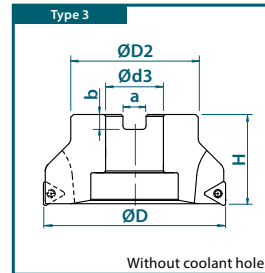
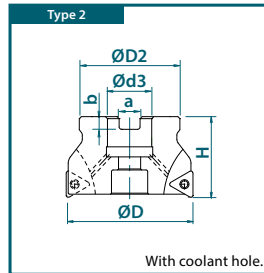
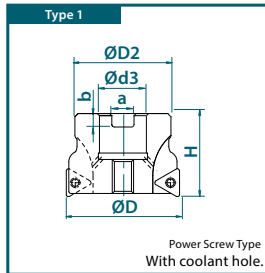


Recommended Materials: p1225
Accessories & Inserts: p1224



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert
					D		H	D2	d3	a	b	
53100000	Bore	Normal	PSTW12R200A075-3	1	2.000	3	1.575	1.772	0.750	0.315	0.197	TNKU12...
53100001			PSTW12R250A075-3	2	2.500	3	1.575	1.968	0.750	0.315	0.197	
53100002			PSTW12R300A100-5	2	3.000	5	1.968	2.362	1.000	0.375	0.236	
53100003			PSTW12R400A125-5	3	4.000	5	1.968	2.756	1.250	0.500	0.315	
53100004			PSTW12R500A150-7	3	5.000	7	2.480	3.543	1.500	0.625	0.394	
53100010			PSTW12R600A150-8	3	6.000	8	2.480	3.740	1.500	0.625	0.394	
53100005		Close	PSTW12R200A075-4	1	2.000	4	1.575	1.772	0.750	0.315	0.197	
53100006			PSTW12R250A075-5	2	2.500	5	1.575	1.968	0.750	0.315	0.197	
53100007			PSTW12R300A100-6	2	3.000	6	1.968	2.362	1.000	0.375	0.236	
53100008			PSTW12R400A125-7	3	4.000	7	1.968	2.756	1.250	0.500	0.315	
53100009			PSTW12R500A150-9	3	5.000	9	2.480	3.543	1.500	0.625	0.394	
53100011			PSTW12R600A150-10	3	6.000	10	2.480	3.740	1.500	0.625	0.394	

Packed: 1 pc.





List 78131

PSTW Bore (Metric)



SPEED FEED
P1225

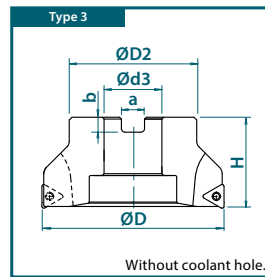
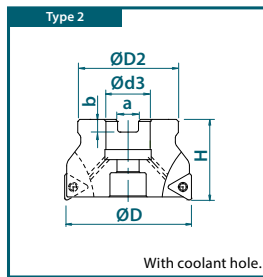
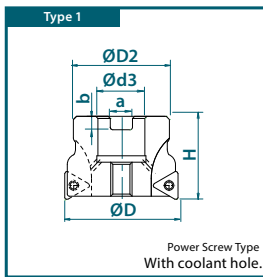


Recommended Materials: p1225
Accessories & Inserts: p1224



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D		H	D2	d3	a	b	
7803100	Bore	Normal	PSTW12R050M22-3	1	50	3	40	45	22	10.4	6.3	TNKU12...
7803102			PSTW12R063M22-3	2	63	3	40	50	22	10.4	6.3	
7803110			PSTW12R080M27-5	2	80	5	50	60	27	12.4	7	
7803104			PSTW12R080M25.4-5	2	80	5	50	60	25.4	9.5	6	
7803112			PSTW12R100M32-5	2	100	5	50	70	32	14.4	8	
7803106			PSTW12R100M31.7-5	3	100	5	50	70	32	12.7	8	
7803114			PSTW12R125M40-7	2	125	7	63	90	40	16.4	9	
7803108			PSTW12R125M38.1-7	3	125	7	63	90	38.1	15.9	10	
7803101			PSTW12R050M22-4	1	50	4	40	45	22	10.4	6.3	
7803103		PSTW12R063M22-5	2	63	5	40	50	22	10.4	6.3		
7803111		PSTW12R080M27-6	2	80	6	50	60	27	12.4	7		
7803105		PSTW12R080M25.4-6	2	80	6	50	60	25.4	9.5	6		
7803113		PSTW12R100M32-7	2	100	7	50	70	32	14.4	8		
7803107		PSTW12R100M31.7-7	3	100	7	50	70	31.8	12.7	8		
7803115		PSTW12R125M40-9	2	125	9	63	90	40	16.4	9		
7803109		PSTW12R125M38.1-9	3	125	9	63	90	38.1	15.9	10		

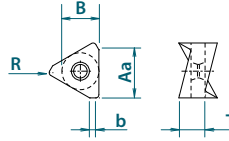
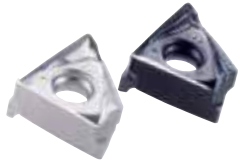
Packed: 1 pc.





List 78PSTW

PSTW Inserts




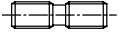
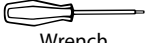
Designation	No. of Cutting Edges	Insert Size					EDP Number									
		B (mm)	T (mm)	R (mm)	b (mm)	Aa Max (mm)	CK010	XC3020	XP3025	XC3030	XP3035	XP2040	XC1015	XP1020	XC5040	
TN KU120608ER-NM	6	10.8	6.55	0.8	1.25	12	7811087	-	-	-	-	-	-	-	-	
TN KU120608ER-GL				0.8	1.5		-	-	-	7825089	7814089	7813089	-	-	-	
TN KU120608ER-GM				0.8	1.5		-	7827088	7828088	7825088	7814088	7813088	7812088	7821088	-	
TN KU120612ER-GM				1.2	1.0		-	-	-	-	7814094	7813094	-	-	-	
TN KU120616ER-GM				1.6	0.75		-	-	-	-	7814095	7813095	-	-	-	
TN KU120620ER-GM				2.0	0.6		-	-	-	-	7814096	7813096	-	-	-	
TN KU120608ER-GR				0.8	1.5		-	-	-	-	-	-	-	7812090	7821090	-
TN KU120608ER-SM				0.8	1.5		-	-	-	-	-	-	-	-	-	7816091

Packed: 10 pcs.



List 7808H

PSTW Accessories

Appearance	EDP No.	Designation	Applicable Cutter		Recommended Tightening Torque
			(mm)	(inch)	
 Clamping Screw	7808129	FS40511 (Torx 15)	PSTW BORE Ø50-125	PSTW BORE Ø2-5"	3.2 Nm
 Power Screw	7808151	PS1031 (M10x31)	PSTW BORE Ø50	PSTW BORE Ø2"	20.0 Nm
 Wrench	7808208	T15-D (Torx 15)	PSTW BORE Ø50-125	PSTW BORE Ø2-5"	

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

Work Material		Tensile Strength - Hardness	Insert Size		
			TNKU12...		
			Face Milling		
			Milling Speed Vc (SFM)	Feed Per Tooth fz(in/t)	Depth of Cut Aa (in)
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (330 - 820)	0.006 (.002 - .010)	0.120
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (330 - 820)	0.006 (.002 - .010)	0.120
	Die Steels (H13, D2)	~280 HB	495 (260 - 655)	0.005 (.002 - .008)	0.120
M	Stainless Steels(Dry) (304SS, 420SS)	~250 HB	495 (260 - 655)	0.004 (.002 - .007)	0.080
	Stainless Steels(Wet) (304SS, 420SS)	~250 HB	260 (195 - 395)	0.004 (.002 - .007)	0.080
K	Cast Iron (FC250)	~350 N/mm ²	650 (330 - 1150)	0.008 (.004 - .012)	0.120
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	590 (330 - 885)	0.006 (.002 - .010)	0.120
S	Heat Resistant Alloys (Inconel 718)	-	115 (85 - 195)	0.003 (.002 - .006)	0.040
	Titanium Alloy (Ti-6Al-4V)	-	130 (100 - 395)	0.003 (.002 - .006)	0.060
H	Pre-hardened Steel (P20, Stavax)	40 - 43 Hrc	330 (165 - 495)	0.004 (.003 - .008)	0.060
	Die Cast Steels (A2, S7)	43 - 48 Hrc	265 (130 - 395)	0.003 (.002 - .006)	0.040
	Hardened Steels (D2)	50 - 55 Hrc	195 (130 - 295)	0.002 (.002 - .004)	0.020

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
CK010	NM	Yes				☐		
XC3020	GM	-	☐		☐			
XP3025	GM	Yes	☐		☐			
XC3030	GL / GM	-	☐		☐			
XP3035	GL / GM	-	☐	☐	☐			
XP2040	GL/GM	-	☐	☐				☐
		Yes	☐	☐			☐	
XC1015	GM/GR	-			☐*			
XP1020	GM/GR	-			☐**			
XC5040	SM	Yes		☐			☐	

GL: Light Cutting GM: Medium Cutting GR: Rough Cutting SM: Heat Resistant Alloy

*: XC1015 best recommended for grey cast iron

** : XP1020 best recommended for ductile cast iron

☐ good ☐ best





List 78005

PRC SA (Inch)



SPEED
FEED
P1232

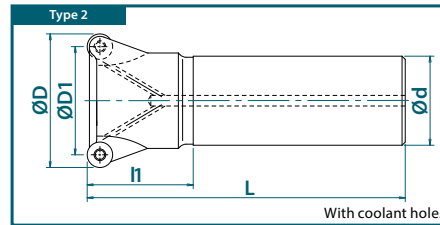
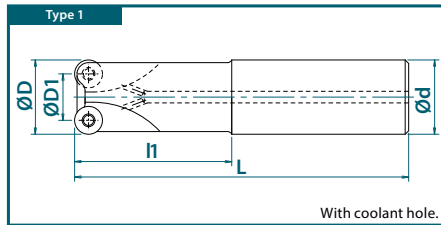


Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	Effective Dia.	No. of Teeth	Shank Dia.	Overall Length	Neck Length	Applicable Insert
					D	D1		d	L	L1	
7800500	Cylindrical Shank Short	Normal	PRC10R100SA100-3S	1	1.000	0.606	3	1.000	5.512	2.362	RPH_10...
7800501			PRC10R125SA125-4S	1	1.250	0.856	4	1.250	5.905	2.756	RPH_12...
7800502			PRC12R125SA125-2S	1	1.250	0.778	2	1.250	5.905	2.756	
7800503			PRC12R150SA125-3S	2	1.500	1.028	3	1.250	5.905	1.968	
7800504			PRC16R150SA125-2S	2	1.500	0.870	2	1.250	5.905	1.968	RPH_16...
7800505	Cylindrical Shank Long		PRC10R100SA100-3L	1	1.000	0.606	3	1.000	7.874	4.724	RPH_10...
7800506			PRC10R125SA125-4L	1	1.250	0.856	4	1.250	7.874	4.724	RPH_12...
7800507			PRC12R125SA125-2L	1	1.250	0.778	2	1.250	7.874	4.724	
7800508			PRC12R150SA125-3L	2	1.500	1.028	3	1.250	9.842	1.968	
7800509			PRC16R150SA125-2L	2	1.500	0.870	2	1.250	9.842	1.968	RPH_16...

Packed: 1 pc.





List 78003

PRC SS (Metric)



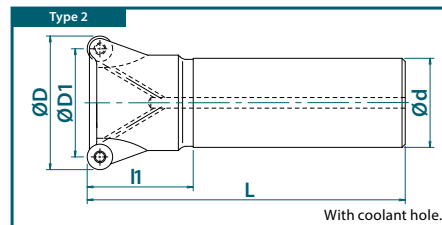
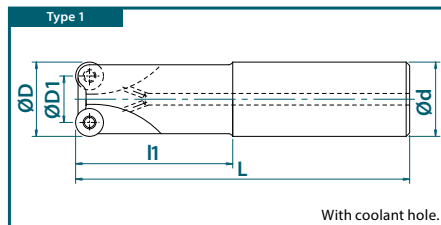
Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D	D1		d	L	L1	
7800300	Cylindrical Shank Short	Normal	PRC10R020SS20-2S	1	20	10	2	20	130	50	RPH_10...
7800301			PRC10R025SS25-3S	1	25	15	3	25	140	60	
7800302			PRC10R032SS32-4S	1	32	22	4	32	150	70	
7800303	Cylindrical Shank Long		PRC10R020SS20-2L	1	20	10	2	20	180	80	
7800304			PRC10R025SS25-3L	1	25	15	3	25	200	120	
7800305			PRC10R032SS32-4L	1	32	22	4	32	200	120	
7800322	Cylindrical Shank Short		PRC12R024SS25-2S	1	24	12	2	25	140	60	RPH_12...
7800318			PRC12R030SS32-2S	1	30	18	2	32	150	70	
7800306			PRC12R032S032-2S	1	32	20	2	32	150	70	
7800320			PRC12R032SS32-3S	1	32	20	3	32	150	70	
7800307			PRC12R040SS32-3S	2	40	28	3	32	150	50	
7800308			PRC12R050SS42-4S	2	50	38	4	42	150	50	
7800323	Cylindrical Shank Long	PRC12R024SS25-2L	1	24	12	2	25	180	100	RPH_12...	
7800319		PRC12R030SS32-2L	1	30	18	2	32	200	120		
7800309		PRC12R032SS32-2L	1	32	20	2	32	200	120		
7800321	Cylindrical Shank Long	PRC12R032SS32-3L	1	32	20	3	32	200	120	RPH_16...	
7800310		PRC12R040SS32-3L	2	40	28	3	32	250	50		
7800311		PRC12R050SS42-4L	2	50	38	4	42	250	50		
7800324	Cylindrical Shank Short	PRC16R033SS32-2S	1	32	16	2	32	150	70	RPH_16...	
7800312		PRC16R040SS32-2S	2	40	24	2	32	150	50		
7800313		PRC16R050SS42-3S	2	50	34	3	42	150	50		
7800314	Cylindrical Shank Long	PRC16R063SS042-4S	2	63	47	4	42	150	50	RPH_16...	
7800325		PRC16R033SS32-2L	1	32	16	2	32	200	120		
7800315		PRC16R040SS32-2L	2	40	24	2	32	250	50		
7800316		PRC16R050SS42-3L	2	50	34	3	42	250	50		
7800317			PRC16R063SS42-4L	2	63	47	4	42	250	50	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



List 78004

PRC Bore (Inch)



SPEED FEED
P1232

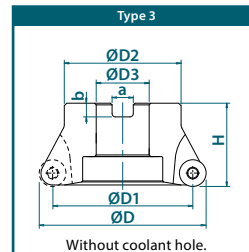
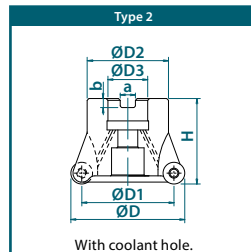


Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	Effective Dia.	No. of Teeth	Tool Height	Flange Dia.	Bore Dia.	Keyway Width	Keyway Depth	Applicable Insert
					D	D1		H	D2	d3	a	b	
7800412	Bore	Normal	PRC10R200A075-5	2	2.000	1.606	5	1.575	1.772	0.750	0.315	0.197	RPH_10...
7800413			PRC10R250A075-6	2	2.500	2.106	6	1.575	1.968	0.750	0.315	0.197	
7800400			PRC12R200A075-4	2	2.000	1.528	4	1.575	1.772	0.750	0.315	0.197	
7800401			PRC12R250A075-4	2	2.500	2.028	4	1.575	1.968	0.750	0.315	0.197	
7800402			PRC12R300A100-5	2	3.000	2.528	5	1.968	2.362	1.000	0.375	0.236	
7800403			PRC12R400A150-6	3	4.000	3.528	6	1.968	2.756	1.500	0.625	0.394	
7800404		Close	PRC12R200A075-5	2	2.000	1.528	5	1.575	1.772	0.750	0.315	0.197	RPH_12...
7800405			PRC12R250A075-6	2	2.500	2.028	6	1.575	1.968	0.750	0.315	0.197	
7800406			PRC12R300A100-8	2	3.000	2.528	8	1.968	2.362	1.000	0.375	0.236	
7800407			PRC12R400A150-10	3	4.000	3.528	10	1.968	2.756	1.500	0.625	0.394	
7800414			PRC12R500A150-12	3	5.000	4.528	12	2.480	3.543	1.500	0.625	0.394	
7800408			Normal	PRC16R200A075-3	2	2.000	1.370	3	1.575	1.772	0.750	0.315	
7800409		PRC16R250A075-5		2	2.500	1.870	5	1.575	1.968	0.750	0.315	0.197	
7800410		PRC16R300A100-6		2	3.000	2.370	6	1.968	2.362	1.000	0.375	0.236	
7800411		PRC16R400A150-7		3	4.000	3.370	7	1.968	2.756	1.500	0.625	0.394	
7800415		PRC16R500A150-8		3	5.000	4.370	8	2.480	3.543	1.500	0.625	0.394	
7800416		PRC16R600A150-10		3	6.000	5.370	10	2.480	3.740	1.500	0.625	0.394	

Packed: 1 pc.



List 78002

PRC Bore (Metric)



SPEED FEED
P1232



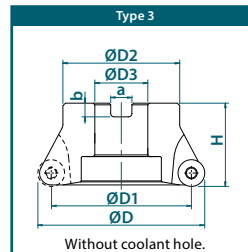
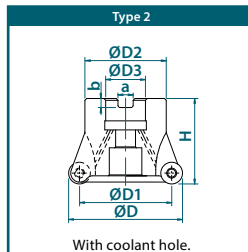
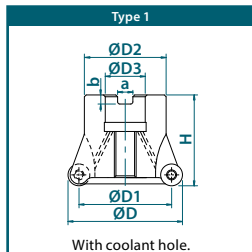
Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	Effective Dia.	No. of Teeth	Tool Height	Flange Dia.	Bore Dia.	Keyway Width	Keyway Depth	Applicable Insert
					D	D1		H	D2	d3	a	b	
7800200	Bore	Normal	PRC12R050M22-4	2	50	38	4	40	45	22	10.4	6.3	RPH_12...
7800201			PRC12R063M22-4	2	63	51	4	40	50	22	10.4	6.3	
7800202			PRC12R080M27-5	2	80	68	5	50	60	27	12.4	7	
7800209			PRC12R080M25.4-5	2	80	68	5	50	60	25.4	9.5	6	
7800203			PRC12R100M32-6	2	100	88	6	50	70	32	14.4	8	
7800210			PRC12R100M31.7-6	3	100	88	6	50	70	31.75	12.7	8	
7800204		Close	PRC12R050M22-5	2	50	38	5	40	45	22	10.4	6.3	
7800206			PRC12R063M22-6	2	63	51	6	40	50	22	10.4	6.3	
7800207			PRC12R080M27-8	2	80	38	8	50	60	27	12.4	7	
7800211			PRC12R080M25.4-8	2	80	38	8	50	60	25.4	9.5	6	
7800208			PRC12R100M32-10	2	100	88	10	50	70	32	14.4	8	
7800212			PRC12R100M31.7-10	3	100	88	10	50	70	31.75	12.7	8	
7800213	Normal	PRC16R050M22-3	1	50	34	3	40	45	22	10.4	6.3	RPH_16...	
7800214		PRC16R063M22-5	2	63	47	5	40	50	22	10.4	6.3		
7800216		PRC16R080M27-6	2	80	64	6	50	60	27	12.4	7		
7800218		PRC16R080M25.4-6	2	80	64	6	50	60	25.4	9.5	6		
7800217		PRC16R100M32-7	2	100	84	7	50	70	32	14.4	8		
7800219		PRC16R100M31.7-7	3	100	84	7	50	70	31.75	12.7	8		

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



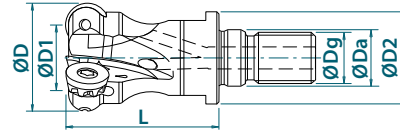


List 52602

PRC ASF (Inch)



Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233
SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	Effective Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
52602000	Screw Fit Head	PRC10R100ASF12-3	1.000	0.606	3	0.492	M12	1.378	0.905	17	RPH_10...
52602001		PRC10R125ASF16-4	1.250	0.856	4	0.669	M16	1.575	1.102	22	RPH_12...
52602002		PRC12R125ASF16-2	1.250	0.778	2	0.669	M16	1.575	1.102	22	
52602003		PRC12R150ASF16-3	1.500	1.028	3	0.669	M16	1.575	1.102	22	
52602004		PRC16R150ASF16-2	1.500	0.870	2	0.669	M16	1.575	1.102	22	RPH_16...

Packed: 1 pc.

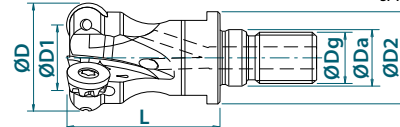


List 78017

PRC SF (Metric)



Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
7801700	Screw Fit Head	PRC10R020SF10-2	20	10	2	10.5	M10	33	18	14	RPH_10...
7801701		PRC10R025SF12-3	25	15	3	12.5	M12	35	23	17	
7801702		PRC10R030SF16-3	30	20	3	17	M16	40	28	22	
7801703		PRC10R032SF16-4	32	22	4	17	M16	40	28	22	
7801704		PRC10R040SF16-4	40	30	4	17	M16	40	28	22	RPH_12...
7801705		PRC12R030SF16-2	30	18	2	17	M16	40	28	22	
7801706		PRC12R032SF16-3	32	20	3	17	M16	40	28	22	
7801707		PRC12R040SF16-3	40	28	3	17	M16	40	28	22	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78PRC

NEW SIZES

PRC Inserts



Designation	No. of Cutting Edges	Insert Size			EDP Number												
		B (mm)	T (mm)	α	CK010	XC3030	XP3035	XP2025	XP2040	XC1015	XC5035	XC5040	XP6015				
RPHT10T3MOFN-NM	8	10	3.97	11°	7811009	-	-	-	-	-	-	-	-	-			
RPHW10T3MOSN	8				-	7825017	7814030	-	-	-	-	-	-	-	-		
RPHW10T3MOEN	8				-	-	-	-	-	-	-	7812017	-	-	-		
RPHT10T3MOEN-GL	8				-	7825008	7814008	7826008	7813008	-	-	-	-	-	-		
RPHT10T3MOEN-GM	8				-	7825009	7814009	-	-	-	-	-	-	-	-		
RPHT10T3MOEN-SM	4				-	-	-	-	-	-	-	-	7815010	-	-		
RPHT10T3M8EN-SM	8				-	-	-	-	-	-	-	-	7815050	7816050	-		
RPMT10T3M8EN-HR	8				-	-	-	-	-	-	-	-	-	-	7824083		
RPHT1204MOFN-NM	8				12	4.76	11°	7811013	-	-	-	-	-	-	-	-	
RPHW1204MOSN	8							-	7825018	7814018	-	-	-	7812018	-	-	-
RPHT1204MOEN-GL	8	-	-	-				7826011	7813011	-	-	-	-	-			
RPHT1204MOEN-GM	8	-	7825011	7814011				-	-	-	-	-	-	-			
RPHT1204MOEN-SM	4	-	-	-				-	-	-	-	-	7815012	-			
RPHT1204M8EN-SM	8	-	-	-				-	-	-	-	-	7815051	7816051			
RPMT1204M8EN-HR	8	-	-	-				-	-	-	-	-	-	-	7824084		
RPHT1605MOFN-NM	8	16	5.56	11°				7811016	-	-	-	-	-	-	-	-	
RPHW1605MOSN	8							-	7825019	7814019	-	-	-	7812019	-	-	-
RPHT1605MOEN-GL	8							-	-	-	7826014	7813014	-	-	-	-	-
RPHT1605MOEN-SM	4				-	-	-	-	-	-	-	-	7815015	-			
RPHT1605M8EN-SM	8				-	-	-	-	-	-	-	-	7815052	7816052			
					-	-	-	-	-	-	-	-	-	-			

Packed: 10 pcs.



List 7808H

PRC Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter		Recommended Tightening Torque
				(mm)	(inch)	
 Clamping Screw	7808116	FS30573A (Torx 10)	RPH_10...	PRC SS/SF Ø20-32	PRC10 SA/ASF Ø1-1.25" PRC10 BORE Ø2-2.5"	2.0 Nm
	7808112	FS35586 (Torx 15)	RPH_12...	PRC SS/SF Ø32-50 PRC BORE Ø32-63	PRC12 SA/ASF Ø1.25-1.5" PRC12 BORE Ø2-4"	3.2 Nm
	7808113	FS45510 (Torx 20)	RPH_16...	PRC SS/SF Ø40-63 PRC BORE Ø50-100	PRC16 SA/ASF Ø1.5" PRC16 BORE Ø2-6"	5.0 Nm
 Power Screw	7808151	PS1031 (M10x31)	RPH_16...	PRC BORE Ø50	n/a	20.0 Nm
 Wrench	7808207	T10-D (Torx 10)	RPH_10...	PRC SS/SF Ø20-32	PRC10 SA/ASF Ø1-1.25" PRC10 BORE Ø2-2.5"	
	7808208	T15-D (Torx 15)	RPH_12...	PRC SS/SF Ø32-50 PRC BORE Ø32-63	PRC12 SA/ASF Ø1.25-1.5" PRC12 BORE Ø2-4"	
	7808209	T20-D (Torx 20)	RPH_16...	PRC SS/SF Ø40-63 PRC BORE Ø50-100	PRC16 SA/ASF Ø1.5" PRC16 BORE Ø2-6"	

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

Work Material		Tensile Strength - Hardness	Milling Speed Vc (SFM)	Insert Size					
				RPH_10...		RPH_12...		RPH_16...	
				Face Milling		Face Milling		Face Milling	
				Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)	Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)	Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)
P	Mild Steels, Carbon Steels (1010, 1018)	~180HB	655 (330-985)	0.010 (0.004 - 0.014)	0.078	0.012 (0.004 - 0.016)	0.093	0.014 (0.004 - 0.020)	0.125
	Carbon Steels, Alloy Steels (1050, 4140)	~280HB	590 (330-820)	0.008 (0.004 - 0.012)	0.078	0.010 (0.004 - 0.014)	0.093	0.012 (0.004 - 0.018)	0.125
	Die Steels (H13, D2)	~280HB	495 (260-655)	0.008 (0.004 - 0.012)	0.078	0.010 (0.004 - 0.014)	0.093	0.012 (0.004 - 0.018)	0.125
M	Stainless Steels (Dry) (304SS, 420SS)	~250HB	525 (265 - 655)	0.010 (0.004 - 0.014)	0.078	0.012 (0.004 - 0.016)	0.093	0.014 (0.004 - 0.020)	0.125
	Stainless Steels (Wet) (304SS, 420SS)	~250HB	395 (200 - 590)	0.010 (0.004 - 0.014)	0.078	0.012 (0.004 - 0.016)	0.093	0.014 (0.004 - 0.020)	0.125
K	Cast Iron (FC250)	~350N/mm ²	720 (330-1150)	0.010 (0.002 - 0.016)	0.078	0.012 (0.004 - 0.020)	0.093	0.014 (0.004 - 0.023)	0.125
	Ductile Cast Iron (60-40-18)	~800N/mm ²	495 (330-720)	0.008 (0.004 - 0.012)	0.078	0.010 (0.004 - 0.014)	0.093	0.012 (0.004 - 0.018)	0.125
N	Aluminum Alloys (6061, 7075)	~13%Si	1970 (985-4920)	0.016 (0.008 - 0.031)	0.078	0.023 (0.008 - 0.039)	0.093	0.031 (0.012 - 0.059)	0.125
S	Heat Resistant Alloys (Inconel 718)	-	130 (85-195)	0.006 (0.002 - 0.010)	0.078	0.010 (0.002 - 0.012)	0.093	0.010 (0.002 - 0.016)	0.125
	Titanium Alloy (Ti-6Al-4V)	-	260 (165-395)	0.008 (0.004 - 0.012)	0.078	0.010 (0.004 - 0.014)	0.093	0.012 (0.004 - 0.018)	0.125
H	Pre-hardened Steel (P20, Stavax)	40-43 HRC	395 (130-495)	0.006 (0.002 - 0.010)	0.059	0.010 (0.002 - 0.012)	0.059	0.010 (0.002 - 0.016)	0.059
	Die Cast Steels (A2, S7)	43-48HRC	260 (130-395)	0.006 (0.002 - 0.010)	0.039	0.010 (0.002 - 0.012)	0.039	0.010 (0.002 - 0.016)	0.039
	Hardened Steels (D2)	50-55HRC	195 (100-295)	0.006 (0.002 - 0.010)	0.020	0.010 (0.002 - 0.012)	0.020	0.010 (0.002 - 0.016)	0.020

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
CK010	NM	Yes				☐		
XC3030	- / GL / GM	-	☐		☐			
XP3035	- / GL / GM	-	☐	☐	☐			
XP2025	GL	Yes	☐	☐			☐	
XP2040	GL	-	☐	☐				☐
		Yes	☐	☐			☐	
XC1015	-	-			☐			
XC5035	SM	-		☐				
		Yes		☐			☐	
XC5040	SM	Yes		☐			☐	
XP6015	HR	-	☐		☐			☐

GL:Light Cutting NM:Aluminum SM: Heat Resistant Alloy HR: Hardened Steel

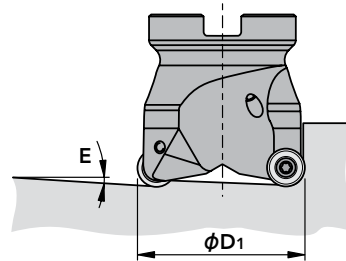
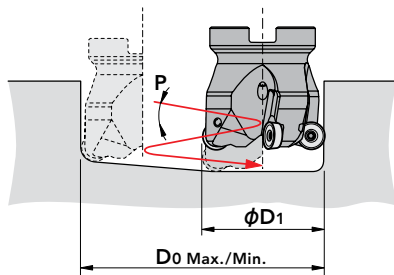
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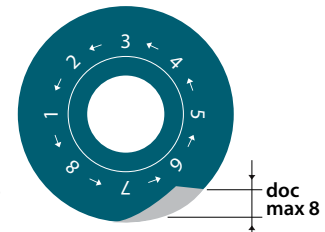
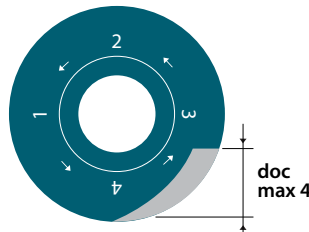
Maximum Ramping Angle (E) & Helical Angle (P)

Insert Size	RPH_10...				RPH_12...				RPH_16...			
	Diameter (inch)	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)	
D1	E	D0 Min	D0 Max	P	E	D0 Min	D0 Max	P	E	D0 Min	D0 Max	P
1.000	2.0°	1.488	1.606	1.8°	-	-	-	-	-	-	-	-
1.250	3.0°	1.988	2.106	1.5°	4.0°	1.752	2.028	1.7°	-	-	-	-
1.500	3.3°	2.488	2.606	1.1°	2.8°	2.252	2.528	1.4°	3.0°	2.016	2.370	2.0°
2.000	2.3°	3.488	3.606	0.9°	2.5°	3.252	3.528	1.1°	4.0°	3.016	3.370	1.5°
2.500	2.2°	4.488	4.606	0.7°	1.8°	4.252	4.528	0.9°	2.8°	4.016	4.370	1.1°
3.000	-	-	-	-	1.3°	5.252	5.528	0.7°	2.0°	5.016	5.370	0.9°
4.000	-	-	-	-	0.9°	7.252	7.528	0.5°	1.5°	7.016	7.370	0.7°
5.000	-	-	-	-	1.0°	9.252	9.528	0.4°	1.1°	9.016	9.370	0.45°
6.000	-	-	-	-	-	-	-	-	1.0°	11.016	11.370	0.4°



Maximum Depth of Cut (Aa)

Insert Size	Maximum Depth of Cut (Aa)	
	4 Indexes Per Insert	8 Indexes Per Insert
	(in)	(in)
RPH_10...	0.177	0.055
RPH_12...	0.217	0.067
RPH_16...	0.295	0.091



List 78009

PHC SA/FA (Inch)

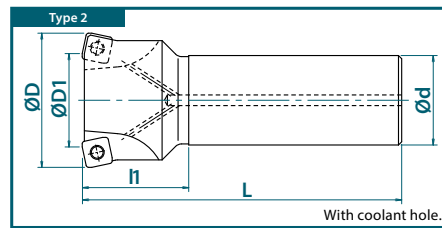
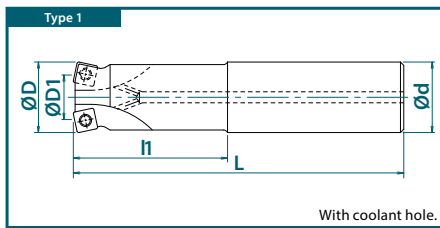


Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	Effective Dia. (inch)	No. of Teeth	Shank Dia. (inch)	Overall Length (inch)	Neck Length (inch)	Applicable Insert
					D	D1		d	L	L1	
7800905	Cylindrical Shank Short	Normal	PHC07R063SA063-2S	1	0.625	0.286	2	0.625	3.937	1.181	SPMT07...
7800906			PHC07R075SA075-3S	1	0.750	0.411	3	0.750	5.118	1.968	
7800907			PHC07R100SA100-4S	1	1.000	0.661	4	1.000	5.512	2.362	
7800908			PHC07R125SA125-5S	1	1.250	0.911	5	1.250	5.905	2.756	
7800909			PHC09R100SA100-2S	1	1.000	0.535	2	1.000	5.512	2.362	
7800901		Close	PHC09R100SA100-3S	1	1.000	0.535	3	1.000	5.512	2.362	SDMT09...
7800902			PHC09R125SA125-3S	1	1.250	0.785	3	1.250	5.906	2.756	
7800903		Normal	PHC12R125SA125-2S	1	1.250	0.596	2	1.250	5.906	2.756	SXMT12...
7800904			PHC12R150SA125-3S	2	1.500	0.846	3	1.250	5.906	1.969	
7800909		Cylindrical Shank Long	Normal	PHC07R063SA063-2L	1	0.625	0.286	2	0.625	5.905	1.968
7800913	PHC07R075SA075-3L			1	0.750	0.411	3	0.750	6.299	3.150	
7800914	PHC07R100SA100-4L			1	1.000	0.661	4	1.000	7.874	3.937	
7800915	PHC07R125SA125-5L			1	1.250	0.911	5	1.250	7.874	4.724	
7800922	PHC09R100SA100-2L			1	1.000	0.535	2	1.000	7.874	4.724	
7800923	Close		PHC09R100SA100-3L	1	1.000	0.535	3	1.000	7.874	4.724	SDMT09...
7800924			PHC09R125SA125-3L	1	1.250	0.785	3	1.250	7.874	4.724	
7800925	Normal		PHC12R125SA125-2L	1	1.250	0.596	2	1.250	7.874	4.724	SXMT12...
7800926			PHC12R150SA125-3L	2	1.500	0.846	3	1.250	9.843	2.756	
7800927	Cylindrical Shank Extra-Long		Normal	PHC09R100SA100-2LL	1	1.000	0.535	2	1.000	11.811	7.087
7800928		Close	PHC09R100SA100-3LL	1	1.000	0.535	3	1.000	11.811	7.087	
7800929		Normal	PHC09R125SA125-3LL	1	1.250	0.785	3	1.250	11.811	7.087	
7800930			PHC12R125SA125-2LL	1	1.250	0.596	2	1.250	11.811	7.087	
7800931			PHC12R150SA125-3LL	2	1.500	0.846	3	1.250	11.811	2.756	
7800916	Weldon Shank Short	Normal	PHC07R063FA063-2S	1	0.625	0.286	2	0.625	3.937	1.181	SPMT07...
7800917			PHC07R075FA075-3S	1	0.750	0.411	3	0.750	5.118	1.968	
7800918			PHC07R100FA100-4S	1	1.000	0.661	4	1.000	5.512	2.362	
7800919			PHC07R125FA125-5S	1	1.250	0.911	5	1.250	5.905	2.756	
7800910			Close	PHC09R100FA100-2S	1	1.000	0.535	2	1.000	3.831	
7800911		PHC09R100FA100-3S		1	1.000	0.535	3	1.000	3.831	1.551	
7800912		Normal	PHC09R125FA125-3S	1	1.250	0.785	3	1.250	4.378	2.098	SXMT12...
7800920			PHC12R125FA125-2S	1	1.250	0.596	2	1.250	4.378	2.098	
7800921			PHC12R150FA125-3S	2	1.500	0.846	3	1.250	4.378	2.098	

Packed: 1 pc.





List 78009 (Continued)

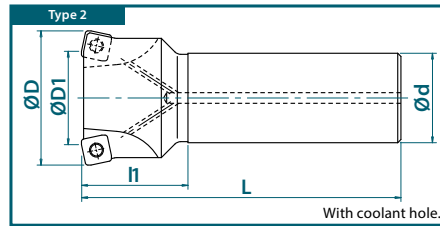
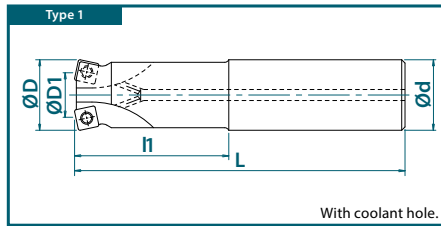
PHC SA/FA (Inch)



Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1242

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia.	Effective Dia.	No. of Teeth	Shank Dia.	Overall Length	Neck Length	Applicable Insert	
					(inch)	(inch)		(inch)	(inch)	(inch)		
					D	D1						
							d	L	L1			
7800942	Weldon Shank Long	Normal	PHC07R063FA063-2L	1	0.625	0.286	2	0.625	5.905	1.968	SPMT07...	
7800943			PHC07R075FA075-3L	1	0.750	0.411	3	0.750	6.299	3.150		
7800944			PHC07R100FA100-4L	1	1.000	0.661	4	1.000	7.874	3.937		
7800945			PHC07R125FA125-5L	1	1.250	0.911	5	1.250	7.874	4.724		
7800932		Weldon Shank Long	Normal	PHC09R100FA100-2L	1	1.000	0.535	2	1.000	7.004	4.724	SDMT09...
7800933				PHC09R100FA100-3L	1	1.000	0.535	3	1.000	7.004	4.724	
7800934			Close	PHC09R125FA125-3L	1	1.250	0.785	3	1.250	7.004	4.724	
7800935				PHC12R125FA125-2L	1	1.250	0.596	2	1.250	7.004	4.724	
7800936	Normal			PHC12R150FA125-3L	2	1.500	0.846	3	1.250	7.004	4.724	
7800937				PHC09R100FA100-2LL	1	1.000	0.535	2	1.000	9.366	7.087	
7800938	Weldon Shank Extra-Long	Close	PHC09R100FA100-3LL	1	1.000	0.535	3	1.000	9.366	7.087	SDMT09...	
7800939			PHC09R125FA125-3LL	1	1.250	0.785	3	1.250	9.366	7.087		
7800940		Normal	PHC12R125FA125-2LL	1	1.250	0.596	2	1.250	9.366	7.087		
7800941			Normal	PHC12R150FA125-3LL	2	1.500	0.846	3	1.250	9.366		7.087
7800941				PHC12R150FA125-3LL	2	1.500	0.846	3	1.250	9.366		7.087

Packed: 1 pc.



List 78007

PHC SS (Metric)



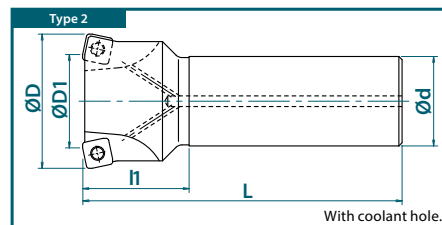
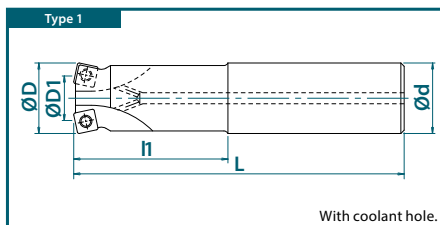
Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)		No. of Teeth	Shank Dia. (mm)		Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D	D1		d	L			
7800750	Cylindrical Shank Short	Normal	PHC07R016SS16-2S	1	16	7.4	2	16	100	30	SPMT07...	
7800751			PHC07R020SS20-3S	1	20	11.4	3	20	130	50		
7800752			PHC07R025SS25-4S	1	25	16.4	4	25	140	60		
7800753			PHC07R030SS32-4S	1	30	21.4	4	32	150	70		
7800754			PHC07R032SS32-5S	1	32	23.4	5	32	150	70		
7800755	Cylindrical Shank Long	Normal	PHC07R016SS16-2L	1	16	7.4	2	16	150	50	SPMT07...	
7800756			PHC07R017SS16-2L	2	17	8.4	2	16	150	25		
7800757			PHC07R018SS16-2L	2	18	9.4	2	16	150	25		
7800758			PHC07R020SS20-3L	1	20	11.4	3	20	160	80		
7800759			PHC07R021SS20-3L	2	21	12.4	3	20	160	30		
7800760			PHC07R022SS20-3L	2	22	13.4	3	20	160	30		
7800761			PHC07R025SS25-4L	1	25	16.4	4	25	200	100		
7800762			PHC07R026SS25-4L	2	26	17.4	4	25	200	40		
7800763			PHC07R028SS25-4L	2	28	19.4	4	25	200	40		
7800764			PHC07R030SS32-4L	1	30	21.4	4	32	200	120		
7800765			PHC07R032SS32-5L	1	32	23.4	5	32	200	120		
7800766			PHC07R033SS32-5L	2	33	24.4	5	32	200	50		
7800767			PHC07R035SS32-5L	2	35	26.0	5	32	200	50		
7800700	Cylindrical Shank Short	Normal	PHC09R025SS25-2S	1	25	13.2	2	25	140	60	SDMT09...	
7800701		Close	PHC09R025SS25-3S	1	25	13.2	3	25	140	60		
7800716		Normal	PHC09R028SS25-3S	2	28	16.2	3	25	140	40		
7800717			PHC09R030SS32-3S	1	30	18.2	3	32	150	70		
7800702			PHC09R032SS32-3S	1	32	20.2	3	32	150	70		
7800718		Normal	PHC09R035SS32-3S	2	35	23.2	3	32	150	50		
7800703			PHC09R040SS32-4S	2	40	28.2	4	32	150	50		
7800719			PHC09R040SS42-4S	1	40	28.2	4	42	150	50		
7800704		Cylindrical Shank Long	Normal	PHC09R025SS25-2L	1	25	13.2	2	25	200		120
7800705	Close		PHC09R025SS25-3L	1	25	13.2	3	25	200	120		
7800740	Normal		PHC09R026SS25-3L	2	26	14.2	3	25	200	40		
7800720			PHC09R028SS25-3L	2	28	16.2	3	25	200	40		
7800721			PHC09R030SS32-3L	1	30	18.2	3	32	200	120		
7800706	Normal		PHC09R032SS32-3L	1	32	20.2	3	32	200	120		
7800741			PHC09R033SS32-3L	2	33	21.2	3	32	200	50		
7800722			PHC09R035SS32-3L	2	35	23.2	3	32	200	50		
7800707	Close		PHC09R040SS32-4L	2	40	28.2	4	32	250	50		
7800723	Normal		PHC09R040SS42-3L	1	40	28.2	3	42	250	70		

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





List 78007 (Continued)

PHC SS (Metric)

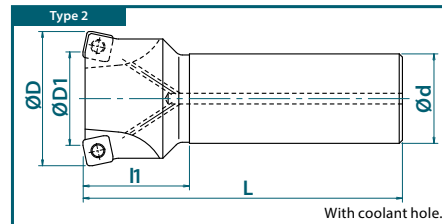
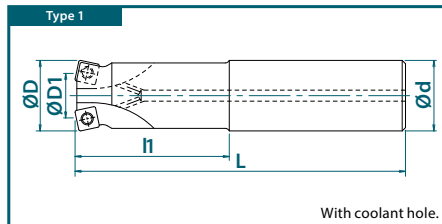


Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert			
					D	D1		d	L	L1				
7800724	Cylindrical Shank Extra-Long	Normal	PHC09R025SS25-2LL	1	25	13.2	2	25	300	180	SDMT09...			
7800742			PHC09R026SS25-2LL	2	26	14.2	2	25	300	40				
7800725			PHC09R028SS25-2LL	2	28	16.2	2	25	300	40				
7800726			PHC09R030SS32-2LL	1	30	18.2	2	32	300	180				
7800727			PHC09R032SS32-2LL	1	32	20.2	2	32	300	180				
7800743			PHC09R033SS32-2LL	2	33	21.2	2	32	300	50				
7800728			PHC09R035SS32-2LL	2	35	23.2	2	32	300	50				
7800729			PHC09R040SS42-2LL	1	40	28.2	2	42	300	70				
7800730			Cylindrical Shank Short	Normal	PHC12R030SS32-2S	1	30	13.4	2	32		150	70	SXMT12...
7800708	PHC12R032SS32-2S	1			32	15.4	2	32	150	70				
7800731	PHC12R035SS32-3S	2			35	18.4	3	32	150	50				
7800709	PHC12R040SS32-3S	2			40	23.4	3	32	150	50				
7800732	PHC12R040SS42-3S	1			40	23.4	3	42	150	50				
7800710	PHC12R050SS42-4S	2			50	33.4	4	42	150	50				
7800711	PHC12R063SS42-5S	2			63	46.4	5	42	150	50				
7800733	Cylindrical Shank Long	Normal			PHC12R030SS32-2L	1	30	13.4	2	32	200	120	SXMT12...	
7800712					PHC12R032SS32-2L	1	32	15.4	2	32	200	120		
7800744			PHC12R033SS32-2L	2	33	16.4	2	32	200	50				
7800734			PHC12R035SS32-3L	2	35	18.4	3	32	200	50				
7800713			PHC12R040SS32-3L	2	40	23.4	3	32	250	50				
7800735			PHC12R040SS42-3L	1	40	23.4	3	42	250	70				
7800714			PHC12R050SS42-4L	2	50	33.4	4	42	250	50				
7800715			PHC12R063SS42-5L	2	63	46.4	5	42	250	50				
7800736			Cylindrical Shank Extra-Long	Normal	PHC12R030SS32-2LL	1	30	13.4	2	32	300	180		SXMT12...
7800737	PHC12R032SS32-2LL	1			32	15.4	2	32	300	180				
7800745	PHC12R033SS32-2LL	2			33	16.4	2	32	300	50				
7800738	PHC12R035SS32-2LL	2			35	18.4	2	32	300	50				
7800739	PHC12R040SS42-2LL	1			40	23.4	2	42	300	70				

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.



List 78008

PHC Bore (Inch)

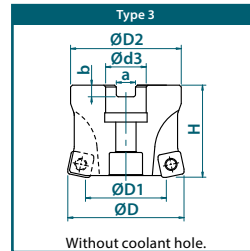
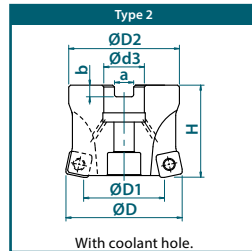


Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)		No. of Teeth	Tool Height (inch)		Bore Dia. (inch)	Keyway (inch)		Applicable Insert	
					D	D1		H	D2		a	b		
7800800	Bore	Close	PHC09R200A075-5	2	2.000	1.535	5	1.968	1.850	0.750	0.315	0.197	SDMT09...	
7800801		Close	PHC09R250A075-6	2	2.500	2.035	6	1.968	2.362	0.750	0.315	0.197		
7800806		Normal	PHC09R300A100-8	2	3.000	2.535	8	2.480	2.835	1.000	0.375	0.236		
7800807		Normal	Close	PHC12R250A075-4	2	2.500	1.846	4	1.968	2.632	0.750	0.315	0.197	SXMT12...
7800808			Close	PHC12R300A100-5	2	3.000	2.346	5	2.480	2.835	1.000	0.375	0.236	
7800809			Close	PHC12R400A150-6	3	4.000	3.346	6	2.480	3.779	1.500	0.625	0.394	
7800802			Normal	PHC12R200A075-4	2	2.000	1.346	4	1.968	1.850	0.750	0.315	0.197	
7800803		Close	Close	PHC12R250A075-5	2	2.500	1.846	5	1.968	2.362	0.750	0.315	0.197	
7800804			Close	PHC12R300A100-7	2	3.000	2.346	7	2.480	2.835	1.000	0.375	0.236	
7800805			Close	PHC12R400A150-8	3	4.000	3.346	8	2.480	3.779	1.500	0.625	0.394	
7800810			Close	PHC12R500A150-10	3	5.000	4.346	10	2.480	3.779	1.500	0.625	0.394	
7800811	Close		PHC12R600A150-12	3	6.000	5.346	12	2.480	3.779	1.500	0.625	0.394		

Packed: 1 pc.





List 78006

PHC Bore (Metric)



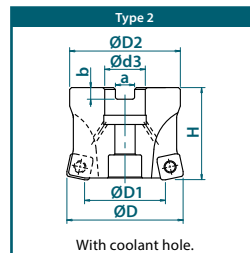
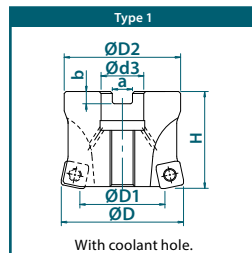
Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)		No. of Teeth	Tool Height (mm)		Bore Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D	D1		H	D2				
7800600	Bore	Close	PHC09R040M16-4	1	40	28.2	4	40	38	16	8.4	5.6	SDMT09...
7800601			PHC09R050M22-5	2	50	38.2	5	50	47	22	10.4	6.3	
7800605			PHC09R050M22.2-5	2	50	38.2	5	50	47	22.225	8.4	5	
7800603			PHC09R063M22-6	2	63	51.2	6	50	60	22	10.4	6.3	
7800606			PHC09R063M22.2-6	2	63	51.2	6	50	60	22.225	8.4	5	
7800607			PHC12R040M16-3	1	40	23.4	3	40	38	16	8.4	5.6	
7800608			PHC12R050M22-4	2	50	33.4	4	50	47	22	10.4	6.3	
7800614			PHC12R050M22.2-4	2	50	33.4	4	50	47	22.225	8.4	5	SXMT12...
7800610			PHC12R063M22-5	2	63	46.4	5	50	60	22	10.4	6.3	
7800615			PHC12R063M22.2-5	2	63	46.4	5	50	60	22.225	8.4	5	
7800612			PHC12R080M27-7	2	80	63.4	7	50	76	27	12.4	7	
7800618			PHC12R080M31.7-5	2	80	63.4	5	63	76	31.75	12.7	8	
7800616			PHC12R080M31.7-7	2	80	63.4	7	63	76	31.75	12.7	8	
7800613			PHC12R100M32-8	2	100	83.4	8	63	96	32	14.4	8	
7800617			PHC12R100M31.7-8	2	100	83.4	8	63	96	31.75	12.7	8	

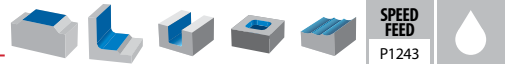
Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



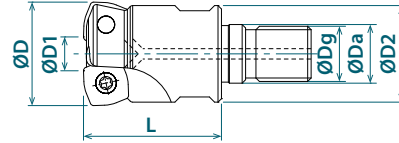
List 52603

PHC ASF (Inch)



SPEED FEED
P1243

Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244
SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	Effective Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
52603004	Screw Fit Head	PHC07R063ASF8-2	0.625	0.286	2	0.334	M8	1.063	0.571	10	SPMT07...
52603005		PHC07R075ASF10-3	0.750	0.411	3	0.413	M10	1.300	0.709	14	
52603006		PHC07R100ASF12-4	1.000	0.661	4	0.492	M12	1.378	0.905	17	
52603007		PHC07R125ASF16-5	1.250	0.911	5	0.669	M16	1.575	1.102	22	SDMT09...
52603000		PHC09R100ASF12-2	1.000	0.535	2	0.492	M12	1.378	0.905	17	
52603001		PHC09R125ASF16-3	1.250	0.785	3	0.669	M16	1.575	1.102	22	
52603002		PHC12R125ASF16-2	1.250	0.596	2	0.669	M16	1.575	1.102	22	SXMT12...
52603003		PHC12R150ASF16-3	1.500	0.846	3	0.669	M16	1.575	1.102	22	

Packed: 1 pc.



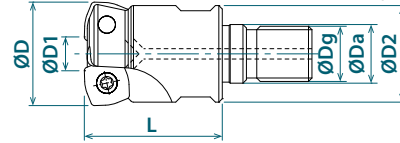


List 78015

PHC SF (Metric)



Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
7801520	Screw Fit Head	PHC07R016SF8-2	16	7.4	2	8.5	M8	27	14.5	10	SPMT07...
7801521		PHC07R017SF8-2	17	8.4	2	8.5	M8	27	14.5	10	
7801522		PHC07R018SF8-2	18	9.4	2	8.5	M8	27	14.5	10	
7801523		PHC07R020SF10-3	20	11.4	3	10.5	M10	33	18	14	
7801524		PHC07R021SF10-3	21	12.4	3	10.5	M10	33	18	14	
7801525		PHC07R022SF10-3	22	13.4	3	10.5	M10	33	18	14	
7801526		PHC07R025SF12-4	25	16.4	4	12.5	M12	35	23	17	
7801527		PHC07R026SF12-4	26	17.4	4	12.5	M12	35	23	17	
7801528		PHC07R028SF12-4	28	19.4	4	12.5	M12	35	23	17	
7801529		PHC07R030SF16-4	30	21.4	4	17	M16	40	28	22	
7801530		PHC07R032SF16-5	32	23.4	5	17	M16	40	28	22	
7801531		PHC07R033SF16-5	33	24.4	5	17	M16	40	28	22	
7801532		PHC07R035SF16-5	35	26.4	5	17	M16	40	28	22	
7801500		PHC09R025SF12-3	25	13.2	3	12.5	M12	35	23	17	SDMT09...
7801510		PHC09R026SF12-3	26	14.2	3	12.5	M12	35	23	17	
7801501		PHC09R028SF12-3	28	16.2	3	12.5	M12	35	23	17	
7801502		PHC09R030SF16-3	30	18.2	3	17	M16	40	28	22	
7801503		PHC09R032SF16-3	32	20.2	3	17	M16	40	28	22	
7801511		PHC09R033SF16-3	33	21.2	3	17	M16	40	28	22	
7801504		PHC09R035SF16-3	35	23.2	3	17	M16	40	28	22	SDXMT12...
7801505		PHC09R040SF16-4	40	28.2	4	17	M16	40	28	22	
7801506		PHC12R030SF16-2	30	13.4	2	17	M16	40	28	22	
7801507		PHC12R032SF16-2	32	15.4	2	17	M16	40	28	22	
7801512		PCH12R033SF16-2	33	16.4	2	17	M16	40	28	22	
7801508	PHC12R035SF16-3	35	18.4	3	17	M16	40	28	22		
7801509	PHC12R040SF16-3	40	23.4	3	17	M16	40	28	22		

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.

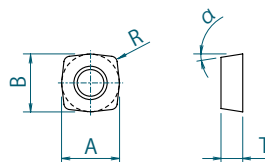




NEW SIZES

List 78PHC

PHC Inserts



Designation	No. of Cutting Edges	Insert Size					EDP Number								
		A x B (mm)	T (mm)	α	R (mm)	Aa Max (mm)	XC3020	XP3025	XC3030	XP3035	XP2025	XP2040	XC1015	XC5035	XC5040
SPMT070305SR-GM	4	7.0 x 7.0	2.75	11°	0.5	0.8	7827092	7828092	7825092	7814092	7826092	7813092	7812092	-	-
SPMT070305ER-SM							-	-	-	-	-	-	-	-	-
SDMT09T308SR-GM		9.52 x 9.52	3.97	15°	0.8	1.0	7827020	7828020	7825020	7814020	7826020	7813020	7812020	-	-
SDMT09T308ER-SM							-	-	-	-	-	-	-	-	-
SXMT120410SR-GM		12.7 x 12.7	4.76	9°	1.0	2.0	7827022	7828022	7825022	7814022	7826022	7813022	7812022	-	-
SXMT120410ER-SM	-						-	-	-	-	-	-	-	-	-

Packed: 10 pcs.



List 7808H

PHC Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter		Recommended Tightening Torque
				(mm)	(inch)	
 Clamping Screw	7808105	FS25550 (Torx 8)	SPMT07...	PHC SS/SF Ø16-35	PHC07 SA/FA/ASF Ø0.625-1.25"	1.6 Nm
	7808111	FS35572 (Torx 15)	SDMT09...	PHC SS/SF Ø25-35	PHC09 SA/FA/ASF Ø1-1.25"	3.2 Nm
	7808112	FS35586 (Torx 15)		PHC SS/SF Ø40 PHC BORE Ø40-63	PHC09 SA/FA/ASF Ø1.5" PHC09 BORE Ø2-3"	3.2 Nm
	7808113	FS45510 (Torx 20)	SXMT12...	PHC SS/SF Ø32-63 PHC BORE Ø40-100	PHC12 SA/FA/ASF Ø1.25-1.5" PHC12 BORE Ø2-6"	5.0 Nm
 Power Screw	7808150	PS0830 (M8x30)	SDMT09...	PHC BORE Ø40	n/a	20.0 Nm
			SXMT12...			
 Wrench	7808205	T8-D (Torx 8)	SPMT07...	PHC SS/SF Ø16-35	PHC07 SA/FA/ASF Ø0.625-1.25"	
	7808208	T15-D (Torx 15)	SDMT09...	PHC SS/SF Ø25-40 PHC BORE Ø40-63	PHC09 SA/FA/ASF Ø1-1.5" PHC09 BORE Ø2-3"	
	7808209	T20-D (Torx 20)	SXMT12...	PHC SS/SF Ø32-63 PHC BORE Ø40-100	PHC12 SA/FA/ASF Ø1.25-1.5" PHC12 BORE Ø2-6"	

Packed: Clamping Screws = 10 pcs.; Power Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





Cutting Conditions

Work Material	Tensile Strength - Hardness	Milling Speed Vc (SFM)	Insert Size											
			SDMT07...			SDMT09...			SXMT12...					
			Face Milling			Face Milling			Face Milling					
			Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)			Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)			Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)		
L/D=2	L/D=3	L/D=4		L/D=2	L/D=3	L/D=4		L/D=2	L/D=3	L/D=4				
P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2)	~180 HB	590 (195 - 820)	0.028 (0.012 - 0.060)	0.032	0.024	0.016	0.032 (0.012 - 0.071)	0.040	0.032	0.020	0.050 (0.020 - 0.126)	0.047	0.047	0.040
	~280 HB	590 (195 - 820)	0.028 (0.012 - 0.051)	0.032	0.024	0.016	0.032 (0.012 - 0.060)	0.040	0.032	0.020	0.050 (0.020 - 0.118)	0.047	0.047	0.040
	~280 HB	590 (195 - 820)	0.028 (0.012 - 0.051)	0.024	0.020	0.012	0.032 (0.012 - 0.060)	0.032	0.024	0.016	0.050 (0.020 - 0.118)	0.047	0.047	0.040
M Stainless Steels (Dry) (304, 420) Stainless Steels (Wet) (304, 420)	~250 HB	525 (265 - 655)	0.016 (0.012 - 0.047)	0.024	0.020	0.012	0.020 (0.012 - 0.060)	0.032	0.024	0.016	0.040 (0.020 - 0.098)	0.047	0.040	0.040
	~250 HB	395 (200 - 590)	0.016 (0.012 - 0.047)	0.024	0.020	0.012	0.020 (0.012 - 0.060)	0.032	0.024	0.016	0.040 (0.020 - 0.098)	0.047	0.040	0.040
K Cast Iron (FC250) Ductile Cast Iron (60-40-18)	~350 N/mm ²	655 (330 - 985)	0.032 (0.016 - 0.060)	0.032	0.024	0.016	0.040 (0.020 - 0.071)	0.040	0.032	0.020	0.060 (0.020 - 0.138)	0.060	0.060	0.040
	~800 N/mm ²	590 (330 - 820)	0.028 (0.012 - 0.051)	0.032	0.024	0.016	0.035 (0.020 - 0.060)	0.040	0.032	0.020	0.053 (0.020 - 0.118)	0.047	0.047	0.035
S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V)	-	100 (85 - 195)	0.012 (0.008 - 0.028)	0.016	0.016	0.012	0.016 (0.008 - 0.032)	0.020	0.020	0.016	0.020 (0.008 - 0.040)	0.040	0.040	0.032
	-	260 (165 - 395)	0.016 (0.012 - 0.032)	0.016	0.016	0.012	0.020 (0.012 - 0.040)	0.020	0.020	0.012	0.028 (0.012 - 0.047)	0.032	0.032	0.016
H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2)	40 - 43 HRC	395 (130 - 495)	0.016 (0.008 - 0.032)	0.016	0.016	0.012	0.020 (0.008 - 0.040)	0.020	0.020	0.012	0.032 (0.012 - 0.060)	0.040	0.040	0.020
	43 - 48 HRC	295 (130 - 395)	0.012 (0.008 - 0.024)	0.016	0.016	0.012	0.016 (0.008 - 0.032)	0.020	0.020	0.016	0.028 (0.012 - 0.047)	0.028	0.028	0.024
	50 - 55 HRC	195 (130 - 295)	0.008 (0.008 - 0.020)	0.012	0.012	0.008	0.012 (0.008 - 0.028)	0.012	0.012	0.008	0.020 (0.012 - 0.032)	0.020	0.020	0.016

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XC3020	GM	-	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XP3025	GM	Yes	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XC3030	GM	-	<input checked="" type="checkbox"/>		<input type="checkbox"/>			
XP3035	GM	-	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
XP2025	GM	Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XP2040	GM	-	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>
		Yes	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input type="checkbox"/>	
XC1015	GM	-			<input checked="" type="checkbox"/>			
XC5035	SM	-		<input checked="" type="checkbox"/>				
		Yes		<input type="checkbox"/>			<input type="checkbox"/>	
XC5040	SM	Yes		<input type="checkbox"/>			<input checked="" type="checkbox"/>	

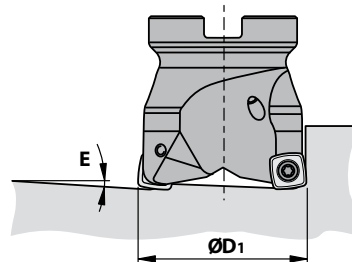
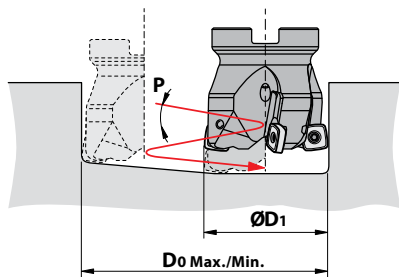
GM: Medium Cutting SM: Heat Resistant Alloy

good best



Maximum Ramping Angle (E) & Helical Angle (P)

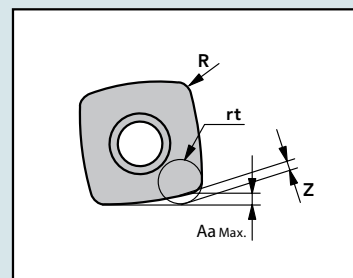
Insert Size	SDMT07...				SDMT09...				SDMT12...			
	Diameter (inch)	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)	
D1	E	D0 Min	D0 Max	P	E	D0 Min	D0 Max	P	E	D0 Min	D0 Max	P
0.625	5.9°	0.857	1.211	4.5°	-	-	-	-	-	-	-	-
0.750	3.2°	1.107	1.461	2.3°	-	-	-	-	-	-	-	-
1.000	2.0°	1.607	1.961	1.2°	3.5°	1.409	1.921	3.0°	-	-	-	-
1.250	1.3°	2.107	2.461	0.9°	1.9°	1.909	2.421	1.7°	7.2°	1.713	2.421	6.1°
1.500	-	-	-	-	1.2°	2.409	2.921	1.0°	2.9°	2.213	2.921	2.5°
2.000	-	-	-	-	0.8°	3.409	3.921	0.7°	1.4°	3.213	3.921	1.2°
2.500	-	-	-	-	0.7°	4.409	4.921	0.7°	1.1°	4.213	4.921	0.9°
3.000	-	-	-	-	0.45°	5.409	5.921	0.4°	1.0°	5.213	5.921	0.8°
4.000	-	-	-	-	-	-	-	-	0.7°	7.213	7.921	0.6°
5.000	-	-	-	-	-	-	-	-	0.5°	9.213	9.921	0.35°
6.000	-	-	-	-	-	-	-	-	0.4°	11.213	11.921	0.3°



Flute shape definitions for the purpose of creating a program

Insert Size	R (mm)	Aa Max (mm)	rt (mm)	z (mm)
SPMT07...	0.5	0.8	1.2	0.35
SDMT09...	0.8	1	2	0.7
SXMT12...	1	2	3	1.15

For machining purposes, create machining programs for the respective simulated R radius cutters.





List 6420

PDR SS (Metric)



SPEED FEED
P1247

Recommended Materials: p1247
Accessories & Inserts: p1246
Maximum Ramping Angle: p1247



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Neck Dia. (mm)	Applicable Insert
					D	D1		d	L	L1	d1	
7800000	Cylindrical Shank Short	Normal	PDR20R040SS42-2S	1	40	20	2	42	150	50	38.9	ADMT20...
7800004			PDR20R050SS42-3S	1	50	30	3	42	150	50	48.5	
7800009	Cylindrical Shank Long		PDR20R040SS42-2L	1	40	20	2	42	250	150	38.9	
7800013			PDR20R050SS42-3L	1	50	30	3	42	250	150	48.5	

Packed: 1 pc.



List 6450

PDR Bore (Metric)



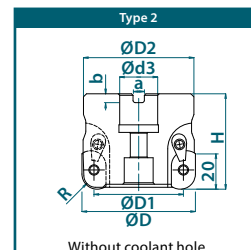
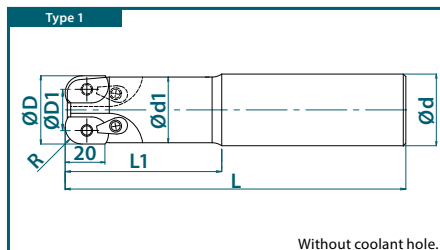
SPEED FEED
P1247

Recommended Materials: p1247
Accessories & Inserts: p1246
Maximum Ramping Angle: p1247



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert
					D	D1		H	D2	d3	a	b	
6450001	Bore	Normal	PDR20R063M25.4-3	2	63	43	3	70	60	25.4	8	5	ADMT20...
6450002			PDR20R063M25.4-4	2	63	43	4	70	60	25.4	8	5	
7800052			PDR20R080M31.7-4	2	80	60	4	63	76	31.75	12.7	8	
7800053			PDR20R080M31.7-5	2	80	60	5	63	76	31.75	12.7	8	
7800054			PDR20R100M31.7-5	2	100	80	5	63	90	31.75	12.7	8	
7800055			PDR20R100M31.7-6	2	100	80	6	63	90	31.75	12.7	8	
7800056			PDR20R125M31.7-6	2	125	105	6	63	100	31.75	12.7	8	
7800057			PDR20R063M22-3	2	63	43	3	63	60	22	10.4	6.3	
7800058			PDR20R063M22-4	2	63	43	4	63	60	22	10.4	6.3	
7800059			PDR20R080M27-4	2	80	60	4	63	76	27	12.4	7	
7800060			PDR20R080M27-5	2	80	60	5	63	76	27	12.4	7	
7800061			PDR20R100M32-5	2	100	80	5	63	96	32	14.4	8	
7800062			PDR20R100M32-6	2	100	80	6	63	96	32	14.4	8	
7800063			PDR20R125M40-6	2	125	105	6	63	100	40	16.4	9	

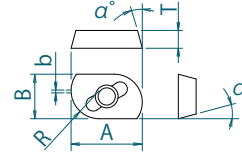
Packed: 1 pc.





List 78PDR

PDR Inserts





Designation	No. of Cutting Edges	Insert Size					EDP Number
		A x B (mm)	T (mm)	α	R (mm)	b (mm)	
ADMT2006100PDR-GM	2	24.18 x 16	6.35	15°	10	1	7810000

Packed: 10 pcs.



List 7808H

PDR Accessories

Appearance	EDP No.	Designation	Recommended Tightening Torque
 Clamping Screw	7808001	CSPB-5 (Torx 20IP)	5.0 Nm
 Wrench	7808000	20IP-T (Torx 20IP)	
Metal Weight Set Washer	7808002	CSY-20	

Packed: Clamping Screws = 10 pcs.; Wrench = 1 pc.; Weight Set = 1 pc.
Note: Wrench sold separately.



Cutting Conditions

Work Material		Tensile Strength - Hardness	Milling Speed Vc (SFM)	Insert Size							
				PDR SS				PDR BORE			
				Face Milling				Face Milling			
				Feed Per Tooth fz (in/t)	Depth of Cut aa (in)		Feed Per Tooth fz (in/t)	Depth of Cut aa (in)			
OAL=120	OAL=170	OAL=100	OAL=200		OAL=300	OAL=400					
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	590 (295 - 720)	0.027 (0.012 - 0.040)	0.118	0.079	0.024 (0.012 - 0.040)	0.118	0.118	0.079	0.079
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (295 - 720)	0.027 (0.012 - 0.040)	0.118	0.079	0.024 (0.012 - 0.040)	0.118	0.118	0.079	0.079
	Die Steels (H13, D2)	~280 HB	495 (295 - 590)	0.024 (0.012 - 0.040)	0.118	0.079	0.020 (0.012 - 0.040)	0.118	0.079	0.079	0.079
K	Cast Iron (FC250)	~350 N/mm ²	590 (330 - 820)	0.031 (0.012 - 0.059)	0.118	0.118	0.027 (0.012 - 0.059)	0.118	0.118	0.079	0.079
	Ductile Cast Iron (60-40-18)	~800 N/mm ²	495 (330 - 820)	0.027 (0.012 - 0.047)	0.118	0.118	0.024 (0.012 - 0.047)	0.118	0.118	0.079	0.079

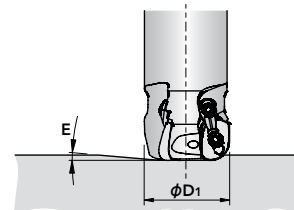
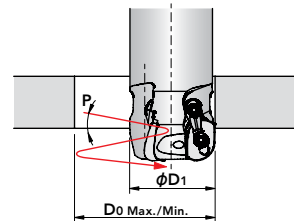
Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XP3930	GM	-	☐		☐			

GM: Medium Cutting

Maximum Ramping Angle (E)

Insert Size		ADMT20...		
Diameter (mm)	Ramping Angle	Helical Milling (mm)		Plunging (mm)
D1	E	D0 Min	D0 Max	Z
40	5°	50	78	3
50	3°	70	98	3
63	2°	96	124	3
80	1°	130	158	3
100	0.5°	170	198	3
125	0.5°	220	248	3





List 78036

PFAL Bore (Metric)

NEW



SPEED FEED
P1250



Recommended Materials: p1250
Accessories & Inserts: p1249

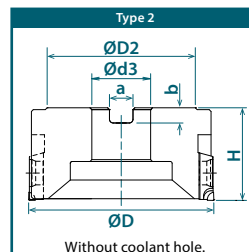
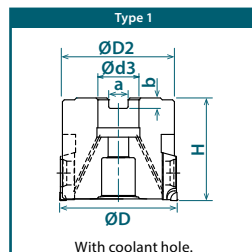


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Tool Height (mm)	Flange Dia. (mm)	Bore Dia. (mm)	Keyway Width (mm)	Keyway Depth (mm)	Applicable Insert	
					D		H	D2	d3	a	b		
7803600	Bore	Normal	PFAL04R050M16-5	1	50	5	55	40	16	8.4	5.6	FR1204 / FR1206	
7803601			PFAL04R063M22-6	1	63	6	55	45	22	10.4	6.3		
7803602		Close	PFAL04R063M22-8	1	63	8	55	45	22	10.4	6.3		
7803603			Normal	PFAL04R080M25.4-8	2	80	8	50	70	25.4	9.5		6
7803604		PFAL04R080M27-8		2	80	8	50	70	27	12.4	7		
7803605		Close	PFAL04R080M25.4-10	2	80	10	50	70	25.4	9.5	6		
7803606			PFAL04R080M27-10	2	80	10	50	70	27	12.4	7		
7803607		Normal	Normal	PFAL04R100M25.4-8	2	100	8	50	80	25.4	9.5		6
7803608				PFAL04R100M27-8	2	100	8	50	80	27	12.4		7
7803609				PFAL04R100M31.7-8	2	100	8	50	72	31.75	12.7		8
7803610				PFAL04R100M32-8	2	100	8	50	80	32	14.4		8.2
7803611		Close	Close	PFAL04R100M25.4-12	2	100	12	50	80	25.4	9.5		6
7803612				PFAL04R100M27-12	2	100	12	50	80	27	12.4		7
7803613				PFAL04R100M31.7-12	2	100	12	50	80	31.75	12.7		8
7803614				PFAL04R100M32-12	2	100	12	50	80	32	14.4		8.2
7803615		Normal	Normal	PFAL04R125M25.4-10	2	125	10	50	80	25.4	9.5		6
7803616				PFAL04R125M27-10	2	125	10	50	80	27	12.4		7
7803617				PFAL04R125M38.1-10	2	125	10	63	80	38.1	15.9		10
7803618				PFAL04R125M40-10	2	125	10	63	85	40	16.4		9.2
7803619		Close	Close	PFAL04R125M25.4-16	2	125	16	50	80	25.4	9.5		6
7803620				PFAL04R125M27-16	2	125	16	50	80	27	12.4		7
7803621				PFAL04R125M38.1-16	2	125	16	63	80	38.1	15.9		10
7803622				PFAL04R125M40-16	2	125	16	63	85	40	16.4		9.2
7803623		Normal	Normal	PFAL04R160M25.4-12	2	160	12	50	80	25.4	9.5		6
7803624				PFAL04R160M27-12	2	160	12	50	80	27	12.4		7
7803625				PFAL04R160M40-12	2	160	12	63	85	40	16.4		9.2
7803626				PFAL04R160M50.8-12	2	160	12	63	100	50.8	19.1		11
7803629		Close	Close	PFAL04R160M25.4-20	2	160	20	50	80	40	16.4		9.2
7803630				PFAL04R160M27-20	2	160	20	50	80	50.8	19.1		11
7803627				PFAL04R160M40-20	2	160	20	63	85	25.4	9.5		6
7803628				PFAL04R160M50.8-20	2	160	20	63	100	27	12.4		7

Packed: 1 pc.

Note: All accessories included with body.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



For the use of internal coolant, please use a clamping bolt with coolant holes sold in the market.

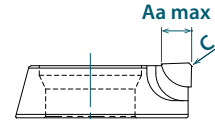




List 78PFAL

NEW

PFAL Inserts



Designation	No. of Cutting Edges	Insert Size		EDP Number
		c (mm)	Aa max (mm)	DP010
FR1204	1	0.4 x 45°	4	7820500
FR1206	1	0.4 x 45°	6	7820502
FR1204-W	1	0.4 x 45°	-	7820501

Packed: 1 pc.

Note: One wiper blade is required per cutter body and should be mounted in the designated position.

Note: The FR1204-W wiper blade can be used with both FR1204 & FR1206 normal blades.



List 7808H

PFAL Accessories

Appearance	EDP No.	Designation	Applicable Cutter		Recommended Tightening Torque
			(mm)	(inch)	
 Blade Clamping Screw	7808125	FS60620 (Torx 25)	PFAL Ø50-160	-	10.0 Nm
 Wedge	7808143	W12-06	PFAL Ø50-160	-	
 Wedge Clamping Screw	7808142	WS0617	PFAL Ø50-160	-	
 Wrench for Blade	7808211	T25-T (Torx 25)	PFAL Ø50-160	-	
 Wrench for Wedge	7808231	3MM-L	PFAL Ø50-160	-	

Packed: Clamping Screws = 10 pcs.; Wedge = 10 pcs.; Wedge Clamping Screw = 10 pcs.; Wrench for Blade = 1 pc.; Wrench for Wedge = 1 pc.





Cutting Conditions (Semi-Finishing)

Work Material		Tensile Strength – Hardness	Insert Size			
			FR12...			
			Face Milling			
			Milling Speed Vc (SFM)		Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)
CAT30	CAT40, CAT50 HSK-63					
N	Aluminum Alloys (7075, 5052, 2017, ADC12)	~12% Si	3300 (2600-6500)	6500 (3300-16400)	0.003 (0.002-0.004)	0.060 (0.040-0.080)
	Aluminum Alloys (AC9A, AC9B)	~13% Si	2000 (1300-2600)	2000 (1300-2600)	0.0025 (0.002-0.003)	0.060 (0.040-0.080)

Cutting Conditions (Finishing)

Work Material		Tensile Strength – Hardness	Insert Size			
			FR12...			
			Face Milling			
			Milling Speed Vc (SFM)		Feed Per Tooth fz (in/t)	Depth of Cut Aa (in)
CAT30	CAT40, CAT50 HSK-63					
N	Aluminum Alloys (7075, 5052, 2017, ADC12)	~12% Si	3300 (2600-6500)	6500 (3300-16400)	0.003 (0.002-0.004)	0.020 (0.012-0.040)
	Aluminum Alloys (AC9A, AC9B)	~13% Si	2000 (1300-2600)	2000 (1300-2600)	0.0025 (0.002-0.003)	0.020 (0.012-0.040)

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
DP010	–	Yes				<input checked="" type="checkbox"/>		

good best





List 52100

PFB SA (Inch)



SPEED FEED
P1259

Recommended Materials: p1259
Accessories & Inserts: p1255-1257
Effective Cutting Diameter & Recommended Width of Cut: p1258



Steel Shank

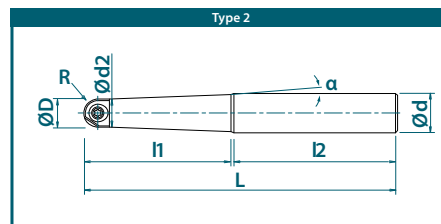
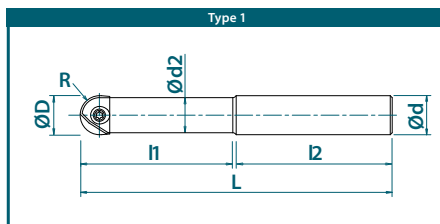


Carbide Shank

EDP No.	Body Type	Designation	Type	Tool Dia. (inch)		Overall Length (inch)	Neck Length (inch)		Taper	L/D Ratio	No. of Teeth	Shank Dia. (inch)		Neck Dia. (inch)	
				D	R		l1	l2				d	l2		d2
52100000	Cylindrical Shank Steel	PFB-R0250SA0250-S325	1	0.250	0.1250	3.250	0.625	0	2.5	2	2	0.250	2.625	0.226	
52100026		PFB-R0250SA0250-S375	1	0.250	0.1250	3.750	1.125	0	4.5	2	2	0.250	2.625	0.226	
52100027		PFB-R0250TPA0375-S375	2	0.250	0.1250	3.750	1.125	2	4.5	2	2	0.375	2.581	0.226	
52100028		PFB-R0250TPA0375-S425	2	0.250	0.1250	4.250	1.500	1	6	2	2	0.375	2.697	0.226	
52100029		PFB-R0375SA0375-S400	1	0.375	0.1875	4.000	0.937	0	2.5	2	2	0.375	3.063	0.336	
52100001		PFB-R0375SA0375-S550	1	0.375	0.1875	5.500	1.687	0	4.5	2	2	0.375	3.813	0.336	
52100030		PFB-R0375TPA0500-S500	2	0.375	0.1875	5.000	1.687	2	4.5	2	2	0.500	3.276	0.336	
52100031		PFB-R0375TPA0500-S550	2	0.375	0.1875	5.500	2.250	1	6	2	2	0.500	3.200	0.336	
52100032		PFB-R0500SA0500-S450	1	0.500	0.2500	4.500	1.250	0	2.5	2	2	0.500	3.250	0.461	
52100002		PFB-R0500SA0500-S550	1	0.500	0.2500	5.500	2.250	0	4.5	2	2	0.500	3.250	0.461	
52100033		PFB-R0500TPA0625-S550	2	0.500	0.2500	5.500	2.250	2	4.5	2	2	0.625	3.229	0.461	
52100034		PFB-R0500TPA0625-S650	2	0.500	0.2500	6.500	3.000	1	6	2	2	0.625	3.461	0.461	
52100035		PFB-R0625SA0625-S500	1	0.625	0.3125	5.000	1.562	0	2.5	2	2	0.625	3.438	0.546	
52100003		PFB-R0625SA0625-S550	1	0.625	0.3125	5.500	2.500	0	4	2	2	0.625	3.000	0.546	
52100036		PFB-R0625TPA0750-S600	2	0.625	0.3125	6.000	2.812	2	4.5	2	2	0.750	3.181	0.546	
52100037		PFB-R0625TPA0750-S700	2	0.625	0.3125	7.000	3.750	1	6	2	2	0.750	3.222	0.546	
52100038		PFB-R0750SA0750-S550	1	0.750	0.3750	5.500	1.875	0	2.5	2	2	0.750	3.625	0.671	
52100004		PFB-R0750SA0750-S600	1	0.750	0.3750	6.000	3.000	0	4	2	2	0.750	3.000	0.671	
52100039		PFB-R0750TPA1000-S650	2	0.750	0.3750	6.500	3.375	2	4.5	2	2	1.000	3.072	0.671	
52100040		PFB-R0750TPA1000-S800	2	0.750	0.3750	8.000	4.500	1	6	2	2	1.000	3.420	0.671	
52100005		PFB-R1000SA1000-S650	1	1.000	0.5000	6.500	3.000	0	3	2	2	1.000	3.500	0.882	
52100041		PFB-R1000SA1000-S750	1	1.000	0.5000	7.500	4.000	0	4	2	2	1.000	3.500	0.882	
52100042		PFB-R1000TPA1250-S800	2	1.000	0.5000	8.000	4.500	2	4.5	2	2	1.250	3.477	0.882	
52100043		PFB-R1000TPA1250-S950	2	1.000	0.5000	9.500	6.000	1	6	2	2	1.250	3.442	0.882	
52100016		PFB-R1250SA1250-S700	1	1.250	0.6250	7.000	3.750	0	3	2	2	1.250	3.250	1.132	
52100044		PFB-R1250SA1250-S850	1	1.250	0.6250	8.500	5.000	0	4	2	2	1.250	3.500	1.132	
52100045		PFB-R1250TPA1500-S900	2	1.250	0.6250	9.000	5.625	2	4.5	2	2	1.500	3.344	1.132	
52100046		PFB-R1250TPA1500-S1100	2	1.250	0.6250	11.000	7.500	1	6	2	2	1.500	3.425	1.132	
52100020		Cylindrical Shank Short Carbide	PFB-R0250SA0250-S325CS	1	0.250	0.1250	3.250	0.625	0	2.5	2	2	0.250	2.625	0.226
52100021			PFB-R0375SA0375-S400CS	1	0.375	0.1875	4.000	0.937	0	2.5	2	2	0.375	3.063	0.336
52100022			PFB-R0500SA0500-S450CS	1	0.500	0.2500	4.500	1.250	0	2.5	2	2	0.500	3.250	0.461
52100023			PFB-R0625SA0625-S550CS	1	0.625	0.3125	5.500	1.562	0	2.5	2	2	0.625	3.938	0.546
52100024	PFB-R0750SA0750-S600CS		1	0.750	0.3750	6.000	1.875	0	2.5	2	2	0.750	4.125	0.671	
52100025	PFB-R1000SA1000-S650CS		1	1.000	0.5000	6.500	2.500	0	2.5	2	2	1.000	4.000	0.882	
52100017	PFB-R1250SA1250-S700CS		1	1.250	0.6250	7.000	3.125	0	2.5	2	2	1.250	3.875	1.132	

Packed: 1 pc.

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List 52100 (Continued)

PFB SA (Inch)

Recommended Materials: p1259
Accessories & Inserts: p1255-1257
Effective Cutting Diameter & Recommended Width of Cut: p1258



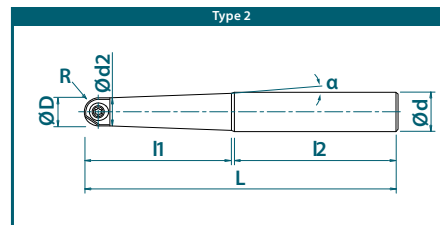
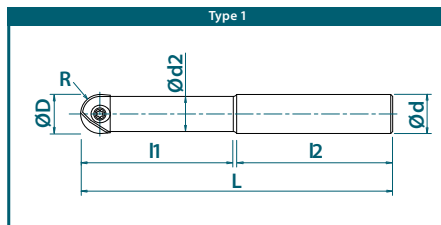
Steel Shank



Carbide Shank

EDP No.	Body Type	Designation	Type	Tool Dia.	Tool Radius	Overall Length	Neck Length	Taper	L/D Ratio	No. of Teeth	Shank Dia.	Shank Length	Neck Dia.
				(inch)	(inch)	(inch)	(inch)	α°	(inch)		(inch)	(inch)	
				D	R	L	l1						
				d									
52100047	Cylindrical Shank Long Carbide	PFB-R0250SA0250-L400CS	1	0.250	0.1250	4.000	1.250	0	5	2	0.250	2.750	0.226
52100048		PFB-R0250TPA0375-L425CS	2	0.250	0.1250	4.250	1.500	1	6	2	0.375	2.697	0.226
52100006		PFB-R0375SA0375-L550CS	1	0.375	0.1875	5.500	1.875	0	5	2	0.375	3.625	0.336
52100049		PFB-R0375TPA0500-L550CS	2	0.375	0.1875	5.500	2.250	1	6	2	0.500	3.200	0.336
52100007		PFB-R0500SA0500-L550CS	1	0.500	0.2500	5.500	2.500	0	5	2	0.500	3.000	0.461
52100050		PFB-R0500TPA0625-L650CS	2	0.500	0.2500	6.500	3.000	1	6	2	0.625	3.461	0.461
52100008		PFB-R0625SA0625-L650CS	1	0.625	0.3125	6.500	3.125	0	5	2	0.625	3.375	0.546
52100051		PFB-R0625TPA0750-L700CS	2	0.625	0.3125	7.000	3.750	1	6	2	0.750	3.222	0.546
52100009		PFB-R0750SA0750-L700CS	1	0.750	0.3750	7.000	3.750	0	5	2	0.750	3.250	0.671
52100052		PFB-R0750TPA1000-L800CS	2	0.750	0.3750	8.000	4.500	1	6	2	1.000	3.420	0.671
52100010		PFB-R1000SA1000-L800CS	1	1.000	0.5000	8.000	4.500	0	4.5	2	1.000	3.500	0.882
52100053		PFB-R1000TPA1250-L950CS	2	1.000	0.5000	9.500	6.000	1	6	2	1.250	3.442	0.882
52100018		PFB-R1250SA1250-L900CS	1	1.250	0.6250	9.000	5.625	0	4.5	2	1.250	3.375	1.132
52100054		PFB-R1250TPA1500-L1100CS	2	1.250	0.6250	11.000	7.500	1	6	2	1.500	3.425	1.132
52100055		PFB-R0250SA0250-LL450CS	1	0.250	0.1250	4.500	1.750	0	7	2	0.250	2.750	0.226
52100056		PFB-R0250TPA0375-LL475CS	2	0.250	0.1250	4.750	2.000	0.5	8	2	0.375	2.690	0.226
52100011	PFB-R0375SA0375-LL650CS	1	0.375	0.1875	6.500	2.625	0	7	2	0.375	3.875	0.336	
52100057	PFB-R0375TPA0500-LL650CS	2	0.375	0.1875	6.500	3.000	0.5	8	2	0.500	3.440	0.336	
52100012	PFB-R0500SA0500-LL700CS	1	0.500	0.2500	7.000	3.500	0	7	2	0.500	3.500	0.461	
52100058	PFB-R0500TPA0625-LL750CS	2	0.500	0.2500	7.500	4.000	0.5	8	2	0.625	3.448	0.461	
52100013	PFB-R0625SA0625-LL750CS	1	0.625	0.3125	7.500	3.750	0	6	2	0.625	3.750	0.546	
52100059	PFB-R0625TPA0750-LL825CS	2	0.625	0.3125	8.250	5.000	0.5	8	2	0.750	3.206	0.546	
52100014	PFB-R0750SA0750-LL900CS	1	0.750	0.3750	9.000	4.500	0	6	2	0.750	4.500	0.671	
52100060	PFB-R0750TPA1000-LL950CS	2	0.750	0.3750	9.500	6.000	0.5	8	2	1.000	3.401	0.671	
52100015	PFB-R1000SA1000-LL1050CS	1	1.000	0.5000	10.500	5.500	0	5.5	2	1.000	5.000	0.882	
52100061	PFB-R1000TPA1250-LL1150CS	2	1.000	0.5000	11.500	8.000	0.5	8	2	1.250	3.416	0.882	
52100019	PFB-R1250SA1250-LL1200CS	1	1.250	0.6250	12.000	6.875	0	5.5	2	1.250	5.125	1.132	
52100062	PFB-R1250TPA1500-LL1350CS	2	1.250	0.6250	13.500	10.000	0.5	8	2	1.500	3.392	1.132	

Packed: 1 pc.





List 78014

PFB SS (Metric)



SPEED
FEED
P1259

Recommended Materials: p1259
Accessories & Inserts: p1255-1257
Effective Cutting Diameter & Recommended Width of Cut: p1258



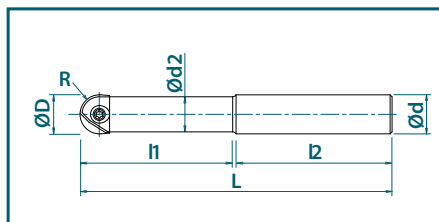
Steel Shank



Carbide Shank

EDP No.	Body Type	Designation	Tool Dia.	Tool Radius	Overall Length	Neck Length	L/D Ratio	No. of Teeth	Shank Dia.	Shank Length	Neck Dia.
			D	R	L	l1			d	l2	d2
7801400	Cylindrical Shank Steel	PFB-R080SS08-S120	8	4	120	36	4.5	2	8	84	7
7801401		PFB-R100SS10-S130	10	5	130	45	4.5	2	10	85	9
7801402		PFB-R120SS12-S130	12	6	130	54	4.5	2	12	76	11
7801403		PFB-R160SS16-S140	16	8	140	65	4	2	16	76	14
7801404		PFB-R200SS20-S160	20	10	160	80	4	2	20	80	18
7801405		PFB-R250SS25-S160	25	12.5	160	75	3	2	25	85	22
7801406		PFB-R300SS32-S170	30	15	170	90	3	2	32	80	27
7801407		PFB-R320SS32-S180	32	16	180	96	3	2	32	84	29
7801429	Cylindrical Shank Short Carbide	PFB-R060SS06-S80CS	6	3	80	15	2.5	2	6	65	5.4
7801430		PFB-R080SS08-S100CS	8	4	100	20	2.5	2	8	80	7
7801431		PFB-R100SS10-S100CS	10	5	100	25	2.5	2	10	75	9
7801432		PFB-R120SS12-S110CS	12	6	110	30	2.5	2	12	80	11
7801433		PFB-R160SS16-S140CS	16	8	140	40	2.5	2	16	100	14
7801434		PFB-R200SS20-S160CS	20	10	160	50	2.5	2	20	110	18
7801435		PFB-R250SS25-S160CS	25	12.5	160	62.5	2.5	2	25	97.5	22
7801436		PFB-R300SS32-S170CS	30	15	170	75	2.5	2	32	95	27
7801437	PFB-R320SS32-S180CS	32	16	180	80	2.5	2	32	100	29	
7801439	Cylindrical Shank Long Carbide	PFB-R060SS06-L100CS	6	3	100	30	5.0	2	6	70	5.4
7801440		PFB-R080SS08-L120CS	8	4	120	40	5.0	2	8	80	7
7801441		PFB-R100SS10-L130CS	10	5	130	50	5.0	2	10	80	9
7801442		PFB-R120SS12-L140CS	12	6	140	60	5.0	2	12	80	11
7801443		PFB-R160SS16-L160CS	16	8	160	72	4.5	2	16	88	14
7801444		PFB-R200SS20-L180CS	20	10	180	90	4.5	2	20	90	18
7801445		PFB-R250SS25-L200CS	25	12.5	200	100	4	2	25	100	22
7801446		PFB-R300SS32-L220CS	30	15	220	120	4	2	32	100	27
7801447	PFB-R320SS32-L230CS	32	16	230	128	4	2	32	102	29	
7801419	Cylindrical Shank Extra-Long Carbide	PFB-R060SS06-LL120CS	6	3	120	42	7	2	6	78	5.4
7801420		PFB-R080SS08-LL140CS	8	4	140	56	7	2	8	84	7
7801421		PFB-R100SS10-LL150CS	10	5	150	70	7	2	10	80	9
7801422		PFB-R120SS12-LL160CS	12	6	160	84	7	2	12	76	11
7801423		PFB-R160SS16-LL200CS	16	8	200	96	6	2	16	104	14
7801424		PFB-R200SS20-LL240CS	20	10	240	120	6	2	20	120	18
7801425		PFB-R250SS25-LL260CS	25	12.5	260	137.5	5.5	2	25	122.5	22
7801426		PFB-R300SS32-LL290CS	30	15	290	165	5.5	2	32	125	27
7801427	PFB-R320SS32-LL300CS	32	16	300	176	5.5	2	32	124	29	

Packed: 1 pc.



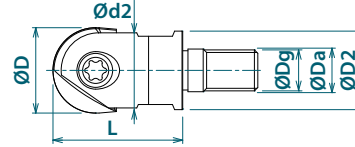


SPEED FEED
P1259

Recommended Materials: p1259
Accessories & Inserts: p1255-1257
Effective Cutting Diameter & Recommended Width of Cut: p1258
SF Arbors: p1279

List 52604

PFB ASF (Inch)



EDP No.	Body Type	Designation	Tool Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Head Dia. (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
52604000	Screw Fit Head	PFB-R0375ASF6	0.375	2	0.256	M6	1.024	0.354	0.354	7	PFB...
52604001		PFB-R0500ASF6	0.500	2	0.256	M6	1.024	0.433	0.433	7	
52604002		PFB-R0625ASF8	0.625	2	0.335	M8	1.260	0.551	0.571	10	
52604003		PFB-R0750ASF10	0.750	2	0.413	M10	1.496	0.709	0.709	14	
52604004		PFB-R1000ASF12	1.000	2	0.492	M12	1.496	0.866	0.906	17	

Packed: 1 pc.



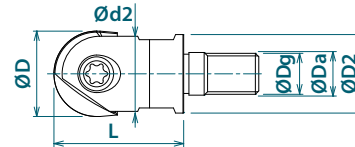
List 78114

PFB SF (Metric)



SPEED FEED
P1259

Recommended Materials: p1259
Accessories & Inserts: p1255-1257
Effective Cutting Diameter & Recommended Width of Cut: p1258
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Head Dia. (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
7801490	Screw Fit Head	PFB-R100SF6	10	2	6.5	M6	26	9	9	7	PFB...
7801491		PFB-R120SF6	12	2	6.5	M6	26	11	11	7	
7801492		PFB-R160SF8	16	2	8.5	M8	32	14	14.5	10	
7801493		PFB-R200SF10	20	2	10.5	M10	38	18	18	14	
7801494		PFB-R250SF12	25	2	12.5	M12	38	22	23	17	
7801495		PFB-R300SF16	30	2	17	M16	43	27	28	22	

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**



List 78PFB

PFB Inserts (Inch)



Spiral



Spiral (Full Radius)



Spiral (Strengthened Edge)

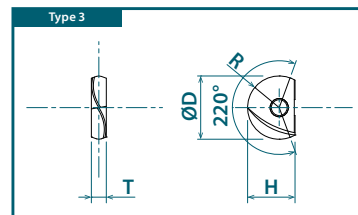
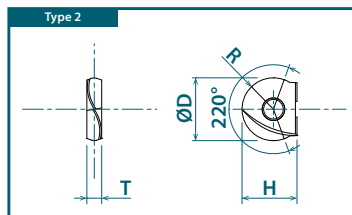
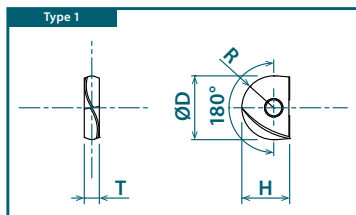


Spiral (Diamond Coated)

Designation	Type	Specification	No. of Cutting Edges	Range	Insert Size				EDP Number			
					D	R	T	H	XP3225	XP3310	XP3320	XC4505
					(inch)	(inch)	(mm)	(mm)				
PFB0250A-SP	1	Spiral	2	180°	0.250	0.125	2	5.175	52101020	-	52101010	-
PFB0375A-SP					0.375	0.1875	2.6	8.5	52101021	-	52101011	-
PFB0500A-SP					0.500	0.2500	3	10	52101022	-	52101012	-
PFB0625A-SP					0.625	0.3125	4	12	52101023	-	52101013	-
PFB0750A-SP					0.750	0.3750	5	15	52101024	-	52101014	-
PFB1000A-SP					1.000	0.5000	6	18.5	52101025	-	52101015	-
PFB1250A-SP					1.250	0.6250	7	23.5	52101026	-	52101016	-
PFB0250A-Q	2	Spiral (Full Radius)	2	220°	0.250	0.125	2	5.175	52101040	-	-	-
PFB0375A-Q					0.375	0.1875	2.6	8.5	52101041	-	-	-
PFB0500A-Q					0.500	0.2500	3	10	52101042	-	-	-
PFB0625A-Q	3				0.625	0.3125	4	12	52101043	-	-	-
PFB0750A-Q					0.750	0.3750	5	15	52101044	-	-	-
PFB1000A-Q					1.000	0.5000	6	18.5	52101045	-	-	-
PFB1250A-Q					1.250	0.6250	7	23.5	52101046	-	-	
PFB0250A-SH	2	Spiral (Strengthened Edge)	2	180°	0.250	0.125	2	5.175	-	52101030	-	-
PFB0375A-SH	1				0.375	0.1875	2.6	8.5	-	52101031	-	-
PFB0500A-SH					0.500	0.2500	3	10	-	52101032	-	-
PFB0625A-SH					0.625	0.3125	4	12	-	52101033	-	-
PFB0750A-SH	0.750				0.3750	5	15	-	52101034	-	-	
PFB1000A-SH	1.000				0.5000	6	18.5	-	52101035	-	-	
PFB1250A-SH					1.250	0.6250	7	23.5	-	52101036	-	
PFB0250A-D	2	Spiral (Diamond Coated)	2	180°	0.250	1.250	2	5.175	-	-	-	52101000
PFB0375A-D	1				0.375	0.1875	2.6	8.5	-	-	-	52101001
PFB0500A-D					0.500	0.2500	3	10	-	-	-	52101002
PFB0625A-D					0.625	0.3125	4	12	-	-	-	52101003
PFB0750A-D	0.750				0.3750	5	15	-	-	-	52101004	
PFB1000A-D	1.000				0.5000	6	18.5	-	-	-	52101005	
PFB1250A-D					1.250	0.6250	7	23.5	-	-	52101006	

Packed: 1 pc.

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List 78PFB (Continued)

PFB Inserts (Metric)



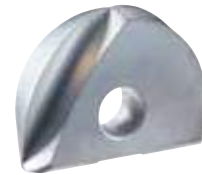
Spiral



Spiral (Full Radius)



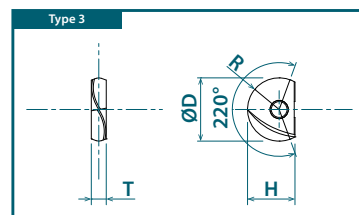
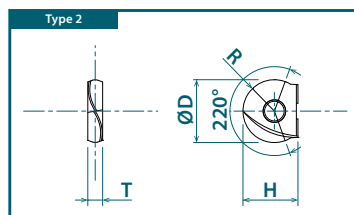
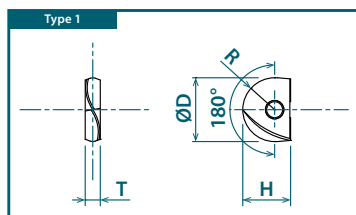
Spiral (Strengthened Edge)



Spiral (Diamond Coated)


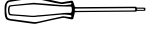
Designation	Type	Specification	No. of Cutting Edges	Range	Insert Size				EDP Number							
					D (mm)	R (mm)	T (mm)	H (mm)	XP3225	XP3310	XP3320	XC4505				
PFB080-SP	1	Spiral	2	180°	8	4	2.4	7	7820030	-	7820010	-				
PFB100-SP					10	5	2.6	8.5	7820031	-	7820011	-				
PFB120-SP					12	6	3	10	7820032	-	7820012	-				
PFB160-SP					16	8	4	12	7820033	-	7820013	-				
PFB200-SP					20	10	5	15	7820034	-	7820014	-				
PFB250-SP					25	12.5	6	18.5	7820035	-	7820015	-				
PFB300-SP	2	Spiral (Full Radius)	2	220°	30	15	7	22.5	7820036	-	7820016	-				
PFB060-Q					2	Spiral (Strengthened Edge)	2	180°	6	3	2	5	7820048	-	-	-
PFB070-Q									7	3.5	2	5.5	7820049	-	-	-
PFB080-Q									8	4	2.4	7	7820050	-	-	-
PFB100-Q									10	5	2.6	8.5	7820051	-	-	-
PFB120-Q									12	6	3	10	7820052	-	-	-
PFB160-Q									16	8	4	12	7820053	-	-	-
PFB200-Q					3	Spiral (Diamond Coated)	2	180°	20	10	5	15	7820054	-	-	-
PFB250-Q									25	12.5	6	18.5	7820055	-	-	-
PFB300-Q									30	15	7	22.5	7820056	-	-	-
PFB060-SH					1	Spiral (Strengthened Edge)	2	180°	6	3	2	5	-	7820039	-	-
PFB080-SH									8	4	2.4	7	-	7820040	-	-
PFB100-SH	10	5	2.6	8.5					-	7820041	-	-				
PFB120-SH	12	6	3	10					-	7820042	-	-				
PFB160-SH	16	8	4	12					-	7820043	-	-				
PFB200-SH	20	10	5	15					-	7820044	-	-				
PFB250-SH	25	12.5	6	18.5					-	7820045	-	-				
PFB300-SH	30	15	7	22.5					-	7820046	-	-				
PFB320-SH	32	16	7	23.5					-	7820047	-	-				
PFB060-D	1	Spiral (Diamond Coated)	2	180°					6	3	2	5	-	-	-	7820018
PFB070-D					7	3.5	2	5.5	-	-	-	7820019				
PFB080-D					8	4	2.4	7	-	-	-	7820020				
PFB100-D					10	5	2.6	8.5	-	-	-	7820021				
PFB120-D					12	6	3	10	-	-	-	7820022				
PFB160-D					16	8	4	12	-	-	-	7820023				
PFB200-D					20	10	5	15	-	-	-	7820024				
PFB250-D					25	12.5	6	18.5	-	-	-	7820025				
PFB300-D	30	15	7	22.5	-	-	-	7820026								

Packed: 1 pc.



List 7808H

PFB Accessories

Appearance	EDP No.	Designation	Applicable Insert		Recommended Tightening Torque
			(inch)	(mm)	
 Clamping Screw	7808124	FS20652RB (Torx 6)	0.250	6-7	0.8 Nm
	7808123	FS25669RB (Torx 7)	-	8	1.0 Nm
	7808117	FS30686RB (Torx 8)	0.375	10	1.2 Nm
	7808118	FS35610RB (Torx 10)	0.500	12	2.0 Nm
	7808119	FS40613RB (Torx 15)	0.625	16	3.0 Nm
	7808120	FS50615RB (Torx 20)	0.750	20	5.0 Nm
	7808121	FS60620RB (Torx 20)	1.000	25	5.0 Nm
	7808122	FS80624RB (Torx 30)	1.250	30-32	6.0 Nm
 Wrench	7808203	T6-D (Torx 6)	0.250	6-7	
	7808204	T7-D (Torx 7)	-	8	
	7808205	T8-D (Torx 8)	0.375	10	
	7808207	T10-D (Torx 10)	0.500	12	
	7808208	T15-D (Torx 15)	0.625	16	
	7808209	T20-D (Torx 20)	0.750-1.000	20-25	
	7808212	T30-T (Torx 30)	1.250	30-32	

Packed: Clamping Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.





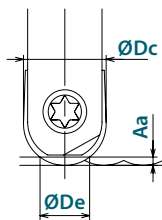
Effective Cutting Diameter

Depth of Cut Aa		Effective Cutting Diameter (ØDe)																			
		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc			
(inch)	(mm)	0.250"	6mm	0.275"	7mm	0.315"	8 mm	0.375"	10 mm	0.500"	12 mm	0.625"	16 mm	0.750"	20 mm	1.000"	25 mm	1.181"	30 mm	1.250"	32mm
0.004	0.1	0.063	1.5	0.063	1.6	0.071	1.8	0.077	2.0	0.089	2.2	0.100	2.5	0.109	2.8	0.126	3.2	0.137	3.5	0.142	3.6
0.008	0.2	0.088	2.2	0.091	2.3	0.099	2.5	0.108	2.8	0.125	3.1	0.141	3.6	0.154	4.0	0.178	4.5	0.194	4.9	0.197	5.0
0.012	0.3	0.107	2.6	0.110	2.8	0.121	3.0	0.132	3.4	0.153	3.7	0.172	4.3	0.188	4.9	0.218	5.4	0.237	6.0	0.244	6.2
0.016	0.4	0.122	3.0	0.130	3.3	0.138	3.5	0.152	3.9	0.176	4.3	0.197	5.0	0.217	5.6	0.251	6.3	0.273	6.9	0.280	7.1
0.020	0.5	0.136	3.3	0.142	3.6	0.154	3.9	0.169	4.4	0.196	4.8	0.220	5.6	0.242	6.2	0.280	7.0	0.305	7.7	0.311	7.9
0.031	0.8	0.165	4.1	0.177	4.5	0.188	4.8	0.207	5.4	0.241	6.0	0.271	7.0	0.299	7.8	0.347	8.8	0.378	9.7	0.394	10.0
0.039	1.0	-	-	-	-	-	-	0.229	6.0	0.268	6.6	0.302	7.7	0.333	8.7	0.387	9.8	0.422	10.8	0.437	11.1
0.059	1.5	-	-	-	-	-	-	0.273	7.1	0.323	7.9	0.365	9.3	0.404	10.5	0.471	11.9	0.515	13.1	0.531	13.5
0.079	2.0	-	-	-	-	-	-	-	0.365	8.9	0.415	10.6	0.460	12.0	0.539	13.6	0.590	15.0	0.610	15.5	
0.098	2.5	-	-	-	-	-	-	-	-	-	-	0.455	11.6	0.506	13.2	0.595	15.0	0.652	16.6	0.677	17.2
0.118	3.0	-	-	-	-	-	-	-	-	-	-	-	-	0.546	14.3	0.645	16.2	0.708	18.0	0.736	18.7
0.138	3.5	-	-	-	-	-	-	-	-	-	-	-	-	0.581	15.2	0.690	17.3	0.759	19.3	0.787	20.0
0.157	4.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.728	18.3	0.802	20.4	0.835	21.2
0.117	4.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.706	21.4	0.874	22.2
0.197	5.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.881	22.3	0.913	23.2

Note: Effective cutting diameter is based on cutting depth (Aa)

How to determine effective cutting diameter:

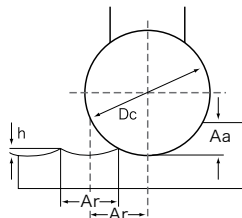
Ex: Dc = 0.500"
 Aa = 0.020"
 $De = 2\sqrt{0.020(0.500-0.020)}$
 De = 0.196"



$$De = 2\sqrt{a_a(D_c - a_a)}$$

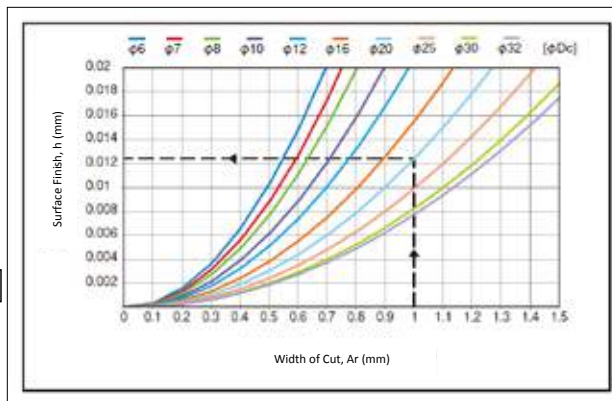
Recommended Width of Cut & Surface Roughness

Tool Dia ØDc		Width of Cut Ar		Surface Finish h	
(inch)	(mm)	(inch)	(mm)	(inch)	(mm)
0.250	6	0.0157	0.4	0.00027	0.007
0.275	7	0.0177	0.45	0.00027	0.007
0.315	8	0.0197	0.5	0.00031	0.008
0.375	10	0.0236	0.6	0.00037	0.009
0.500	12	0.0275	0.7	0.00038	0.010
0.625	16	0.0315	0.8	0.00040	0.010
0.750	20	0.0394	1.0	0.00052	0.012
1.000	25	0.0472	1.2	0.00055	0.014
1.181	30	0.0512	1.3	0.00055	0.014
1.250	32	0.0551	1.4	0.00059	0.015



$$h = 0.5 (D_c - \sqrt{D_c^2 - Ar^2})$$

Dc=20mm
 Ar=1mm
 ->h=0.0125mm



Cutting Conditions

Work Material	Tensile Strength – Hardness	Milling Speed Vc (SFM)	Depth of Cut Aa (in)	Feed Per Tooth fz (in/t)			
				Ø0.236-0.312 (6-8mm)	Ø0.375-0.500 (10-12mm)	Ø0.625-0.750 (16-20mm)	Ø1.000-1.250 (25-32mm)
P Mild Steels, Carbon Steels (1010, 1018) Carbon Steels, Alloy Steels (1050, 4140) Die Steels (H13, D2)	~180 HB	985 (655-1310)	0.02Dc	0.0040	0.0047	0.0055	0.0071
	~280 HB	985 (655-1310)	0.02Dc	0.0028	0.0040	0.0047	0.0055
	~280 HB	820 (495-1150)	0.02Dc	0.0028	0.0040	0.0047	0.0055
M Stainless Steels (304SS, 420SS)	~250 HB	820 (495-1150)	0.02Dc	0.0028	0.0047	0.0055	0.0067
K Cast Iron (FC250) Ductile Cast Iron (60-40-18)	~350 N/mm ²	1310 (985-1640)	0.02Dc	0.0047	0.0055	0.0071	0.0086
	~600 N/mm ²	985 (655-1310)	0.02Dc	0.0040	0.0047	0.0055	0.0071
N Aluminum Alloys (6061, 7075) Copper Alloys (C1100) Graphite CFRP	~13% Si	1640 (1310-1970)	0.03Dc	0.0047	0.0055	0.0071	0.0086
	-	985 (655-1310)	0.03Dc	0.0043	0.0051	0.0067	0.0079
	-	1640 (1310-1970)	0.03Dc	0.0055	0.0067	0.0083	0.0098
	-	1310 (985-1640)	0.03Dc	0.0043	0.0051	0.0067	0.0079
S Heat Resistant Alloys (Inconel 718) Titanium Alloy (Ti-6Al-4V)	-	165 (65-260)	0.015Dc	0.0016	0.0020	0.0024	0.0024
	-	295 (130-395)	0.02Dc	0.0024	0.0031	0.0043	0.0051
H Pre-hardened Steel (P20, Stavax) Die Cast Steels (A2, S7) Hardened Steels (D2)	40 - 43 HRC	655 (330-985)	0.015Dc	0.0024	0.0028	0.0031	0.0040
	43 - 48 HRC	590 (295-655)	0.015Dc	0.0020	0.0024	0.0028	0.0028
	50 - 55 HRC	490 (330-820)	0.01Dc	0.0020	0.0024	0.0028	0.0028

Recommended Materials by Application

Insert Grade	P	M	K	N	S	H
XP3225	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/> *	<input type="checkbox"/>	
XP3310			<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
XP3320	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
XC4505				<input checked="" type="checkbox"/> **		

*: Best recommended for aluminum & copper alloy applications.
 **: Best recommended for graphite & CFRP applications.

good best

List 52200

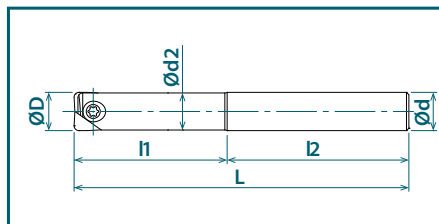
PFR SA (Inch)



Recommended Materials: p1269-1270
Accessories & Inserts: p1263-1268

EDP No.	Body Type	Designation	Tool Dia.	Overall Length	Neck Length	L/D Ratio	No. of Teeth	Shank Dia.	Shank Length	Neck Dia.	
			(inch)	(inch)	(inch)			(inch)	(inch)	(inch)	
			D	L	l1				d	l2	d2
52200024	Cylindrical Shank Steel	PFR-R0250SA0250-S325	0.250	3.250	0.625	2.5	2	0.250	2.625	0.225	
52200025		PFR-R0250SA0250-S375	0.250	3.750	1.125	4.5	2	0.250	2.625	0.225	
52200026		PFR-R0375SA0375-S400	0.375	4.000	0.937	2.5	2	0.375	3.063	0.335	
52200000		PFR-R0375SA0375-S550	0.375	5.500	1.687	4.5	2	0.375	3.813	0.355	
52200027		PFR-R0500SA0500-S450	0.500	4.500	1.250	2.5	2	0.500	3.250	0.480	
52200001		PFR-R0500SA0500-S550	0.500	5.500	2.250	4.5	2	0.500	3.250	0.480	
52200028		PFR-R0625SA0625-S500	0.625	5.000	1.562	2.5	2	0.625	3.438	0.605	
52200002		PFR-R0625SA0625-S550	0.625	5.500	2.500	4	2	0.625	3.000	0.605	
52200029		PFR-R0750SA0750-S550	0.750	5.500	1.875	2.5	2	0.750	3.625	0.730	
52200003		PFR-R0750SA0750-S600	0.750	6.000	3.000	4	2	0.750	3.000	0.730	
52200004		PFR-R1000SA1000-S650	1.000	6.500	3.000	3	2	1.000	3.500	0.980	
52200030		PFR-R1000SA1000-S750	1.000	7.500	4.000	4	2	1.000	3.500	0.980	
52200015		PFR-R1250SA1250-S700	1.250	7.000	3.750	3	2	1.250	3.250	1.230	
52200031		PFR-R1250SA1250-S850	1.250	8.500	5.000	4	2	1.250	3.500	1.230	
52200032	Cylindrical Shank Short Carbide	PFR-R0250SA0250-S325CS	0.250	3.250	0.625	2.5	2	0.250	2.625	0.225	
52200005		PFR-R0375SA0375-S400CS	0.375	4.000	0.937	2.5	2	0.375	3.063	0.355	
52200006		PFR-R0500SA0500-S450CS	0.500	4.500	1.250	2.5	2	0.500	3.250	0.480	
52200007		PFR-R0625SA0625-S550CS	0.625	5.500	1.562	2.5	2	0.625	3.938	0.605	
52200008		PFR-R0750SA0750-S600CS	0.750	6.000	1.875	2.5	2	0.750	4.125	0.730	
52200009		PFR-R1000SA1000-S650CS	1.000	6.500	2.500	2.5	2	1.000	4.000	0.980	
52200016	Cylindrical Shank Long Carbide	PFR-R1250SA1250-S700CS	1.250	7.000	3.125	2.5	2	1.250	3.875	1.230	
52200033		PFR-R0250SA0250-L400CS	0.250	4.000	1.250	5	2	0.250	2.750	0.225	
52200018		PFR-R0375SA0375-L550CS	0.375	5.500	1.875	5	2	0.375	3.625	0.355	
52200019		PFR-R0500SA0500-L550CS	0.500	5.500	2.500	5	2	0.500	3.000	0.480	
52200020		PFR-R0625SA0625-L650CS	0.625	6.500	3.125	5	2	0.625	3.375	0.605	
52200021	Cylindrical Shank Extra-Long Carbide	PFR-R0750SA0750-L700CS	0.750	7.000	3.750	5	2	0.750	3.250	0.730	
52200022		PFR-R1000SA1000-L800CS	1.000	8.000	4.500	4.5	2	1.000	3.500	0.980	
52200023		PFR-R1250SA1250-L900CS	1.250	9.000	5.625	4.5	2	1.250	3.375	1.230	
52200034		PFR-R0250SA0250-LL450CS	0.250	4.500	1.750	7	2	0.250	2.750	0.225	
52200010	Cylindrical Shank Extra-Long Carbide	PFR-R0375SA0375-LL650CS	0.375	6.500	2.625	7	2	0.375	3.875	0.355	
52200011		PFR-R0500SA0500-LL700CS	0.500	7.000	3.500	7	2	0.500	3.500	0.480	
52200012		PFR-R0625SA0625-LL750CS	0.625	7.500	3.750	6	2	0.625	3.750	0.605	
52200013		PFR-R0750SA0750-LL900CS	0.750	9.000	4.500	6	2	0.750	4.500	0.730	
52200014		PFR-R1000SA1000-LL1050CS	1.000	10.500	5.500	5.5	2	1.000	5.000	0.980	
52200017	PFR-R1250SA1250-LL1200CS	1.250	12.000	6.875	5.5	2	1.250	5.125	1.230		

Packed: 1 pc.





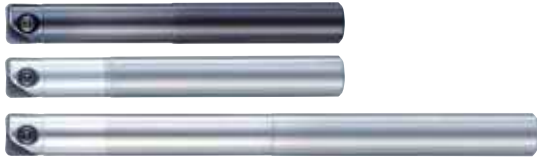
List 78320

PFR SS (Metric)



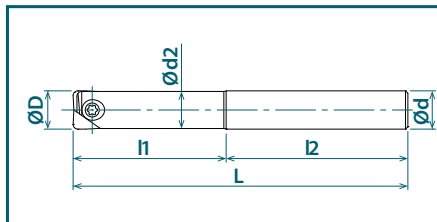
SPEED FEED
P1269-1270

Recommended Materials: p1269-1270
Accessories & Inserts: p1263-1268



EDP No.	Body Type	Designation	Tool Dia.	Overall Length	Neck Length	L/D Ratio	No. of Teeth	Shank Dia.	Shank Length	Neck Dia.	
			(mm)	(mm)	(mm)			(mm)	(mm)	(mm)	
			D	L	l1				d	l2	d2
7832000	Cylindrical Shank Steel	PFR-R080SS08-S120	8	120	36	4.5	2	8	84	7.5	
7832001		PFR-R100SS10-S130	10	130	45	4.5	2	10	85	9.5	
7832002		PFR-R120SS12-S130	12	130	54	4.5	2	12	76	11.5	
7832003		PFR-R160SS16-S140	16	140	64	4	2	16	76	15.5	
7832004		PFR-R200SS20-S160	20	160	80	4	2	20	80	19.5	
7832005		PFR-R250SS25-S160	25	160	75	3	2	25	85	24.5	
7832006		PFR-R300SS32-S170	30	170	90	3	2	32	80	29.5	
7832007	PFR-R320SS32-S180	32	180	96	3	2	32	84	31.5		
7832029	Cylindrical Shank Short Carbide	PFR-R060SS06-S80CS	6	80	15	2.5	2	6	65	5.5	
7832030		PFR-R080SS08-S100CS	8	100	20	2.5	2	8	80	7.5	
7832031		PFR-R100SS10-S100CS	10	100	25	2.5	2	10	75	9.5	
7832032		PFR-R120SS12-S110CS	12	110	30	2.5	2	12	80	11.5	
7832033		PFR-R160SS16-S140CS	16	140	40	2.5	2	16	100	15.5	
7832034		PFR-R200SS20-S160CS	20	160	50	2.5	2	20	110	19.5	
7832035		PFR-R250SS25-S160CS	25	160	62.5	2.5	2	25	97.5	24.5	
7832036	PFR-R300SS32-S170CS	30	170	75	2.5	2	32	95	29.5		
7832037	PFR-R320SS32-S180CS	32	180	80	2.5	2	32	100	31.5		
7832039	Cylindrical Shank Long Carbide	PFR-R060SS06-L100CS	6	100	30	5	2	6	70	5.5	
7832040		PFR-R080SS08-L120CS	8	120	40	5	2	8	80	7.5	
7832041		PFR-R100SS10-L130CS	10	130	50	5	2	10	80	9.5	
7832042		PFR-R120SS12-L140CS	12	140	60	5	2	12	80	11.5	
7832043		PFR-R160SS16-L160CS	16	160	72	4.5	2	16	88	15.5	
7832044		PFR-R200SS20-L180CS	20	180	90	4.5	2	20	90	19.5	
7832045		PFR-R250SS25-L200CS	25	200	100	4	2	25	100	24.5	
7832046	PFR-R300SS32-L220CS	30	220	120	4	2	32	100	29.5		
7832047	PFR-R320SS32-L230CS	32	230	128	4	2	32	102	31.5		
7832019	Cylindrical Shank Extra-Long Carbide	PFR-R060SS06-LL120CS	6	120	42	7	2	6	78	5.5	
7832020		PFR-R080SS08-LL140CS	8	140	56	7	2	8	84	7.5	
7832021		PFR-R100SS10-LL150CS	10	150	70	7	2	10	80	9.5	
7832022		PFR-R120SS12-LL160CS	12	160	84	7	2	12	76	11.5	
7832023		PFR-R160SS16-LL200CS	16	200	96	6	2	16	104	15.5	
7832024		PFR-R200SS20-LL240CS	20	240	120	6	2	20	120	19.5	
7832025		PFR-R250SS25-LL260CS	25	260	137.5	5.5	2	25	122.5	24.5	
7832026	PFR-R300SS32-LL290CS	30	290	165	5.5	2	32	125	29.5		
7832027	PFR-R320SS32-LL300CS	32	300	176	5.5	2	32	124	31.5		

Packed: 1 pc.





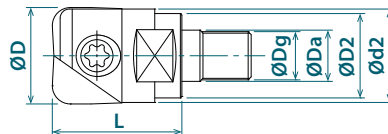
List 52605

PFR ASF (Inch)



SPEED FEED
P1269-1270

Recommended Materials: p1269-1270
Accessories & Inserts: p1263-1268
SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Head Dia. (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
52605000	Screw Fit Head	PFR-R0375ASF6	0.375	2	0.256	M6	1.024	0.374	0.354	7	PFR...
52605001		PFR-R0500ASF6	0.500	2	0.256	M6	1.024	0.453	0.433	7	
52605002		PFR-R0625ASF8	0.625	2	0.335	M8	1.260	0.610	0.571	10	
52605003		PFR-R0750ASF10	0.750	2	0.413	M10	1.496	0.768	0.709	14	
52605004		PFR-R1000ASF12	1.000	2	0.492	M12	1.496	0.965	0.906	17	

Packed: 1 pc.



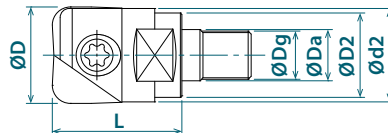
List 78220

PFR SF (Metric)



SPEED FEED
P1269-1270

Recommended Materials: p1269-1270
Accessories & Inserts: p1263-1268
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Head Dia. (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
7832090	Screw Fit Head	PFR-R100SF6	10	2	6.5	M6	26	9.5	9	7	PFR...
7832091		PFR-R120SF6	12	2	6.5	M6	26	11.5	11	7	
7832092		PFR-R160SF8	16	2	8.5	M8	32	15.5	14.5	10	
7832093		PFR-R200SF10	20	2	10.5	M10	38	19.5	18	14	
7832094		PFR-R250SF12	25	2	12.5	M12	38	24.5	23	17	
7832095		PFR-R300SF16	30	2	17	M16	43	29.5	28	22	
7832096		PFR-R320SF16	32	2	17	M16	43	31.5	28	22	

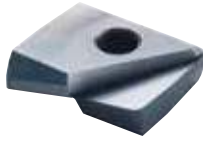
Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

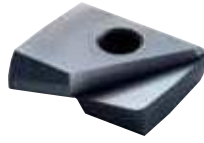


List 78PFR

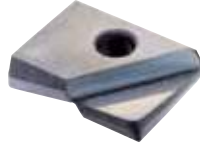
PFR Inserts (Inch)



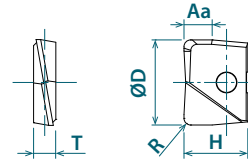
Multi-Purpose



Strengthened Edge



Diamond Coated



Designation	Specification	No. of Cutting Edges	Insert Size					EDP Number		
			D	R	Aa	T	H	XP3225	XP3310	XC4505
			(inch)	(inch)	(inch)	(mm)	(mm)			
PFR0250R015A-ST	Multi-Purpose	2	0.250	0.015	0.078	2	5	52201029	-	-
PFR0250R030A-ST				0.030				52201030	-	-
PFR0250R060A-ST				0.060				52201031	-	-
PFR0375R015A-ST				0.015				52201000	-	-
PFR0375R030A-ST			0.030	52201001	-	-				
PFR0375R060A-ST			0.060	52201002	-	-				
PFR0375R090A-ST			0.090	52201003	-	-				
PFR0500R015A-ST			0.015	52201004	-	-				
PFR0500R030A-ST			0.030	52201005	-	-				
PFR0500R060A-ST			0.060	52201006	-	-				
PFR0500R090A-ST			0.090	52201007	-	-				
PFR0500R120A-ST			0.120	52201008	-	-				
PFR0625R015A-ST			0.015	52201009	-	-				
PFR0625R030A-ST			0.030	52201010	-	-				
PFR0625R060A-ST			0.060	52201011	-	-				
PFR0625R090A-ST			0.090	52201012	-	-				
PFR0625R120A-ST			0.120	52201013	-	-				
PFR0750R015A-ST			0.015	52201014	-	-				
PFR0750R030A-ST			0.030	52201015	-	-				
PFR0750R060A-ST			0.060	52201016	-	-				
PFR0750R090A-ST			0.090	52201017	-	-				
PFR0750R120A-ST			0.120	52201018	-	-				
PFR1000R015A-ST			0.015	52201019	-	-				
PFR1000R030A-ST			0.030	52201020	-	-				
PFR1000R060A-ST			0.060	52201021	-	-				
PFR1000R090A-ST			0.090	52201022	-	-				
PFR1000R120A-ST			0.120	52201023	-	-				
PFR1250R015A-ST			0.015	52201024	-	-				
PFR1250R030A-ST	0.030	52201025	-	-						
PFR1250R060A-ST	0.060	52201026	-	-						
PFR1250R090A-ST	0.090	52201027	-	-						
PFR1250R120A-ST	0.120	52201028	-	-						
PFR0250R015A-SH	Strengthened Edge	2	0.250	0.015	0.078	2	5	-	52201079	-
PFR0250R030A-SH				0.030				-	52201080	-
PFR0250R060A-SH				0.060				-	52201081	-
PFR0375R015A-SH				0.015				-	52201050	-
PFR0375R030A-SH			0.030	0.130	2.6	8.5	-	52201051	-	
PFR0375R060A-SH			0.060				-	52201052	-	
PFR0375R090A-SH			0.090				-	52201053	-	
PFR0500R015A-SH			0.015				-	52201054	-	
PFR0500R030A-SH			0.030	0.157	3	10	-	52201055	-	
PFR0500R060A-SH			0.060				-	52201056	-	
PFR0500R090A-SH			0.090				-	52201057	-	
PFR0500R120A-SH			0.120				-	52201058	-	

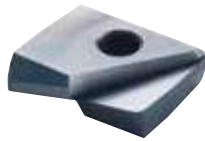
Packed: 1 pc.

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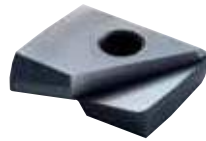


List 78PFR (Continued)

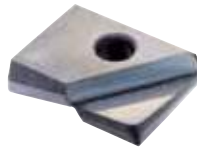
PFR Inserts (Inch)



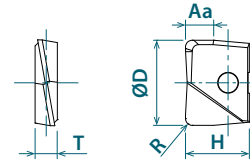
Multi-Purpose



Strengthened Edge



Diamond Coated



Designation	Specification	No. of Cutting Edges	Insert Size					EDP Number					
			D	R	Aa	T	H	XP3225	XP3310	XC4505			
			(inch)	(inch)	(inch)	(mm)	(mm)						
PFR0625R015A-SH	Strengthened Edge	2	0.625	0.015	0.208	4	12	-	52201059	-			
PFR0625R030A-SH				0.030				-	52201060	-			
PFR0625R060A-SH				0.060				-	52201061	-			
PFR0625R090A-SH				0.090				-	52201062	-			
PFR0625R120A-SH				0.120				-	52201063	-			
PFR0750R015A-SH			0.750	0.015	0.264	5	15	-	52201064	-			
PFR0750R030A-SH				0.030				-	52201065	-			
PFR0750R060A-SH				0.060				-	52201066	-			
PFR0750R090A-SH				0.090				-	52201067	-			
PFR0750R120A-SH				0.120				-	52201068	-			
PFR1000R015A-SH				0.015				0.327	6	18.5	-	52201069	-
PFR1000R030A-SH				0.030							-	52201070	-
PFR1000R060A-SH				0.060							-	52201071	-
PFR1000R090A-SH			0.090	-	52201072	-							
PFR1000R120A-SH			0.120	-	52201073	-							
PFR1250R015A-SH			1.250	0.015	0.405	7	23.5	-	52201074	-			
PFR1250R030A-SH				0.030				-	52201075	-			
PFR1250R060A-SH				0.060				-	52201076	-			
PFR1250R090A-SH				0.090				-	52201077	-			
PFR1250R120A-SH				0.120				-	52201078	-			
PFR0250R015A-D	Diamond Coated	2	0.250	0.015	0.078	2	5	-	-	52201114			
PFR0250R030A-D				0.030				-	52201115	-			
PFR0250R060A-D				0.060				-	52201116	-			
PFR0375R015A-D			0.375	0.015	0.130	2.6	8.5	-	-	52201100	-		
PFR0375R030A-D				0.030				-	52201101	-			
PFR0375R060A-D				0.060				-	52201102	-			
PFR0500R015A-D			0.500	0.015	0.157	3	10	-	-	52201103	-		
PFR0500R030A-D				0.030				-	52201104	-			
PFR0500R060A-D				0.060				-	52201105	-			
PFR0625R015A-D			0.625	0.015	0.208	4	12	-	-	52201106	-		
PFR0625R030A-D				0.030				-	52201107	-			
PFR0625R060A-D				0.060				-	52201108	-			
PFR0750R015A-D			0.750	0.015	0.264	5	15	-	-	52201109	-		
PFR0750R030A-D				0.030				-	52201110	-			
PFR0750R060A-D				0.060				-	52201111	-			
PFR1000R060A-D			1.000	0.060	0.327	6	18.5	-	-	52201112	-		
PFR1250R060A-D			1.250	0.060	0.405	7	23.5	-	-	52201113	-		

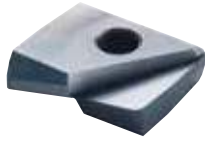
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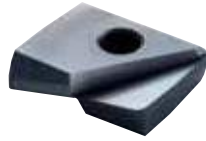


List 78PFR

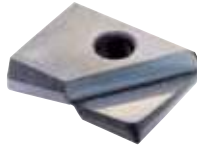
PFR Inserts (Metric)



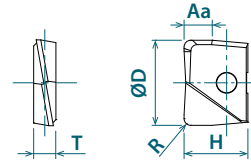
Multi-Purpose



Strengthened Edge



Diamond Coated



Designation	Specification	No. of Cutting Edges	Insert Size					EDP Number								
			D (mm)	R (mm)	Aa (mm)	T (mm)	H (mm)	XP3225	XP3310	XC4505						
PFR060R03-ST	Multi-Purpose	2	6	0.3	2	2	5	7820350	-	-						
PFR060R05-ST				0.5				7820351	-	-						
PFR060R10-ST				1				7820352	-	-						
PFR070R03-ST				0.3				7820353	-	-						
PFR070R05-ST				0.5				7820354	-	-						
PFR070R10-ST				1				7820355	-	-						
PFR080R03-ST			0.3	8	8	2.7	2.4	7	7820200	-	-					
PFR080R05-ST			0.5						7820201	-	-					
PFR080R10-ST			1						7820202	-	-					
PFR080R20-ST			2						7820203	-	-					
PFR100R03-ST			0.3						10	10	3.3	2.6	8.5	7820204	-	-
PFR100R05-ST			0.5											7820205	-	-
PFR100R10-ST			1	7820206	-	-										
PFR100R20-ST			2	7820207	-	-										
PFR110R03-ST			0.3	11	11	4	3	10						7820356	-	-
PFR110R05-ST			0.5											7820357	-	-
PFR110R10-ST			1						7820358	-	-					
PFR110R20-ST			2						7820359	-	-					
PFR120R03-ST			0.3						12	12	5.3	4	12	7820208	-	-
PFR120R05-ST			0.5											7820209	-	-
PFR120R10-ST			1	7820210	-	-										
PFR120R20-ST			2	7820211	-	-										
PFR120R30-ST			3	7820212	-	-										
PFR130R03-ST			0.3	13	13	6.7	5	15						7820360	-	-
PFR130R05-ST			0.5						7820361	-	-					
PFR130R10-ST			1						7820362	-	-					
PFR130R20-ST			2						7820363	-	-					
PFR160R03-ST			0.3						16	16	8.5	6	18	7820213	-	-
PFR160R05-ST			0.5											7820214	-	-
PFR160R10-ST			1	7820215	-	-										
PFR160R20-ST			2	7820216	-	-										
PFR160R30-ST			3	7820217	-	-										
PFR170R03-ST			0.3	17	17	10.5	7	20						7820364	-	-
PFR170R05-ST			0.5						7820365	-	-					
PFR170R10-ST			1						7820366	-	-					
PFR170R20-ST			2						7820367	-	-					
PFR200R03-ST			0.3						20	20	13.5	8	22.5	7820218	-	-
PFR200R05-ST			0.5											7820219	-	-
PFR200R10-ST			1	7820220	-	-										
PFR200R20-ST			2	7820221	-	-										
PFR200R30-ST			3	7820222	-	-										
PFR210R03-ST			0.3	21	21	16.5	9	25.5						7820368	-	-
PFR210R05-ST	0.5	7820369	-						-							
PFR210R10-ST	1	7820370	-						-							
PFR210R20-ST	2	7820371	-						-							

Packed: 1 pc.

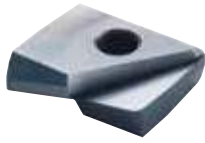
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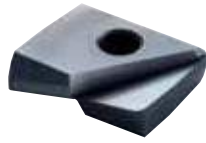


List 78PFR (Continued)

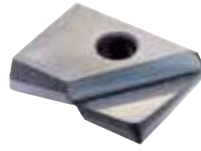
PFR Inserts (Metric)



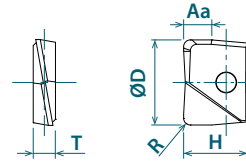
Multi-Purpose



Strengthened Edge



Diamond Coated



Designation	Specification	No. of Cutting Edges	Insert Size					EDP Number						
			D (mm)	R (mm)	Aa (mm)	T (mm)	H (mm)	XP3225	XP3310	XC4505				
PFR250R03-ST	Multi-Purpose	2	25	0.3	8.3	6	18.5	7820223	-	-				
PFR250R05-ST				0.5				7820224	-	-				
PFR250R10-ST				1				7820225	-	-				
PFR250R20-ST				2				7820226	-	-				
PFR250R30-ST				3				7820227	-	-				
PFR260R03-ST				0.3				26	8.3	6	18.5	7820372	-	-
PFR260R05-ST			0.5	7820373	-	-								
PFR260R10-ST			1	7820374	-	-								
PFR260R20-ST			2	7820375	-	-								
PFR300R03-ST			0.3	30	10	7	22.5					7820228	-	-
PFR300R05-ST			0.5									7820229	-	-
PFR300R10-ST			1					7820230	-	-				
PFR300R20-ST			2					7820231	-	-				
PFR300R30-ST			3					7820232	-	-				
PFR320R03-ST			0.3					32	10.3	7	23.5	7820233	-	-
PFR320R05-ST			0.5	7820234	-	-								
PFR320R10-ST			1	7820235	-	-								
PFR320R20-ST			2	7820236	-	-								
PFR320R30-ST	3	7820237	-	-										
PFR060R03-SH	Strengthened Edge	2	6	0.3	2	2	5					-	7820400	-
PFR060R05-SH				0.5				-	7820401	-				
PFR060R10-SH				1				-	7820402	-				
PFR070R03-SH			7	0.3	2.7	2.4	7	-	7820403	-				
PFR070R05-SH				0.5				-	7820404	-				
PFR070R10-SH				1				-	7820405	-				
PFR080R03-SH			8	0.3	3.3	2.6	8.5	-	7820250	-				
PFR080R05-SH				0.5				-	7820251	-				
PFR080R10-SH				1				-	7820252	-				
PFR080R20-SH			2	-	7820253	-								
PFR100R03-SH			10	0.3	4	3	10	-	7820254	-				
PFR100R05-SH				0.5				-	7820255	-				
PFR100R10-SH				1				-	7820256	-				
PFR100R20-SH				2				-	7820257	-				
PFR110R03-SH				0.3				11	4	3	10	-	7820406	-
PFR110R05-SH				0.5								-	7820407	-
PFR110R10-SH			1	-	7820408	-								
PFR110R20-SH			2	-	7820409	-								
PFR120R03-SH			0.3	12	4	3	10					-	7820258	-
PFR120R05-SH			0.5									-	7820259	-
PFR120R10-SH			1					-	7820260	-				
PFR120R20-SH			2					-	7820261	-				
PFR120R30-SH			3					-	7820262	-				
PFR130R03-SH			0.3					13	4	3	10	-	7820410	-
PFR130R05-SH			0.5	-	7820411	-								
PFR130R10-SH			1	-	7820412	-								
PFR130R20-SH			2	-	7820413	-								

Packed: 1 pc.



List 78PFR (Continued)

PFR Inserts (Metric)

Designation	Specification	No. of Cutting Edges	Insert Size					EDP Number		
			D	R	Aa	T	H	XP3225	XP3310	XC4505
			(mm)	(mm)	(mm)	(mm)	(mm)			
PFR160R03-SH	Strengthened Edge	2	16	0.3	5.3	4	12	-	7820263	-
PFR160R05-SH				0.5				-	7820264	-
PFR160R10-SH				1				-	7820265	-
PFR160R20-SH				2				-	7820266	-
PFR160R30-SH				3				-	7820267	-
PFR170R03-SH				17				0.3	-	7820414
PFR170R05-SH			0.5		-	7820415	-			
PFR170R10-SH			1		-	7820416	-			
PFR170R20-SH			2		-	7820417	-			
PFR200R03-SH			20		0.3	-	7820268	-		
PFR200R05-SH					0.5	-	7820269	-		
PFR200R10-SH				1	-	7820270	-			
PFR200R20-SH				2	-	7820271	-			
PFR200R30-SH				3	-	7820272	-			
PFR210R03-SH				21	0.3	-	7820418	-		
PFR210R05-SH			0.5		-	7820419	-			
PFR210R10-SH			1		-	7820420	-			
PFR210R20-SH			2		-	7820421	-			
PFR250R03-SH			25		0.3	-	7820273	-		
PFR250R05-SH					0.5	-	7820274	-		
PFR250R10-SH				1	-	7820275	-			
PFR250R20-SH				2	-	7820276	-			
PFR250R30-SH				3	-	7820277	-			
PFR260R03-SH				26	0.3	-	7820422	-		
PFR260R05-SH			0.5		-	7820423	-			
PFR260R10-SH			1		-	7820424	-			
PFR260R20-SH			2		-	7820425	-			
PFR300R03-SH			30		0.3	-	7820278	-		
PFR300R05-SH					0.5	-	7820279	-		
PFR300R10-SH				1	10	7	22.5	-	7820280	-
PFR300R20-SH				2	-	-	-	-	7820281	-
PFR300R30-SH				3	-	-	-	-	7820282	-
PFR320R03-SH				32	0.3	-	7820283	-		
PFR320R05-SH			0.5		-	7820284	-			
PFR320R10-SH			1		10.3	7	23.5	-	7820285	-
PFR320R20-SH			2		-	-	-	-	7820286	-
PFR320R30-SH	3	-	-		-	-	7820287	-		
PFR060R03-D	Diamond Coated	2	6		0.3	2	2	5	-	-
PFR060R05-D				0.5	-				-	7820451
PFR060R10-D				1	-				-	7820452
PFR080R03-D			8	0.3	-	7820300	-			
PFR080R05-D				0.5	2.7	2.4	7	-	-	7820301
PFR080R10-D				1	-	-	-	-	-	7820302
PFR100R03-D			10	0.3	-	7820303	-			
PFR100R05-D				0.5	3.3	2.6	8.5	-	-	7820304
PFR100R10-D				1	-	-	-	-	-	7820305
PFR120R03-D			12	0.3	-	7820306	-			
PFR120R05-D				0.5	4	3	10	-	-	7820307
PFR120R10-D				1	-	-	-	-	-	7820308
PFR160R03-D			16	0.3	-	7820309	-			
PFR160R05-D				0.5	5.3	4	12	-	-	7820310
PFR160R10-D				1	-	-	-	-	-	7820311
PFR200R03-D			20	0.3	-	7820312	-			
PFR200R05-D				0.5	6.7	5	15	-	-	7820313
PFR200R10-D				1	-	-	-	-	-	7820314


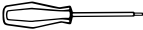
Packed: 1 pc.





List 7808H

PFR Accessories

Appearance	EDP No.	Designation	Applicable Insert		Recommended Tightening Torque
			(inch)	(mm)	
 Clamping Screw	7808124	FS20652RB (Torx 6)	0.250	6-7	0.8 Nm
	7808123	FS25669RB (Torx 7)	-	8	1.0 Nm
	7808117	FS30686RB (Torx 8)	0.375	10	1.2 Nm
	7808118	FS35610RB (Torx 10)	0.500	12	2.0 Nm
	7808119	FS40613RB (Torx 15)	0.625	16	3.0 Nm
	7808120	FS50615RB (Torx 20)	0.750	20	5.0 Nm
	7808121	FS60620RB (Torx 20)	1.000	25	5.0 Nm
	7808122	FS80624RB (Torx 30)	1.250	30-32	6.0 Nm
 Wrench	7808203	T6-D (Torx 6)	0.250	6-7	
	7808204	T7-D (Torx 7)	-	8	
	7808205	T8-D (Torx 8)	0.375	10	
	7808207	T10-D (Torx 10)	0.500	12	
	7808208	T15-D (Torx 15)	0.625	16	
	7808209	T20-D (Torx 20)	0.750-1.000	20-25	
	7808212	T30-T (Torx 30)	1.250	30-32	

Packed: Clamping Screw = 1 pc.; Wrench = 1 pc.
Note: Wrench sold separately.



Cutting Conditions (Standard Milling)

Work Material	Tensile Strength - Hardness	Milling Speed Vc (SFM)			Depth of Cut Aa (in)	Feed Per Tooth fz (in/t)				
		L/D = 2.5	L/D = 5	L/D = 8		Ø0.236-0.275 [6-7mm]	Ø0.312-0.375 [8-10mm]	Ø0.500-0.625 [12-16mm]	Ø0.750-1.250 [20-32mm]	
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	655 (490-820)	80%	60%	0.05Dc	0.0047	0.0079	0.0087	0.0098
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (495-820)			0.05Dc	0.0059	0.0071	0.0087	0.0098
	Die Steels (H13, D2)	~280 HB	495 (395-655)			0.05Dc	0.0040	0.0059	0.0071	0.0079
M	Stainless Steels (304SS, 420SS)	~250 HB	495 (330-655)			0.03Dc	0.0031	0.0047	0.0059	0.0071
K	Cast Iron (FC250)	~350 N/mm ²	655 (495-820)			0.05Dc	0.0059	0.0079	0.0098	0.0118
	Ductile Cast Iron (60-40-18)	~600 N/mm ²	495 (330-655)			0.05Dc	0.0047	0.0059	0.0079	0.0098
N	Aluminum Alloys (6061, 7075)	~13% Si	985 (655-1310)			0.05Dc	0.0079	0.0098	0.0118	0.0138
	Graphite	-	825 (500-1150)			0.10Dc	0.0098	0.0157	0.0197	0.0197
	CFRP	-	650 (500-825)			0.50Dc	0.0020	0.0040	0.0059	0.0079
S	Heat Resistant Alloys (Inconel 718)	-	100 (65-130)			0.02Dc	0.0016	0.0020	0.0031	0.0047
	Titanium Alloy (Ti-6Al-4V)	-	165 (130-195)			0.02Dc	0.0020	0.0031	0.0040	0.0059
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	395 (330-495)			0.03Dc	0.0031	0.0040	0.0047	0.0071
	Die Cast Steels (A2, S7)	43 - 48 HRC	260 (165-330)			0.025Dc	0.0020	0.0031	0.0040	0.0059
	Hardened Steels (D2)	50 - 55 HRC	195 (130-260)	0.02Dc	0.0016	0.0020	0.0031	0.0040		

Recommended Materials by Application

Insert Grade	P	M	K	N	S	H
XP3225	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/>	<input type="checkbox"/>
XP3310	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
XP4505				<input checked="" type="checkbox"/> **		

XP3225: recommended when L/D ≥ 5.

XP3310: recommended for interrupted cutting.

*: Best recommended for aluminum applications.

** : Best recommended for graphite & CFRP applications.

good best



Cutting Conditions (High Speed Light Milling)

Work Material	Tensile Strength - Hardness	Milling Speed Vc (SFM)			Depth of Cut Aa (in)	Feed Per Tooth fz (in/t)				
		Steel Shank	Carbide Shank Short	Carbide Shank Long		Ø0.236-0.312 [6-8mm]	Ø0.375-0.500 [10-12mm]	Ø0.625-0.750 [16-20mm]	Ø1.000-1.250 [25-32mm]	
P	Mild Steels, Carbon Steels (1010, 1018)	~180 HB	1475	1575	1180	0.02Dc	0.0040	0.0047	0.0055	0.0071
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	1475	1575	1180	0.02Dc	0.0027	0.0040	0.0047	0.0055
	Die Steels (H13, D2)	~280 HB	1230	1310	985	0.02Dc	0.0027	0.0040	0.0047	0.0055
M	Stainless Steels (304SS, 420SS)	~250 HB	1230	1310	985	0.02Dc	0.0027	0.0047	0.0055	0.0067
K	Cast Iron (FC250)	~350 N/mm ²	1970	2100	1575	0.02Dc	0.0047	0.0055	0.0071	0.0087
	Ductile Cast Iron (60-40-18)	~600 N/mm ²	1475	1575	1180	0.02Dc	0.0040	0.0047	0.0055	0.0071
N	Aluminum Alloys (6061, 7075)	~13% Si	2460	2625	1970	0.03Dc	0.0047	0.0055	0.0071	0.0087
S	Heat Resistant Alloys (Inconel 718)	-	230	260	195	0.015Dc	0.0016	0.0020	0.0024	0.0051
	Titanium Alloy (Ti-6Al-4V)	-	395	470	360	0.02Dc	0.0024	0.0031	0.0043	0.0040
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	985	1050	790	0.015Dc	0.0024	0.0027	0.0031	0.0040
	Die Cast Steels (A2, S7)	43 - 48 HRC	885	940	720	0.015Dc	0.0020	0.0024	0.0027	0.0027
	Hardened Steels (D2)	50 - 55 HRC	720	790	590	0.01Dc	0.0020	0.0024	0.0027	0.0027

Recommended Materials by Application

Insert Grade	P	M	K	N	S	H
XP3225	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> *	<input checked="" type="checkbox"/>	<input type="checkbox"/>
XP3310	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>
XP4505				<input checked="" type="checkbox"/> **		

XP3225: recommended when L/D ≥ 5.

XP3310: recommended for interrupted cutting.

*: Best recommended for aluminum applications.

** : Best recommended for graphite & CFRP applications.

good best



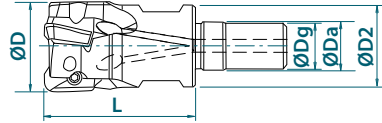


List 52601

PSE ASF (Inch)



Recommended Materials: p1205
 Accessories & Inserts: p1203-1204
 Maximum Ramping Angle: p1206
 SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D		Da	Dg	L	D2		
52601000	Screw Fit Head	PSE11R063ASF8-2	0.625	2	0.335	M8	1.063	0.571	10	ZD_T11...
52601001		PSE11R075ASF10-3	0.750	3	0.413	M10	1.299	0.709	14	
52601002		PSE11R100ASF12-3	1.000	3	0.492	M12	1.378	0.905	17	
52601003		PSE11R125ASF16-3	1.250	3	0.669	M16	1.575	1.102	22	ZDKT15...
52601004		PSE15R100ASF12-2	1.000	2	0.492	M12	1.378	0.905	17	
52601005		PSE15R125ASF16-3	1.250	3	0.669	M16	1.575	1.102	22	
52601006	PSE15R150ASF16-4	1.500	4	0.669	M16	1.575	1.102	22		

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).



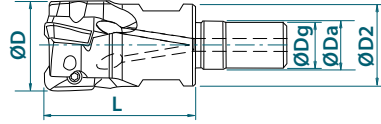


List 78016

PSE SF (Metric)



Recommended Materials: p1205
Accessories & Inserts: p1203-1204
Maximum Ramping Angle: p1206
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D		Da	Dg	L	D2		
7801600	Screw Fit Head	PSE11R016SF8-2	16	2	8.5	M8	27	14.5	10	ZD_T11...
7801612		PSE11R017SF8-2	17	2	8.5	M8	27	14.5	10	
7801613		PSE11R018SF8-2	18	2	8.5	M8	27	14.5	10	
7801601		PSE11R020SF10-3	20	3	10.5	M10	33	18	14	
7801614		PSE11R021SF10-3	21	3	10.5	M10	33	18	14	
7801615		PSE11R022SF10-3	22	3	10.5	M10	33	18	14	
7801602		PSE11R025SF12-4	25	4	12.5	M12	35	23	17	
7801616		PSE11R026SF12-3	26	3	12.5	M12	35	23	17	
7801603		PSE11R028SF12-4	28	4	12.5	M12	35	23	17	
7801604		PSE11R032SF16-5	32	5	17.0	M16	40	28	22	
7801617		PSE11R033SF16-3	33	3	17.0	M16	40	28	22	
7801605		PSE11R035SF16-5	35	5	17.0	M16	40	28	22	
7801606		PSE11R040SF16-6	40	6	17.0	M16	40	28	22	
7801607		PSE15R025SF12-2	25	2	12.5	M12	35	23	17	
7801618		PSE15R026SF12-2	26	2	12.5	M12	35	23	17	
7801608		PSE15R028SF12-2	28	2	12.5	M12	35	23	17	
7801609		PSE15R032SF16-3	32	3	17	M16	40	28	22	
7801619		PSE15R033SF16-3	33	3	17	M16	40	28	22	
7801610	PSE15R035SF16-3	35	3	17	M16	40	28	22		
7801611	PSE15R040SF16-4	40	4	17	M16	40	28	22		
										ZDKT15...

Packed: 1 pc.

Note: When using an insert with a corner radius of R2 or greater, the corner of the cutter body must be corrected. The body corner radius should equal insert radius minus one (example: if insert radius is R3, body radius should be R2).

This item is stocked overseas. Please contact OSG for availability and delivery.



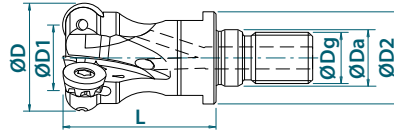


List 52602

PRC ASF (Inch)



Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233
SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	Effective Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
52602000	Screw Fit Head	PRC10R100ASF12-3	1.000	0.606	3	0.492	M12	1.378	0.905	17	RPH_10...
52602001		PRC10R125ASF16-4	1.250	0.856	4	0.669	M16	1.575	1.102	22	RPH_10...
52602002		PRC12R125ASF16-2	1.250	0.778	2	0.669	M16	1.575	1.102	22	RPH_12...
52602003		PRC12R150ASF16-3	1.500	1.028	3	0.669	M16	1.575	1.102	22	RPH_12...
52602004		PRC16R150ASF16-2	1.500	0.870	2	0.669	M16	1.575	1.102	22	RPH_16...

Packed: 1 pc.

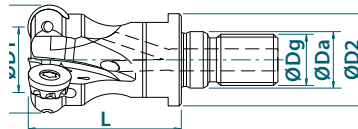


List 78017

PRC SF (Metric)



Recommended Materials: p1232
Accessories & Inserts: p1231
Maximum Ramping Angle: p1233
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
7801700	Screw Fit Head	PRC10R020SF10-2	20	10	2	10.5	M10	33	18	14	RPH_10...
7801701		PRC10R025SF12-3	25	15	3	12.5	M12	35	23	17	RPH_10...
7801702		PRC10R030SF16-3	30	20	3	17	M16	40	28	22	RPH_10...
7801703		PRC10R032SF16-4	32	22	4	17	M16	40	28	22	RPH_10...
7801704		PRC10R040SF16-4	40	30	4	17	M16	40	28	22	RPH_10...
7801705		PRC12R030SF16-2	30	18	2	17	M16	40	28	22	RPH_12...
7801706		PRC12R032SF16-3	32	20	3	17	M16	40	28	22	RPH_12...
7801707		PRC12R040SF16-3	40	28	3	17	M16	40	28	22	RPH_12...

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





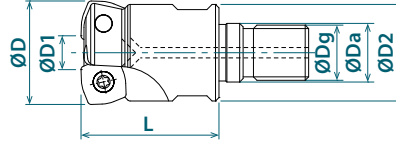
List 52603

PHC ASF (Inch)



SPEED FEED
P1243

Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244
SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	Effective Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
52603004	Screw Fit Head	PHC07R063ASF8-2	0.625	0.286	2	0.334	M8	1.063	0.571	10	SPMT07...
52603005		PHC07R075ASF10-3	0.750	0.411	3	0.413	M10	1.300	0.709	14	
52603006		PHC07R100ASF12-4	1.000	0.661	4	0.492	M12	1.378	0.905	17	
52603007		PHC07R125ASF16-5	1.250	0.911	5	0.669	M16	1.575	1.102	22	SDMT09...
52603000		PHC09R100ASF12-2	1.000	0.535	2	0.492	M12	1.378	0.905	17	
52603001		PHC09R125ASF16-3	1.250	0.785	3	0.669	M16	1.575	1.102	22	
52603002		PHC12R125ASF16-2	1.250	0.596	2	0.669	M16	1.575	1.102	22	SXMT12...
52603003		PHC12R150ASF16-3	1.500	0.846	3	0.669	M16	1.575	1.102	22	

Packed: 1 pc.



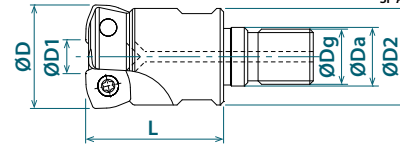


List 78015

PHC SF (Metric)



Recommended Materials: p1243
Accessories & Inserts: p1242
Maximum Ramping Angle: p1244
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	Effective Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D	D1		Da	Dg	L	D2		
7801520	Screw Fit Head	PHC07R016SF8-2	16	7.4	2	8.5	M8	27	14.5	10	SPMT07...
7801521		PHC07R017SF8-2	17	8.4	2	8.5	M8	27	14.5	10	
7801522		PHC07R018SF8-2	18	9.4	2	8.5	M8	27	14.5	10	
7801523		PHC07R020SF10-3	20	11.4	3	10.5	M10	33	18	14	
7801524		PHC07R021SF10-3	21	12.4	3	10.5	M10	33	18	14	
7801525		PHC07R022SF10-3	22	13.4	3	10.5	M10	33	18	14	
7801526		PHC07R025SF12-4	25	16.4	4	12.5	M12	35	23	17	
7801527		PHC07R026SF12-4	26	17.4	4	12.5	M12	35	23	17	
7801528		PHC07R028SF12-4	28	19.4	4	12.5	M12	35	23	17	
7801529		PHC07R030SF16-4	30	21.4	4	17	M16	40	28	22	
7801530		PHC07R032SF16-5	32	23.4	5	17	M16	40	28	22	
7801531		PHC07R033SF16-5	33	24.4	5	17	M16	40	28	22	
7801532		PHC07R035SF16-5	35	26.4	5	17	M16	40	28	22	
7801500		SDMT09...	PHC09R025SF12-3	25	13.2	3	12.5	M12	35	23	17
7801510			PHC09R026SF12-3	26	14.2	3	12.5	M12	35	23	17
7801501			PHC09R028SF12-3	28	16.2	3	12.5	M12	35	23	17
7801502			PHC09R030SF16-3	30	18.2	3	17	M16	40	28	22
7801503			PHC09R032SF16-3	32	20.2	3	17	M16	40	28	22
7801511			PHC09R033SF16-3	33	21.2	3	17	M16	40	28	22
7801504			PHC09R035SF16-3	35	23.2	3	17	M16	40	28	22
7801505	PHC09R040SF16-4		40	28.2	4	17	M16	40	28	22	
7801506	PHC12R030SF16-2		30	13.4	2	17	M16	40	28	22	
7801507	PHC12R032SF16-2		32	15.4	2	17	M16	40	28	22	
7801512	SDXMT12...	PCH12R033SF16-2	33	16.4	2	17	M16	40	28	22	
7801508		PHC12R035SF16-3	35	18.4	3	17	M16	40	28	22	
7801509		PHC12R040SF16-3	40	23.4	3	17	M16	40	28	22	

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





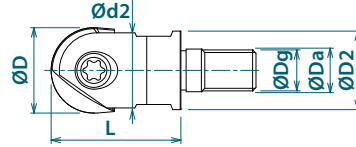
List 52604

PFB ASF (Inch)



**SPEED
FEED**
P1259

Recommended Materials: p1259
Accessories & Inserts: p1255-1257
Effective Cutting Diameter & Recommended Width of Cut: p1258
SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Head Dia. (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
52604000	Screw Fit Head	PFB-R0375ASF6	0.375	2	0.256	M6	1.024	0.354	0.354	7	PFB...
52604001		PFB-R0500ASF6	0.500	2	0.256	M6	1.024	0.433	0.433	7	
52604002		PFB-R0625ASF8	0.625	2	0.335	M8	1.260	0.551	0.571	10	
52604003		PFB-R0750ASF10	0.750	2	0.413	M10	1.496	0.709	0.709	14	
52604004		PFB-R1000ASF12	1.000	2	0.492	M12	1.496	0.866	0.906	17	

Packed: 1 pc.





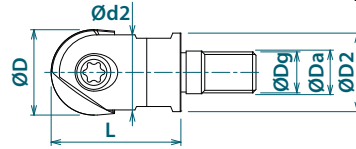
List 78114

PFB SF (Metric)



SPEED
FEED
P1259

Recommended Materials: p1259
Accessories & Inserts: p1255-1257
Effective Cutting Diameter & Recommended Width of Cut: p1258
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Head Dia. (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
7801490	Screw Fit Head	PFB-R100SF6	10	2	6.5	M6	26	9	9	7	PFB...
7801491		PFB-R120SF6	12	2	6.5	M6	26	11	11	7	
7801492		PFB-R160SF8	16	2	8.5	M8	32	14	14.5	10	
7801493		PFB-R200SF10	20	2	10.5	M10	38	18	18	14	
7801494		PFB-R250SF12	25	2	12.5	M12	38	22	23	17	
7801495		PFB-R300SF16	30	2	17	M16	43	27	28	22	

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





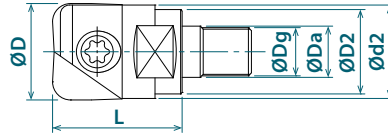
List 52605

PFR ASF (Inch)



SPEED FEED
P1269-1270

Recommended Materials: p1269-1270
Accessories & Inserts: p1263-1268
SF Arbors: p1279



EDP No.	Body Type	Designation	Tool Dia. (inch)	No. of Teeth	Pilot Dia. (inch)	Thread Dia. (mm)	Overall Length (inch)	Head Dia. (inch)	Flange Dia. (inch)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
52605000	Screw Fit Head	PFR-R0375ASF6	0.375	2	0.256	M6	1.024	0.374	0.354	7	PFR...
52605001		PFR-R0500ASF6	0.500	2	0.256	M6	1.024	0.453	0.433	7	
52605002		PFR-R0625ASF8	0.625	2	0.335	M8	1.260	0.610	0.571	10	
52605003		PFR-R0750ASF10	0.750	2	0.413	M10	1.496	0.768	0.709	14	
52605004		PFR-R1000ASF12	1.000	2	0.492	M12	1.496	0.965	0.906	17	

Packed: 1 pc.



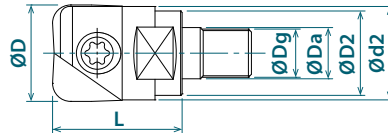
List 78220

PFR SF (Metric)



SPEED FEED
P1269-1270

Recommended Materials: p1269-1270
Accessories & Inserts: p1263-1268
SF Arbors: p1280-1282



EDP No.	Body Type	Designation	Tool Dia. (mm)	No. of Teeth	Pilot Dia. (mm)	Thread Dia. (mm)	Overall Length (mm)	Head Dia. (mm)	Flange Dia. (mm)	Wrench Size	Applicable Insert
			D		Da	Dg	L	d2	D2		
7832090	Screw Fit Head	PFR-R100SF6	10	2	6.5	M6	26	9.5	9	7	PFR...
7832091		PFR-R120SF6	12	2	6.5	M6	26	11.5	11	7	
7832092		PFR-R160SF8	16	2	8.5	M8	32	15.5	14.5	10	
7832093		PFR-R200SF10	20	2	10.5	M10	38	19.5	18	14	
7832094		PFR-R250SF12	25	2	12.5	M12	38	24.5	23	17	
7832095		PFR-R300SF16	30	2	17	M16	43	29.5	28	22	
7832096		PFR-R320SF16	32	2	17	M16	43	31.5	28	22	

Packed: 1 pc.

This item is stocked overseas. Please contact OSG for availability and delivery.





List 52600

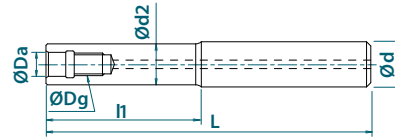
SF Arbor SA (Inch)



Carbide



Steel



EDP No.	Body Type	Designation	Shank Dia. (inch)	Neck Dia. (inch)	Thread Dia. (mm)	Pilot Dia. (inch)	Overall Length (inch)	Neck Length (inch)
			d	d2	Dg	Da	L	l1
52600000	Cylindrical Shank Steel	SF-M06SA0375-0250	0.375	0.354	M6	0.256	4.000	0.250
52600001		SF-M06SA0500-0500	0.500	0.433	M6	0.256	4.000	0.500
52600002		SF-M08SA0625-0500	0.625	0.571	M8	0.335	4.000	0.500
52600003		SF-M10SA0750-1000	0.750	0.709	M10	0.413	5.000	1.000
52600004		SF-M12SA1000-1250	1.000	0.905	M12	0.492	5.500	1.250
52600005	SF-M16SA1250-1500	1.250	1.102	M16	0.669	6.000	1.500	
52600010	Cylindrical Shank Carbide	SF-M06SA0375-1500CS	0.375	0.354	M6	0.256	5.000	1.500
52600011		SF-M06SA0500-2500CS	0.500	0.433	M6	0.256	5.500	2.500
52600012		SF-M08SA0625-2000CS	0.625	0.571	M8	0.335	5.000	2.000
52600013		SF-M08SA0625-3000CS	0.625	0.571	M8	0.335	6.000	3.000
52600014		SF-M10SA0750-3000CS	0.750	0.709	M10	0.413	6.000	3.000
52600015		SF-M10SA0750-4000CS	0.750	0.709	M10	0.413	7.000	4.000
52600016		SF-M12SA1000-4000CS	1.000	0.905	M12	0.492	7.000	4.000
52600017		SF-M12SA1000-5500CS	1.000	0.905	M12	0.492	9.000	5.500
52600018		SF-M16SA1250-5500CS	1.250	1.102	M16	0.669	9.000	5.500
52600019		SF-M16SA1250-8500CS	1.250	1.102	M16	0.669	12.000	8.500

Packed: 1 pc.



List 78019

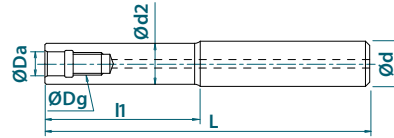
SF Arbor SS (Metric)



Carbide



Steel



EDP No.	Body Type	Designation	Shank Dia. (mm)	Neck Dia. (mm)	Thread Dia. (mm)	Pilot Dia. (mm)	Overall Length (mm)	Neck Length (mm)
			d	d2	Dg	Da	L	l1
7801904	Cylindrical Shank Steel	SF-M06SS10-4	10	9	M6	6.5	104	4
7801905		SF-M06SS12-10	12	11	M6	6.5	104	10
7801900		SF-M08SS16-15	16	14.5	M8	8.5	95	15
7801901		SF-M10SS20-20	20	18	M10	10.5	120	20
7801902		SF-M12SS25-35	25	23	M12	12.5	135	35
7801903		SF-M16SS32-35	32	28	M16	17	155	35
7801918	Cylindrical Shank Carbide	SF-M06SS10-24CS	10	9	M6	6.5	124	24
7801919		SF-M06SS12-34CS	12	11	M6	6.5	134	34
7801910		SF-M08SS16-55CS	16	14.5	M8	8.5	115	55
7801911		SF-M08SS16-85CS	16	14.5	M8	8.5	145	85
7801912		SF-M10SS20-70CS	20	18	M10	10.5	140	70
7801913		SF-M10SS20-110CS	20	18	M10	10.5	180	110
7801914		SF-M12SS25-90CS	25	23	M12	12.5	170	90
7801915		SF-M12SS25-140CS	25	23	M12	12.5	220	140
7801916		SF-M16SS32-120CS	32	28	M16	17	220	120
7801917		SF-M16SS32-190CS	32	28	M16	17	290	190

Packed: 1 pc.

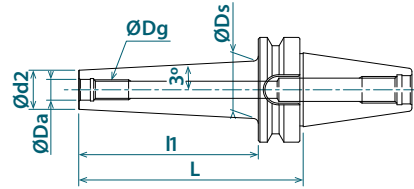
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78025

SF Arbor BT



EDP No.	Body Type	Designation	Neck Dia. (mm)	Thread Dia. (mm)	Bore Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Taper Dia. (mm)
			d2	Dg	Da	L	l1	Ds
7802500	BT30 Taper	BT30-SFA8-45	14.5	M8	8.5	45	23	16.0
7802501		BT30-SFA8-85	14.5	M8	8.5	85	63	21.1
7802502		BT30-SFA10-45	18.5	M10	10.5	45	23	20.0
7802503		BT30-SFA10-85	18.5	M10	10.5	85	63	25.1
7802504		BT30-SFA12-45	23.5	M12	12.5	45	23	25.0
7802505		BT30-SFA12-85	23.5	M12	12.5	85	63	30.1
7802506		BT30-SFA16-45	29	M16	17	45	23	32.0
7802507		BT30-SFA16-85	29	M16	17	85	63	32.0
7802508	BT40 Taper	BT40-SFA8-45	14.5	M8	8.5	45	18	16.0
7802509		BT40-SFA8-85	14.5	M8	8.5	85	58	20.5
7802510		BT40-SFA10-45	18.5	M10	10.5	45	18	20.0
7802511		BT40-SFA10-85	18.5	M10	10.5	85	58	24.5
7802512		BT40-SFA12-45	23.5	M12	12.5	45	18	25.0
7802513		BT40-SFA12-85	23.5	M12	12.5	85	58	29.5
7802514		BT40-SFA12-135	23.5	M12	12.5	135	108	34.8
7802515		BT40-SFA16-45	29	M16	17	45	18	32.0
7802516	BT40-SFA16-85	29	M16	17	85	58	35.0	
7802517	BT40-SFA16-135	29	M16	17	135	108	40.3	
7802518	BT50 Taper	BT50-SFA8-85	14.5	M8	8.5	85	47	19.4
7802519		BT50-SFA8-135	14.5	M8	8.5	135	97	23.6
7802520		BT50-SFA10-85	18.5	M10	10.5	85	47	20.0
7802521		BT50-SFA10-135	18.5	M10	10.5	135	97	28.6
7802522		BT50-SFA12-85	23.5	M12	12.5	85	47	25.0
7802523		BT50-SFA12-135	23.5	M12	12.5	135	97	33.6
7802524		BT50-SFA12-185	23.5	M12	12.5	185	147	38.9
7802525		BT50-SFA12-250	23.5	M12	12.5	250	212	45.7
7802526		BT50-SFA12-300	23.5	M12	12.5	300	262	50.9
7802527		BT50-SFA16-800	29	M16	17	85	47	32.0
7802528		BT50-SFA16-135	29	M16	17	135	97	39.1
7802529		BT50-SFA16-185	29	M16	17	185	147	44.4
7802530		BT50-SFA16-250	29	M16	17	250	212	51.2
7802531	BT50-SFA16-300	29	M16	17	300	262	56.4	

Packed: 1 pc.

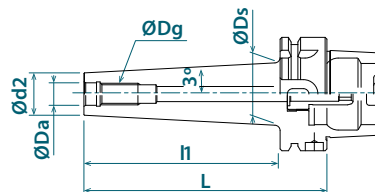
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





List 78125

SF Arbor HSK



EDP No.	Body Type	Designation	Neck Dia. (mm)	Thread Dia. (mm)	Bore Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Taper Dia. (mm)
			d2	Dg	Da	L	l1	Ds
7802550	HSK-A63	A63-SFA8-45	14.5	M8	8.5	45	19	16.0
7802551		A63-SFA8-85	14.5	M8	8.5	85	59	20.6
7802552		A63-SFA10-60	18.5	M10	10.5	60	34	20.0
7802553		A63-SFA10-85	18.5	M10	10.5	85	59	24.6
7802554		A63-SFA12-60	23.5	M12	12.5	60	34	25.0
7802555		A63-SFA12-85	23.5	M12	12.5	85	59	39.6
7802556		A63-SFA12-135	23.5	M12	12.5	135	109	34.9
7802557		A63-SFA16-60	29	M16	17	60	34	32.0
7802558		A63-SFA16-85	29	M16	17	85	59	32.0
7802559		A63-SFA16-135	29	M16	17	135	109	40.4
7802560	HSK-A100	A100-SFA8-85	14.5	M8	8.5	85	50	19.7
7802561		A100-SFA8-135	14.5	M8	8.5	135	100	23.9
7802562		A100-SFA10-85	18.5	M10	10.5	85	50	23.7
7802563		A100-SFA10-135	18.5	M10	10.5	135	100	28.9
7802564		A100-SFA12-85	23.5	M12	12.5	85	50	28.7
7802565		A100-SFA12-135	23.5	M12	12.5	135	100	33.9
7802566		A100-SFA12-185	23.5	M12	12.5	185	150	39.2
7802567		A100-SFA12-250	23.5	M12	12.5	250	221	46.6
7802568		A100-SFA12-300	23.5	M12	12.5	300	271	51.9
7802569		A100-SFA16-85	29	M16	17	85	50	34.2
7802570		A100-SFA16-135	29	M16	17	135	106	40.1
7802571		A100-SFA16-185	29	M16	17	185	156	45.3
7802572		A100-SFA16-250	29	M16	17	250	221	52.1
7802573		A100-SFA16-300	29	M16	17	300	271	57.4

Packed: 1 pc.

Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**





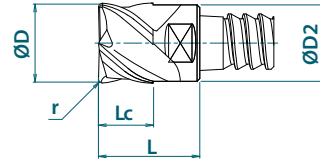
List 78PXSE

PXSE Exchangeable Heads (Inch & Metric) - 4 Flute, Square & Corner Radius



SPEED FEED
P1295

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Corner Radius		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade
			D		r		Lc		L		D2			
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		
52301000	PXSE	PXSE0500AC12-04R000	-	0.500	-	0.000	-	0.350	-	0.598	-	0.488	38°	XP3225
52301001		PXSE0500AC12-04R015	-	0.500	-	0.015	-	0.350	-	0.598	-	0.488	38°	XP3225
52301002		PXSE0500AC12-04R030	-	0.500	-	0.030	-	0.350	-	0.598	-	0.488	38°	XP3225
52301003		PXSE0500AC12-04R060	-	0.500	-	0.060	-	0.350	-	0.598	-	0.488	38°	XP3225
52301004		PXSE0500AC12-04R090	-	0.500	-	0.090	-	0.350	-	0.598	-	0.488	38°	XP3225
52301005		PXSE0625AC16-04R000	-	0.625	-	0.000	-	0.438	-	0.732	-	0.613	38°	XP3225
52301006		PXSE0625AC16-04R030	-	0.625	-	0.030	-	0.438	-	0.732	-	0.613	38°	XP3225
52301007		PXSE0625AC16-04R060	-	0.625	-	0.060	-	0.438	-	0.732	-	0.613	38°	XP3225
52301008		PXSE0625AC16-04R090	-	0.625	-	0.090	-	0.438	-	0.732	-	0.613	38°	XP3225
52301009		PXSE0625AC16-04R120	-	0.625	-	0.120	-	0.438	-	0.732	-	0.613	38°	XP3225
52301010		PXSE0750AC20-04R000	-	0.750	-	0.000	-	0.525	-	0.807	-	0.736	38°	XP3225
52301011		PXSE0750AC20-04R030	-	0.750	-	0.030	-	0.525	-	0.807	-	0.736	38°	XP3225
52301012		PXSE0750AC20-04R060	-	0.750	-	0.060	-	0.525	-	0.807	-	0.736	38°	XP3225
52301013		PXSE0750AC20-04R090	-	0.750	-	0.090	-	0.525	-	0.807	-	0.736	38°	XP3225
52301014		PXSE0750AC20-04R120	-	0.750	-	0.120	-	0.525	-	0.807	-	0.736	38°	XP3225
52301015		PXSE1000AC25-04R000	-	1.000	-	0.000	-	0.700	-	1.098	-	0.960	38°	XP3225
52301016		PXSE1000AC25-04R030	-	1.000	-	0.030	-	0.700	-	1.098	-	0.960	38°	XP3225
52301017		PXSE1000AC25-04R060	-	1.000	-	0.060	-	0.700	-	1.098	-	0.960	38°	XP3225
52301018		PXSE1000AC25-04R090	-	1.000	-	0.090	-	0.700	-	1.098	-	0.960	38°	XP3225
52301019		PXSE1000AC25-04R120	-	1.000	-	0.120	-	0.700	-	1.098	-	0.960	38°	XP3225
7830004		PXSE120C12-04R000	12	-	0	-	8.4	-	14.4	-	11.7	-	38°	XP3225
7830005		PXSE120C12-04R005	12	-	0.5	-	8.4	-	14.4	-	11.7	-	38°	XP3225
7830006		PXSE120C12-04R010	12	-	1	-	8.4	-	14.4	-	11.7	-	38°	XP3225
7830007	PXSE120C12-04R020	12	-	2	-	8.4	-	14.4	-	11.7	-	38°	XP3225	
7830008	PXSE120C12-04R030	12	-	3	-	8.4	-	14.4	-	11.7	-	38°	XP3225	
7830009	PXSE160C16-04R000	16	-	0	-	11.2	-	18.7	-	15.7	-	38°	XP3225	
7830010	PXSE160C16-04R005	16	-	0.5	-	11.2	-	18.7	-	15.7	-	38°	XP3225	
7830011	PXSE160C16-04R010	16	-	1	-	11.2	-	18.7	-	15.7	-	38°	XP3225	
7830012	PXSE160C16-04R015	16	-	1.5	-	11.2	-	18.7	-	15.7	-	38°	XP3225	
7830013	PXSE160C16-04R020	16	-	2	-	11.2	-	18.7	-	15.7	-	38°	XP3225	
7830014	PXSE160C16-04R030	16	-	3	-	11.2	-	18.7	-	15.7	-	38°	XP3225	
7830015	PXSE200C20-04R000	20	-	0	-	14	-	21.5	-	19.6	-	38°	XP3225	
7830016	PXSE200C20-04R005	20	-	0.5	-	14	-	21.5	-	19.6	-	38°	XP3225	
7830017	PXSE200C20-04R010	20	-	1	-	14	-	21.5	-	19.6	-	38°	XP3225	
7830018	PXSE200C20-04R020	20	-	2	-	14	-	21.5	-	19.6	-	38°	XP3225	
7830019	PXSE200C20-04R030	20	-	3	-	14	-	21.5	-	19.6	-	38°	XP3225	
7830020	PXSE250C25-04R000	25	-	0	-	17.5	-	27.5	-	24	-	38°	XP3225	
7830021	PXSE250C25-04R010	25	-	1	-	17.5	-	27.5	-	24	-	38°	XP3225	
7830022	PXSE250C25-04R020	25	-	2	-	17.5	-	27.5	-	24	-	38°	XP3225	
7830023	PXSE250C25-04R030	25	-	3	-	17.5	-	27.5	-	24	-	38°	XP3225	

Packed: 1 pc.





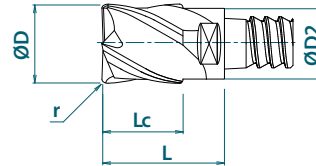
List 78PXVC

PXVC Exchangeable Heads (Inch & Metric) - 4 Flute, Square & Corner Radius



SPEED FEED
P1296

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Corner Radius		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade
			D		r		Lc		L		D2			
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		
52308000		PXVC0500AC12-04R000	-	0.500	-	0.000	-	0.500	-	0.748	-	0.488	45° / 48°	XP3225
52308001		PXVC0500AC12-04R015	-	0.500	-	0.015	-	0.500	-	0.748	-	0.488	45° / 48°	XP3225
52308002		PXVC0500AC12-04R030	-	0.500	-	0.030	-	0.500	-	0.748	-	0.488	45° / 48°	XP3225
52308003		PXVC0500AC12-04R060	-	0.500	-	0.060	-	0.500	-	0.748	-	0.488	45° / 48°	XP3225
52308004		PXVC0500AC12-04R090	-	0.500	-	0.090	-	0.500	-	0.748	-	0.488	45° / 48°	XP3225
52308005		PXVC0625AC16-04R000	-	0.625	-	0.000	-	0.625	-	0.921	-	0.614	45° / 48°	XP3225
52308006		PXVC0625AC16-04R030	-	0.625	-	0.030	-	0.625	-	0.921	-	0.614	45° / 48°	XP3225
52308007		PXVC0625AC16-04R060	-	0.625	-	0.060	-	0.625	-	0.921	-	0.614	45° / 48°	XP3225
52308008		PXVC0625AC16-04R090	-	0.625	-	0.090	-	0.625	-	0.921	-	0.614	45° / 48°	XP3225
52308009		PXVC0625AC16-04R120	-	0.625	-	0.120	-	0.625	-	0.921	-	0.614	45° / 48°	XP3225
52308010		PXVC0750AC20-04R000	-	0.750	-	0.000	-	0.750	-	1.035	-	0.736	45° / 48°	XP3225
52308011		PXVC0750AC20-04R030	-	0.750	-	0.030	-	0.750	-	1.035	-	0.736	45° / 48°	XP3225
52308012		PXVC0750AC20-04R060	-	0.750	-	0.060	-	0.750	-	1.035	-	0.736	45° / 48°	XP3225
52308013		PXVC0750AC20-04R090	-	0.750	-	0.090	-	0.750	-	1.035	-	0.736	45° / 48°	XP3225
52308014		PXVC0750AC20-04R120	-	0.750	-	0.120	-	0.750	-	1.035	-	0.736	45° / 48°	XP3225
52308015		PXVC1000AC25-04R000	-	1.000	-	0.000	-	1.000	-	1.398	-	0.961	45° / 48°	XP3225
52308016		PXVC1000AC25-04R030	-	1.000	-	0.030	-	1.000	-	1.398	-	0.961	45° / 48°	XP3225
52308017		PXVC1000AC25-04R060	-	1.000	-	0.060	-	1.000	-	1.398	-	0.961	45° / 48°	XP3225
52308018		PXVC1000AC25-04R090	-	1.000	-	0.090	-	1.000	-	1.398	-	0.961	45° / 48°	XP3225
52308019		PXVC1000AC25-04R120	-	1.000	-	0.120	-	1.000	-	1.398	-	0.961	45° / 48°	XP3225
7835004		PXVC120C12-04R000	12	-	0	-	12	-	18	-	11.7	-	45° / 48°	XP3225
7835005		PXVC120C12-04R005	12	-	0.5	-	12	-	18	-	11.7	-	45° / 48°	XP3225
7835006		PXVC120C12-04R010	12	-	1	-	12	-	18	-	11.7	-	45° / 48°	XP3225
7835007		PXVC120C12-04R020	12	-	2	-	12	-	18	-	11.7	-	45° / 48°	XP3225
7835008		PXVC120C12-04R030	12	-	3	-	12	-	18	-	11.7	-	45° / 48°	XP3225
7835009		PXVC140C12-04R000	14	-	0	-	14	-	20	-	11.7	-	45° / 48°	XP3225
7835010		PXVC140C12-04R005	14	-	0.5	-	14	-	20	-	11.7	-	45° / 48°	XP3225
7835011	PXVC	PXVC140C12-04R010	14	-	1	-	14	-	20	-	11.7	-	45° / 48°	XP3225
7835012		PXVC140C12-04R020	14	-	2	-	14	-	20	-	11.7	-	45° / 48°	XP3225
7835013		PXVC140C12-04R030	14	-	3	-	14	-	20	-	11.7	-	45° / 48°	XP3225
7835014		PXVC160C16-04R000	16	-	0	-	16	-	23.5	-	15.7	-	45° / 48°	XP3225
7835015		PXVC160C16-04R005	16	-	0.5	-	16	-	23.5	-	15.7	-	45° / 48°	XP3225
7835016		PXVC160C16-04R010	16	-	1	-	16	-	23.5	-	15.7	-	45° / 48°	XP3225
7835017		PXVC160C16-04R015	16	-	1.5	-	16	-	23.5	-	15.7	-	45° / 48°	XP3225
7835018		PXVC160C16-04R020	16	-	2	-	16	-	23.5	-	15.7	-	45° / 48°	XP3225
7835019		PXVC160C16-04R030	16	-	3	-	16	-	23.5	-	15.7	-	45° / 48°	XP3225
7835020		PXVC180C16-04R000	18	-	0	-	18	-	25.5	-	15.7	-	45° / 48°	XP3225
7835021		PXVC180C16-04R005	18	-	0.5	-	18	-	25.5	-	15.7	-	45° / 48°	XP3225
7835022		PXVC180C16-04R010	18	-	1	-	18	-	25.5	-	15.7	-	45° / 48°	XP3225
7835023		PXVC180C16-04R020	18	-	2	-	18	-	25.5	-	15.7	-	45° / 48°	XP3225
7835024		PXVC180C16-04R030	18	-	3	-	18	-	25.5	-	15.7	-	45° / 48°	XP3225
7835025		PXVC200C20-04R000	20	-	0	-	20	-	27.5	-	19.6	-	45° / 48°	XP3225
7835026		PXVC200C20-04R005	20	-	0.5	-	20	-	27.5	-	19.6	-	45° / 48°	XP3225
7835027		PXVC200C20-04R010	20	-	1	-	20	-	27.5	-	19.6	-	45° / 48°	XP3225
7835028		PXVC200C20-04R020	20	-	2	-	20	-	27.5	-	19.6	-	45° / 48°	XP3225
7835029		PXVC200C20-04R030	20	-	3	-	20	-	27.5	-	19.6	-	45° / 48°	XP3225
7835030		PXVC220C20-04R000	22	-	0	-	22	-	29.5	-	19.6	-	45° / 48°	XP3225
7835038		PXVC220C20-04R005	22	-	0.5	-	22	-	29.5	-	19.6	-	45° / 48°	XP3225
7835031		PXVC220C20-04R010	22	-	1	-	22	-	29.5	-	19.6	-	45° / 48°	XP3225
7835032		PXVC220C20-04R020	22	-	2	-	22	-	29.5	-	19.6	-	45° / 48°	XP3225
7835033		PXVC220C20-04R030	22	-	3	-	22	-	29.5	-	19.6	-	45° / 48°	XP3225
7835034		PXVC250C25-04R000	25	-	0	-	25	-	35	-	24	-	45° / 48°	XP3225
7835035		PXVC250C25-04R010	25	-	1	-	25	-	35	-	24	-	45° / 48°	XP3225
7835036		PXVC250C25-04R020	25	-	2	-	25	-	35	-	24	-	45° / 48°	XP3225
7835037		PXVC250C25-04R030	25	-	3	-	25	-	35	-	24	-	45° / 48°	XP3225

Packed: 1 pc.





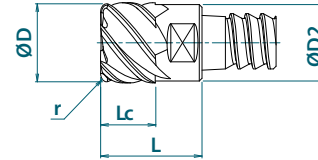
List 78PXS

PXSM Exchangeable Heads (Inch & Metric) - Multiple Flute, Square & Corner Radius



SPEED FEED
P1297

Accessories: p1292-1294
PXM Arbors: p1290-1291



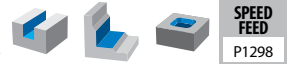
EDP No.	Type	Designation	Head Dia.		Corner Radius		No. of Flutes	Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade
			D		r			Lc		L		D2			
			(mm)	(inch)	(mm)	(inch)		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		
52302000		PXSM0500AC12-06R000	-	0.500	-	0.000	6	-	0.350	-	0.598	-	0.488	38°	XP3225
52302001		PXSM0500AC12-06R015	-	0.500	-	0.015	6	-	0.350	-	0.598	-	0.488	38°	XP3225
52302002		PXSM0500AC12-06R030	-	0.500	-	0.030	6	-	0.350	-	0.598	-	0.488	38°	XP3225
52302003		PXSM0500AC12-06R060	-	0.500	-	0.060	6	-	0.350	-	0.598	-	0.488	38°	XP3225
52302004		PXSM0500AC12-06R090	-	0.500	-	0.090	6	-	0.350	-	0.598	-	0.488	38°	XP3225
52302005		PXSM0625AC16-06R000	-	0.625	-	0.000	6	-	0.438	-	0.732	-	0.613	38°	XP3225
52302006		PXSM0625AC16-06R030	-	0.625	-	0.030	6	-	0.438	-	0.732	-	0.613	38°	XP3225
52302007		PXSM0625AC16-06R060	-	0.625	-	0.060	6	-	0.438	-	0.732	-	0.613	38°	XP3225
52302008		PXSM0625AC16-06R090	-	0.625	-	0.090	6	-	0.438	-	0.732	-	0.613	38°	XP3225
52302009		PXSM0625AC16-06R120	-	0.625	-	0.120	6	-	0.438	-	0.732	-	0.613	38°	XP3225
52302010		PXSM0625AC16-08R000	-	0.625	-	0.000	8	-	0.438	-	0.732	-	0.613	42°	XP3225
52302011		PXSM0625AC16-08R030	-	0.625	-	0.030	8	-	0.438	-	0.732	-	0.613	42°	XP3225
52302012		PXSM0625AC16-08R060	-	0.625	-	0.060	8	-	0.438	-	0.732	-	0.613	42°	XP3225
52302013		PXSM0625AC16-08R090	-	0.625	-	0.090	8	-	0.438	-	0.732	-	0.613	42°	XP3225
52302014		PXSM0625AC16-08R120	-	0.625	-	0.120	8	-	0.438	-	0.732	-	0.613	42°	XP3225
52302015		PXSM0750AC20-10R000	-	0.750	-	0.000	10	-	0.525	-	0.807	-	0.736	42°	XP3225
52302016		PXSM0750AC20-10R030	-	0.750	-	0.030	10	-	0.525	-	0.807	-	0.736	42°	XP3225
52302017		PXSM0750AC20-10R060	-	0.750	-	0.060	10	-	0.525	-	0.807	-	0.736	42°	XP3225
52302018		PXSM0750AC20-10R090	-	0.750	-	0.090	10	-	0.525	-	0.807	-	0.736	42°	XP3225
52302019		PXSM0750AC20-10R120	-	0.750	-	0.120	10	-	0.525	-	0.807	-	0.736	42°	XP3225
52302020		PXSM1000AC25-10R000	-	1.000	-	0.000	10	-	0.700	-	1.098	-	0.960	42°	XP3225
52302021		PXSM1000AC25-10R030	-	1.000	-	0.030	10	-	0.700	-	1.098	-	0.960	42°	XP3225
52302022		PXSM1000AC25-10R060	-	1.000	-	0.060	10	-	0.700	-	1.098	-	0.960	42°	XP3225
52302023		PXSM1000AC25-10R090	-	1.000	-	0.090	10	-	0.700	-	1.098	-	0.960	42°	XP3225
52302024		PXSM1000AC25-10R120	-	1.000	-	0.120	10	-	0.700	-	1.098	-	0.960	42°	XP3225
7830104	PXSM	PXSM120C12-06R000	12	-	0	-	6	8.4	-	14.4	-	11.7	-	38°	XP3225
7830105		PXSM120C12-06R005	12	-	0.5	-	6	8.4	-	14.4	-	11.7	-	38°	XP3225
7830106		PXSM120C12-06R010	12	-	1	-	6	8.4	-	14.4	-	11.7	-	38°	XP3225
7830107		PXSM120C12-06R020	12	-	2	-	6	8.4	-	14.4	-	11.7	-	38°	XP3225
7830108		PXSM120C12-06R030	12	-	3	-	6	8.4	-	14.4	-	11.7	-	38°	XP3225
7830109		PXSM160C16-06R000	16	-	0	-	6	11.2	-	18.7	-	15.7	-	38°	XP3225
7830110		PXSM160C16-06R005	16	-	0.5	-	6	11.2	-	18.7	-	15.7	-	38°	XP3225
7830111		PXSM160C16-06R010	16	-	1	-	6	11.2	-	18.7	-	15.7	-	38°	XP3225
7830112		PXSM160C16-06R015	16	-	1.5	-	6	11.2	-	18.7	-	15.7	-	38°	XP3225
7830113		PXSM160C16-06R020	16	-	2	-	6	11.2	-	18.7	-	15.7	-	38°	XP3225
7830114		PXSM160C16-06R030	16	-	3	-	6	11.2	-	18.7	-	15.7	-	38°	XP3225
7830115		PXSM160C16-08R000	16	-	0	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830116		PXSM160C16-08R005	16	-	0.5	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830117		PXSM160C16-08R010	16	-	1	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830118		PXSM160C16-08R015	16	-	1.5	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830119		PXSM160C16-08R020	16	-	2	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830120		PXSM160C16-08R030	16	-	3	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830121		PXSM200C20-10R000	20	-	0	-	10	14	-	21.5	-	19.6	-	42°	XP3225
7830122		PXSM200C20-10R005	20	-	0.5	-	10	14	-	21.5	-	19.6	-	42°	XP3225
7830123		PXSM200C20-10R010	20	-	1	-	10	14	-	21.5	-	19.6	-	42°	XP3225
7830124		PXSM200C20-10R020	20	-	2	-	10	14	-	21.5	-	19.6	-	42°	XP3225
7830125		PXSM200C20-10R030	20	-	3	-	10	14	-	21.5	-	19.6	-	42°	XP3225
7830126		PXSM250C25-10R000	25	-	0	-	10	17.5	-	27.5	-	24	-	42°	XP3225
7830127		PXSM250C25-10R010	25	-	1	-	10	17.5	-	27.5	-	24	-	42°	XP3225
7830128		PXSM250C25-10R020	25	-	2	-	10	17.5	-	27.5	-	24	-	42°	XP3225
7830129		PXSM250C25-10R030	25	-	3	-	10	17.5	-	27.5	-	24	-	42°	XP3225

Packed: 1 pc.

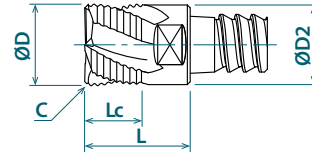


List 78PXNL

PXNL Exchangeable Heads (inch & metric) - 4 Flute, Roughing, Low Helix



Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Corner Chamfer		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade
			D		C		Lc		L		D2			
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		
52303000	PXNL	PXNL0500AC12-04C020	-	0.500	-	0.020	-	0.350	-	0.598	-	0.488	19° / 21°	XP3225
52303001		PXNL0625AC16-04C025	-	0.625	-	0.025	-	0.438	-	0.732	-	0.613	19° / 21°	XP3225
52303002		PXNL0750AC20-04C025	-	0.750	-	0.025	-	0.525	-	0.807	-	0.736	19° / 21°	XP3225
52303003		PXNL1000AC25-04C025	-	1.000	-	0.025	-	0.700	-	1.098	-	0.960	19° / 21°	XP3225
7830401		PXNL120C12-04C005	12	-	0.5	-	8.4	-	14.4	-	11.7	-	19° / 21°	XP3225
7830402		PXNL160C16-04C006	16	-	0.6	-	11.2	-	18.7	-	15.7	-	19° / 21°	XP3225
7830403		PXNL200C20-04C006	20	-	0.6	-	14	-	21.5	-	19.6	-	19° / 21°	XP3225
7830404		PXNL250C25-04C006	25	-	0.6	-	17.5	-	27.5	-	24	-	19° / 21°	XP3225

Packed: 1 pc.

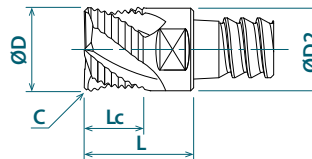


List 78PXNH

PXNH Exchangeable Heads (inch & metric) - 4 Flute, Roughing, High Helix



Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Corner Chamfer		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade
			D		C		Lc		L		D2			
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		
52304000	PXNH	PXNH0500AC12-04C020	-	0.500	-	0.020	-	0.350	-	0.598	-	0.488	40° / 42°	XP3225
52304001		PXNH0625AC16-04C025	-	0.625	-	0.025	-	0.438	-	0.732	-	0.613	40° / 42°	XP3225
52304002		PXNH0750AC20-04C025	-	0.750	-	0.025	-	0.525	-	0.807	-	0.736	40° / 42°	XP3225
52304003		PXNH1000AC25-04C025	-	1.000	-	0.025	-	0.700	-	1.098	-	0.960	40° / 42°	XP3225
7830451		PXNH120C12-04C005	12	-	0.5	-	8.4	-	14.4	-	11.7	-	40° / 42°	XP3225
7830452		PXNH160C16-04C006	16	-	0.6	-	11.2	-	18.7	-	15.7	-	40° / 42°	XP3225
7830453		PXNH200C20-04C006	20	-	0.6	-	14	-	21.5	-	19.6	-	40° / 42°	XP3225
7830454		PXNH250C25-04C006	25	-	0.6	-	17.5	-	27.5	-	24	-	40° / 42°	XP3225

Packed: 1 pc.

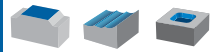




List 78PXRE

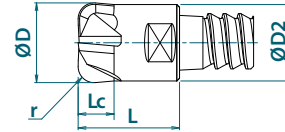
PXRE Exchangeable Heads (inch & metric) - Multiple Flute, Straight Flute, Corner Radius

NEW SIZES



SPEED FEED
P1299

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Corner Radius		No. of Flutes	Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade
			D		r			Lc		L		D2			
			(mm)	(inch)	(mm)	(inch)		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		
52305000	PXRE	PXRE0500AC12-04R090	-	0.500	-	0.090	4	-	0.197	-	0.598	-	0.488	-	XP6305
52305001		PXRE0625AC16-06R120	-	0.625	-	0.120	6	-	0.276	-	0.732	-	0.613	-	XP6305
52305002		PXRE0750AC20-06R120	-	0.750	-	0.120	6	-	0.394	-	0.807	-	0.736	-	XP6305
52305003		PXRE1000AC25-06R120	-	1.000	-	0.120	6	-	0.500	-	1.098	-	0.960	-	XP6305
7830201		PXRE120C12-04R020	12	-	2	-	4	5	-	14.4	-	11.7	-	-	XP6305
7830202		PXRE160C16-06R030	16	-	3	-	6	7	-	18.7	-	15.7	-	-	XP6305
7830203		PXRE200C20-06R030	20	-	3	-	6	10	-	21.5	-	19.6	-	-	XP6305

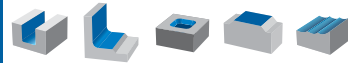
Packed: 1 pc.



List 78PXDR

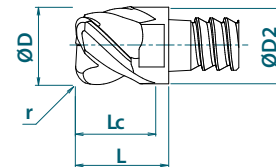
PXDR-P Exchangeable Heads (inch & metric) - 3 Flute, Helical Flute, Corner Radius

NEW SIZES



SPEED FEED
P1299

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Corner Radius		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade	
			D		r		Lc		L		D2				
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)			
52309000	PXDR-P	PXDR0500AC12-03R060-P	-	0.500	-	0.060	-	0.35	-	0.598	-	0.488	45°	XP3225	
52309001		PXDR0500AC12-03R090-P	-	0.500	-	0.090	-	0.35	-	0.598	-	0.488	45°	XP3225	
52309002		PXDR0625AC16-03R090-P	-	0.625	-	0.090	-	0.438	-	0.732	-	0.614	45°	XP3225	
52309003		PXDR0625AC16-03R120-P	-	0.625	-	0.120	-	0.438	-	0.732	-	0.614	45°	XP3225	
52309004		PXDR0750AC20-03R090-P	-	0.750	-	0.090	-	0.525	-	0.807	-	0.736	45°	XP3225	
52309005		PXDR0750AC20-03R120-P	-	0.750	-	0.120	-	0.525	-	0.807	-	0.736	45°	XP3225	
52309006		PXDR1000AC25-03R090-P	-	1.000	-	0.090	-	0.700	-	1.098	-	0.960	45°	XP3225	
52309007		PXDR1000AC25-03R120-P	-	1.000	-	0.120	-	0.700	-	1.098	-	0.960	45°	XP3225	
7830351		PXDR120C12-03R015-P	12	-	1.5	-	8.4	-	14.4	-	11.7	-	-	45°	XP3225
7830352		PXDR120C12-03R020-P	12	-	2	-	8.4	-	14.4	-	11.7	-	-	45°	XP3225
7830353		PXDR160C16-03R020-P	16	-	2	-	11.2	-	18.7	-	15.7	-	-	45°	XP3225
7830354		PXDR160C16-03R030-P	16	-	3	-	11.2	-	18.7	-	15.7	-	-	45°	XP3225
7830355		PXDR200C20-03R020-P	20	-	2	-	14	-	21.5	-	19.6	-	-	45°	XP3225
7830356		PXDR200C20-03R030-P	20	-	3	-	14	-	21.5	-	19.6	-	-	45°	XP3225

Packed: 1 pc.

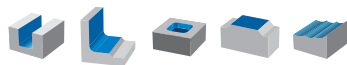




List 78PXDR

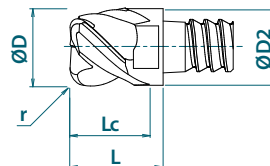
PXDR-N Exchangeable Heads (inch & metric) - 3 Flute, Helical Flute, Corner Radius

NEW SIZES



SPEED FEED
P1300

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Corner Radius		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade		
			D		r		Lc		L		D2					
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)				
52310000	PXDR-N	PXDR0500AC12-03R060-N	-	0.500	-	0.060	-	0.35	-	0.598	-	0.488	45°	XP6305		
52310001		PXDR0500AC12-03R090-N	-	0.500	-	0.090	-	0.35	-	0.598	-	0.488	45°	XP6305		
52310002		PXDR0625AC16-03R090-N	-	0.625	-	0.090	-	0.438	-	0.732	-	0.614	45°	XP6305		
52310003		PXDR0625AC16-03R120-N	-	0.625	-	0.120	-	0.438	-	0.732	-	0.614	45°	XP6305		
52310004		PXDR0750AC20-03R090-N	-	0.750	-	0.090	-	0.525	-	0.807	-	0.736	45°	XP6305		
52310005		PXDR0750AC20-03R120-N	-	0.750	-	0.120	-	0.525	-	0.807	-	0.736	45°	XP6305		
52310006		PXDR1000AC25-03R090-N	-	1.000	-	0.090	-	0.700	-	1.098	-	0.960	45°	XP6305		
52310007		PXDR1000AC25-03R120-N	-	1.000	-	0.120	-	0.700	-	1.098	-	0.960	45°	XP6305		
7830371		PXDR120C12-03R015-N	12	-	1.5	-	8.4	-	8.4	-	14.4	-	11.7	-	45°	XP6305
7830372		PXDR120C12-03R020-N	12	-	2	-	8.4	-	8.4	-	14.4	-	11.7	-	45°	XP6305
7830373		PXDR160C16-03R020-N	16	-	2	-	11.2	-	11.2	-	18.7	-	15.7	-	45°	XP6305
7830374		PXDR160C16-03R030-N	16	-	3	-	11.2	-	11.2	-	18.7	-	15.7	-	45°	XP6305
7830375		PXDR200C20-03R020-N	20	-	2	-	14	-	14	-	21.5	-	19.6	-	45°	XP6305
7830376		PXDR200C20-03R030-N	20	-	3	-	14	-	14	-	21.5	-	19.6	-	45°	XP6305

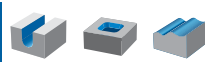
Packed: 1 pc.



List 78PXBE

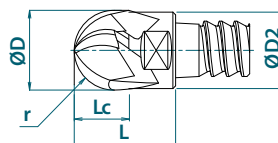
PXBE-P Exchangeable Heads (inch & metric) - 3 Flute, Ball End

NEW SIZES



SPEED FEED
P1300

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Head Radius		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade		
			D		r		Lc		L		D2					
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)				
52311000	PXBE-P	PXBE0500AC12-03R250-P	-	0.500	-	0.250	-	0.350	-	0.598	-	0.488	45°	XP3320		
52311001		PXBE0625AC16-03R313-P	-	0.625	-	0.3125	-	0.438	-	0.732	-	0.614	45°	XP3320		
52311002		PXBE0750AC20-03R375-P	-	0.750	-	0.375	-	0.525	-	0.807	-	0.736	45°	XP3320		
52311003		PXBE1000AC25-03R500-P	-	1.000	-	0.500	-	0.700	-	1.098	-	0.960	45°	XP3320		
7830271		PXBE120C12-03R060-P	12	-	6	-	8.4	-	8.4	-	14.4	-	11.7	-	45°	XP3320
7830272		PXBE160C16-03R080-P	16	-	8	-	11.2	-	11.2	-	18.7	-	15.7	-	45°	XP3320
7830273	PXBE200C20-03R100-P	20	-	10	-	14	-	14	-	21.5	-	19.6	-	45°	XP3320	

Packed: 1 pc.

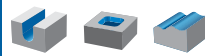




List 78PXBE

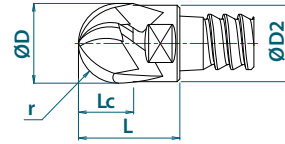
PXBE-N Exchangeable Heads (inch & metric) - 3 Flute, Ball End

NEW SIZES



SPEED FEED
P1301

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Head Radius		Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade	
			D		R		Lc		L		D2				
			(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)			
52306000	PXBE-N	PXBE0500AC12-03R250-N	-	0.500	-	0.500	-	0.350	-	0.598	-	0.488	45°	XP3320	
52306001		PXBE0625AC16-03R313-N	-	0.625	-	0.3125	-	0.438	-	0.732	-	0.613	45°	XP3320	
52306002		PXBE0750AC20-03R375-N	-	0.750	-	0.375	-	0.525	-	0.807	-	0.736	45°	XP3320	
52306003		PXBE1000AC25-03R500-N	-	1.000	-	0.500	-	0.700	-	1.098	-	0.960	45°	XP3320	
7830251		PXBE120C12-03R060-N	12	-	6	-	8.4	-	14.4	-	11.7	-	-	45°	XP3320
7830252		PXBE160C16-03R080-N	16	-	8	-	11.2	-	18.7	-	15.7	-	-	45°	XP3320
7830253		PXBE200C20-03R100-N	20	-	10	-	14	-	21.5	-	19.6	-	-	45°	XP3320

Packed: 1 pc.



List 78PXBM

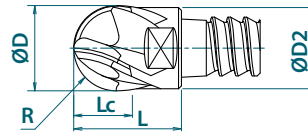
PXBM Exchangeable Heads (inch & metric) - Multiple Flute, Ball End

NEW SIZES



SPEED FEED
P1301

Accessories: p1292-1294
PXM Arbors: p1290-1291



EDP No.	Type	Designation	Head Dia.		Head Radius		No. of Flutes	Length of Cut		Overall Length		Flange Dia.		Helix Angle	Grade
			D		R			Lc		L		D2			
			(mm)	(inch)	(mm)	(inch)		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		
52307000	PXBM	PXBM0500AC12-04R250	-	0.500	-	0.250	4	-	0.350	-	0.598	-	0.488	45°	XP3320
52307001		PXBM0625AC16-06R313	-	0.625	-	0.3125	6	-	0.438	-	0.732	-	0.613	45°	XP3320
52307002		PXBM0750AC20-06R375	-	0.750	-	0.375	6	-	0.525	-	0.807	-	0.736	45°	XP3320
52307003		PXBM1000AC25-06R500	-	1.000	-	0.500	6	-	0.700	-	1.098	-	0.960	45°	XP3320
7830301		PXBM120C12-04R060	12	-	6	-	4	8.4	-	14.4	-	11.7	-	45°	XP3320
7830302		PXBM160C16-06R080	16	-	8	-	6	11.2	-	18.7	-	15.7	-	45°	XP3320
7830303		PXBM200C20-06R100	20	-	10	-	6	14	-	21.5	-	19.6	-	45°	XP3320

Packed: 1 pc.



List 52300

PXM SA/TPA (inch)



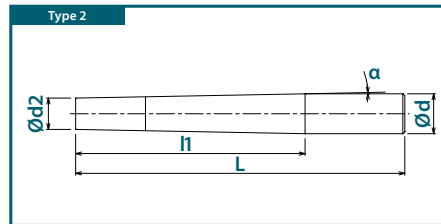
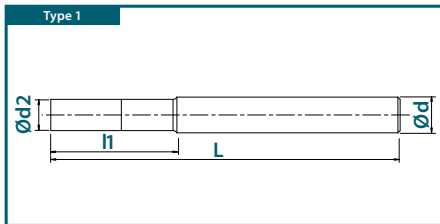
Straight Shank



Tapered Shank

EDP No.	Body Type	Designation	Type	Neck Dia. (inch)	Shank Dia. (inch)	Taper	Overall Length (inch)	Neck Length (inch)	Applicable Head (Inch)	
				d2	d	α°	L	l1		
52300000	Cylindrical Shank Steel	PXMZ-C12SA0500-S400	1	0.488	0.500	-	4.000	0.750	0.500	
52300001		PXMZ-C12TPA0750-S600	2	0.488	0.750	5°	6.000	1.500		
52300002		PXMZ-C16SA0625-S400	1	0.613	0.625	-	4.000	1.000	0.625	
52300003		PXMZ-C16TPA1000-S650	2	0.613	1.000	5°	6.500	2.200		
52300004		PXMZ-C20SA0750-S500	1	0.736	0.750	-	5.000	1.250	0.750	
52300005		PXMZ-C20TPA1250-S700	2	0.736	1.250	5°	7.000	2.900		
52300006	PXMZ-C25SA1000-S550	1	0.960	1.000	-	5.500	1.500	1.000		
52300007	Cylindrical Shank Carbide	PXMZ-C12SA0500-S300CS	1	0.488	0.500	-	3.000	1.000	0.500	
52300008		PXMZ-C12SA0500-L400CS	1	0.488	0.500	-	4.000	1.750		
52300009		PXMZ-C12SA0500-L450CS	1	0.488	0.500	-	4.500	2.500		
52300010		PXMZ-C12TPA0625-LL550CS	2	0.488	0.625	1.2°	5.500	3.250		
52300011		PXMZ-C16SA0625-S350CS	1	0.613	0.625	-	3.500	1.500		0.625
52300012		PXMZ-C16SA0625-L550CS	1	0.613	0.625	-	5.500	2.500		
52300013		PXMZ-C16SA0625-L600CS	1	0.613	0.625	-	6.000	3.250		
52300014		PXMZ-C16TPA0750-LL650CS	2	0.613	0.750	1°	6.500	4.500	0.750	
52300015		PXMZ-C20SA0750-S350CS	1	0.736	0.750	-	3.500	1.500		
52300016		PXMZ-C20SA0750-L600CS	1	0.736	0.750	-	6.000	3.000		
52300017		PXMZ-C20SA0750-L700CS	1	0.736	0.750	-	7.000	4.250		
52300018		PXMZ-C20TPA1000-LL800CS	2	0.736	1.000	1.5°	8.000	5.500		
52300019		PXMZ-C25SA1000-L800CS	1	0.960	1.000	-	8.000	3.750		1.000

Packed: 1 pc.
Note: Wrench included with body.





List 78018

PXM SS/TP (Metric)



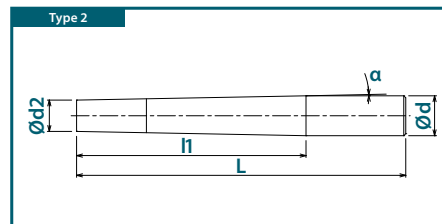
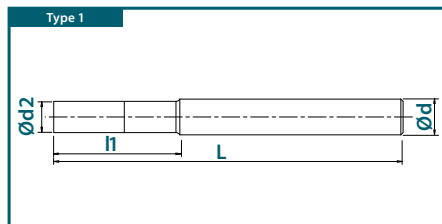
Straight Shank



Tapered Shank

EDP No.	Body Type	Designation	Type	Neck Dia. (mm)	Shank Dia. (mm)	Taper	Overall Length (mm)	Neck Length (mm)	Applicable Head (mm)
				d2	d	α°	L	l1	
48174001	Cylindrical Shank Steel	PXMZ-C12SS12-S100	1	11.7	12	-	100	19.0	12
48174002		PXMZ-C12TP20-S145	2	11.7	20	5°	145	47.4	
48174003		PXMZ-C16SS16-S100	1	15.7	16	-	100	23.4	16
48174004		PXMZ-C16TP25-S155	2	15.7	25	5°	155	53.1	
48174005		PXMZ-C20SS20-S120	1	19.6	20	-	120	28.8	20
48174006		PXMZ-C20TP32-S170	2	19.6	32	5°	170	70.8	
48174007		PXMZ-C25SS25-S140	1	24	25	-	140	36.0	25
48174008	Cylindrical Shank Carbide	PXMZ-C12SS12-S075CS	1	11.7	12	-	75	25.0	12
48174009		PXMZ-C12SS12-L100CS	1	11.7	12	-	100	46.3	
48174010		PXMZ-C12SS12-L115CS	1	11.7	12	-	115	65.0	
48174011		PXMZ-C12TP16-LL135CS	2	11.7	16	1.5°	135	85.0	
48174012		PXMZ-C16SS16-S090CS	1	15.7	16	-	90	40.0	16
48174013		PXMZ-C16SS16-L130CS	1	15.7	16	-	130	62.0	
48174014		PXMZ-C16SS16-L135CS	1	15.7	16	-	135	85.0	
48174015		PXMZ-C16TP20-LL165CS	2	15.7	20	1.5°	165	115.0	
48174016		PXMZ-C20SS20-S090CS	1	19.6	20	-	90	40.0	20
48174017		PXMZ-C20SS20-L150CS	1	19.6	20	-	150	79.3	
48174018		PXMZ-C20SS20-L180CS	1	19.6	20	-	180	110.0	
48174019		PXMZ-C20TP25-LL200CS	2	19.6	25	1.5°	200	140.0	
48174020		PXMZ-C25SS25-L200CS	1	24	25	-	200	98.0	25

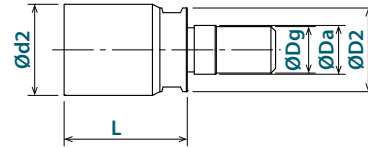
Packed: 1 pc.
Note: Wrench included with body.





List 52300

PXM SF Joint (Inch)



EDP No.	Body Type	Designation	Neck Dia. (Inch)	Pilot Dia. (Inch)	Thread Dia. (mm)	Flange Dia. (Inch)	Overall Length (Inch)	Spanner Wrench	Applicable Head (inch)
			d2	Da	Dg	D2	L		
52300020	PXMJ (Joint)	PXMJ-AC12SF06	0.488	0.256	M6	0.433	0.709	PXMP8-10	0.500
52300021		PXMJ-AC16SF08	0.613	0.335	M8	0.571	0.858	PXMP13-16	0.625
52300022		PXMJ-AC20SF10	0.736	0.413	M10	0.707	1.043	PXMP13-16	0.750
52300023		PXMJ-AC25SF12	0.960	0.492	M12	0.905	1.338	PXMP21	1.000

Packed: 1 pc.

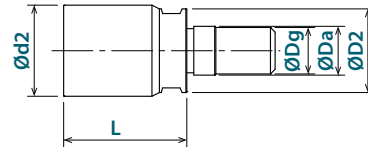
Note: Wrench included with body.

Note: PXM heads can be mounted to PHOENIX® SF arbors by attaching the PXM SF joint.



List 78018

PXM SF Joint (Metric)



EDP No.	Body Type	Designation	Neck Dia. (mm)	Pilot Dia. (mm)	Thread Dia. (mm)	Flange Dia. (mm)	Overall Length (mm)	Spanner Wrench	Applicable Head
			d2	Da	Dg	D2	L		
7801893	PXMJ (Joint)	PXMJ-C12SF06	11.7	6.5	M6	11.0	18.0	PXMP8-10	12
7801894		PXMJ-C16SF08	15.7	8.5	M8	14.5	21.8	PXMP13-16	16
7801895		PXMJ-C20SF10	19.6	10.5	M10	18.0	26.5	PXMP13-16	20
7801896		PXMJ-C25SF12	24.0	12.5	M12	23.0	34.0	PXMP21	25

Packed: 1 pc.

Note: Wrench included with body.

Note: PXM heads can be mounted to PHOENIX® SF arbors by attaching the PXM SF joint.



List 7808H

PXM Accessories

Appearance	EDP No.	Designation	Applicable Head		Recommended Tightening
			(inch)	(mm)	
 Spanner Wrench	7801890	PXMP8-10	0.500	12	12.0 Nm
	7801891	PXMP13-16	0.625	16	30.0 Nm
			0.750	20	50.0 Nm
	7801892	PXMP21	1.000	25	60.0 Nm

Packed: Wrench = 1 pc.

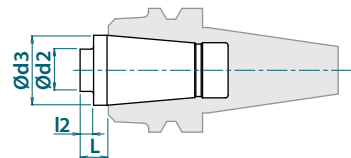




List 78340



PXMC (Metric)



EDP No.	Body Type	Designation	Neck Dia. (mm)	Body Dia. (mm)	Projection Length (mm)	Neck Length (mm)	Applicable Head (mm)
			d2	d3	L	l2	
7834001	Extra-Short	PXMC-C1205	11.7	26	10.5	5	12
7834002		PXMC-C1605	15.7	26	10.5	5	16
7834003		PXMC-C2005	19.6	26	10.5	5	20
7834004		PXMC-C2505	24	26	10.5	5	25
7834011	Short	PXMC-C1230	11.7	26	35.5	30	12
7834012		PXMC-C1630	15.7	26	35.5	30	16
7834013		PXMC-C2030	19.6	26	35.5	30	20
7834014		PXMC-C2530	24	26	35.5	30	25

Packed: 1 pc.

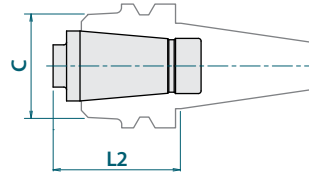
Note: The PXMC collet is compatible with the HYPRO Shrink Collet System.

Note: Wrench sold separately.



HY-PRO® Shrink

2 Piece Base Holders



EDP No.	Body Type	Designation	Nose Diameter (mm)	Gage Length (mm)	
			C	L2	
				Extra-Short	Short
9910002	CAT40	CT40-SLK12-45	40.9	45.5	70.5
8910000	BT30	BT30-SLK12-35 - 45 Deg.	38	45.5	70.5
8910001		BT30-SLK12-35 - 60 Deg.	38	45.5	70.5
8910002	BT40	BT40-SLK12-45	38	55.5	80.5
8910003		BT40-SLK12-75	38	85.5	110.5
9910005	HSK-E50	HSK-E50-SLK12-75	38	85.5	110.5
8910005	HSK-A63	HSK-A63-SLK12-75	38	85.5	110.5
8910006		HSK-A63-SLK12-135	38	145.5	170.5

Packed: 1 pc.

Note: For more information, see p1327.



Cutting Conditions (PXSE)

Side milling

Hardness				Up to 30 HRC		30-45 HRC		45-55 HRC			
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels Titanium Alloys		Heat Resistant Alloys Inconel	
Depth of Cut		Aa=0.5Dc • Ar=0.15Dc				Aa=0.5Dc • Ar=0.1Dc		Aa=0.5Dc • Ar=0.05Dc			
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	3180	29.92	2650	25.20	1700	15.75	1700	13.78	650	3.94
1/2	-	3010	28.29	2450	23.28	1590	14.95	1590	12.72	620	3.78
5/8	-	2410	22.65	1955	18.57	1270	11.94	1270	10.16	495	3.07
-	16	2390	22.44	1950	18.50	1250	11.81	1250	9.84	500	3.15
3/4	-	2000	18.80	1630	15.49	1060	10.39	1060	8.48	410	2.62
-	20	1910	18.11	1550	14.57	1000	9.84	1000	7.87	400	2.56
-	25	1530	14.57	1240	11.81	800	7.87	800	6.30	320	1.97
1	-	1500	14.10	1225	11.64	790	7.74	790	6.25	310	1.89

1. Cutting conditions shown above are for side milling with L/D ≤ 3.5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD

Slotting

Hardness				Up to 30 HRC		30-45 HRC		45-55 HRC			
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels Titanium Alloys		Heat Resistant Alloys Inconel	
Depth of Cut		Aa≤0.35Dc				Aa≤0.3Dc		Aa≤0.2Dc		Aa≤0.1Dc	
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	2500	19.69	1550	11.81	1300	9.84	1300	9.84	650	3.94
1/2	-	2350	18.49	1450	11.02	1240	9.42	1240	9.42	620	3.78
5/8	-	1875	14.76	1160	9.98	1010	7.88	1010	7.88	495	3.07
-	16	1850	13.78	1150	9.84	1000	7.87	1000	7.87	500	3.15
3/4	-	1565	12.32	990	8.22	790	6.64	790	6.64	410	2.62
-	20	1500	11.81	950	7.87	750	6.30	750	6.30	400	2.56
-	25	1200	9.45	760	6.30	600	5.12	600	5.12	320	1.97
1	-	1170	9.21	745	6.18	590	5.02	590	5.02	310	1.89

1. Cutting conditions shown above are for side milling with L/D ≤ 3.5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD





Cutting Conditions (PXVC)

Side milling

Hardness		Up to 30 HRC				30-45 HRC		45-55 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels Titanium Alloys	
Depth of Cut		Aa=0.5Dc • Ar=0.2Dc				Aa=0.5Dc • Ar=0.1Dc		Aa=0.5Dc • Ar=0.05Dc	
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)								
-	12	3980	37.80	3190	30.31	2660	25.20	2130	20.47
1/2	-	3780	35.83	3020	28.63	2520	23.90	2010	19.30
-	14	3420	32.68	2730	25.98	2280	21.65	1820	17.32
5/8	-	3025	28.67	2410	22.85	2015	19.10	1610	15.46
-	16	2990	28.35	2390	22.83	1990	18.90	1600	15.35
-	18	2660	25.20	2130	20.47	1770	16.93	1420	13.78
3/4	-	2520	23.90	2010	19.05	1680	15.93	1340	12.86
-	20	2390	22.83	1910	18.11	1600	15.35	1280	12.20
-	22	2180	20.87	1740	16.54	1450	13.78	1160	11.00
-	25	1910	18.11	1530	14.57	1280	12.20	1020	9.84
1	-	1890	17.92	1510	14.31	1260	11.95	1000	9.60

1. Cutting conditions shown above are for side milling with $L/D \leq 5xD$
2. For side milling with $5xD < L/D \leq 6xD$, reduce Speed and Feed by 10%
3. For side milling with $6xD < L/D \leq 7xD$, reduce Speed & Feed by 20%
4. For side milling with PXM Extra-Short Collet, increase Speed by 30-40% and Feed by 40-80%
5. For side milling with PXM Short Collet, increase Speed by 10-20% and Feed by 20-30%

Slotting

Hardness		Up to 30 HRC				30-45 HRC		45-55 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels Titanium Alloys	
Depth of Cut		Aa≤0.5Dc		Aa≤0.4Dc		Aa≤0.3Dc			
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)								
-	12	3980	31.50	3180	25.20	2650	20.87	1990	15.75
1/2	-	3760	29.61	3010	23.70	2505	19.72	1870	14.72
-	14	3410	26.77	2730	21.65	2270	17.72	1710	13.38
5/8	-	3010	23.70	2410	18.98	2005	15.79	1500	11.81
-	16	2980	23.62	2390	18.90	1990	15.75	1490	11.81
-	18	2650	20.87	2120	16.53	1770	13.78	1330	10.63
3/4	-	2505	19.72	2010	15.83	1670	13.15	1250	9.84
-	20	2390	18.90	1910	14.96	1590	12.60	1190	9.45
-	22	2170	16.93	1740	13.78	1450	11.42	1090	8.66
-	25	1910	14.96	1530	12.20	1270	9.84	950	7.48
1	-	1880	14.80	1505	11.85	1250	9.70	935	7.36

1. Cutting conditions shown above are for slotting with $L/D \leq 5xD$
2. For slotting with $5xD < L/D \leq 6xD$, reduce Speed and Feed by 20%
3. For slotting with $6xD < L/D \leq 7xD$, reduce Speed & Feed by 35%
4. For slotting with PXM Extra-Short Collet, increase Speed by 10-20% and Feed by 10-50%
5. For slotting with PXM Short Collet, increase Feed by 15-30%





Cutting Conditions (PXSM)

Side milling

Hardness		Up to 30 HRC				30-45 HRC		45-55 HRC			
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels Titanium Alloys		Heat Resistant Alloys Inconel	
Depth of Cut		Aa≤0.5Dc • Ar≤0.05Dc				Aa≤0.5Dc • Ar≤0.02Dc		Aa≤0.3Dc • Ar≤0.02Dc			
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	4750	68.90	3950	45.28	3150	37.40	2650	31.50	1550	13.78
1/2	-	4485	65.03	3725	42.84	2980	35.16	2500	29.75	1450	12.91
5/8 (6F)	-	3590	52.06	2970	34.16	2385	28.38	1955	23.66	1160	10.32
5/8 (8F)	-	3590	69.65	2970	45.44	2385	37.92	1955	31.67	1160	13.92
-	16 (6F)	3550	51.57	2950	33.86	2350	27.95	1950	23.62	1150	10.24
-	16 (8F)	3550	68.90	2950	45.28	2350	37.40	1950	31.50	1150	13.78
3/4	-	2990	71.76	2475	47.52	1985	39.10	1630	33.09	995	14.43
-	20	2850	68.90	2350	45.28	1900	37.40	1550	31.50	950	13.78
-	25	2280	55.12	1880	36.22	1520	29.92	1240	25.20	760	11.02
1	-	2240	54.21	1855	35.80	1490	29.35	1220	24.77	745	10.80

1. Cutting conditions shown above are for side milling with L/D ≤ 3.5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD





Cutting Conditions (PXNL & PXNH)

Side milling

Work Material		Cast Iron		Carbon Steels		Alloy Steels		Hardened Steels Pre-hardened Steels		Stainless Steels	
Depth of Cut		Aa=0.5Dc • Ar=0.3Dc				Aa=0.5Dc • Ar=0.2Dc					
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	2390	23.62	3180	27.56	2650	17.32	2390	11.42	2120	9.06
1/2	-	2255	22.32	3000	26.10	2500	16.25	2255	10.82	2000	8.60
5/8	-	1800	24.48	2400	28.56	2000	17.80	1800	11.88	1600	9.44
-	16	1790	24.41	2390	28.35	1990	17.72	1790	11.81	1590	9.45
3/4	-	1500	27.30	2000	31.40	1670	19.87	1500	12.75	1335	10.28
-	20	1430	25.98	1910	29.92	1590	18.90	1430	12.20	1270	9.84
-	25	890	17.72	1270	22.05	1020	13.38	890	8.66	760	6.69
1	-	875	17.41	1250	21.75	1000	13.10	875	8.49	745	6.56

1. Cutting conditions shown above are for side milling with $L/D \leq 3.5xD$
2. Adjust/reduce the cutting conditions when the overhang length is longer than $3.5xD$
3. For side milling with PXM Extra-Short Collet, increase Speed by 20-80% and Feed by 20-100%
4. For side milling with PXM Short Collet, increase Speed by 30-50% and Feed by 10-80%

Slotting

Work Material		Cast Iron		Carbon Steels		Alloy Steels		Hardened Steels Pre-hardened Steels		Stainless Steels	
Depth of Cut		Aa=0.5Dc									
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	1860	11.81	2650	14.57	2120	8.66	1860	5.51	1590	4.33
1/2	-	1750	11.03	2505	13.78	2000	8.20	1750	5.08	1500	4.05
5/8	-	1400	12.74	2005	15.84	1600	9.44	1400	5.88	1200	4.80
-	16	1390	12.60	1990	15.75	1590	9.45	1390	5.91	1190	4.72
3/4	-	1165	14.91	1670	18.54	1335	11.21	1165	6.99	1000	5.40
-	20	1110	14.17	1590	17.72	1270	10.63	1110	6.69	950	5.12
-	25	760	11.02	1150	14.57	890	8.27	760	5.12	640	3.94
1	-	745	10.80	1130	14.35	875	8.14	745	4.99	630	3.84

1. Cutting conditions shown above are for slotting with $L/D \leq 3.5xD$
2. Adjust/reduce the cutting conditions when the overhang length is longer than $3.5xD$
4. For slotting with PXM Extra-Short Collet, increase Speed by 20-80% and Feed by 50-250%
5. For slotting with PXM Short Collet, increase Speed by 20-50% and Feed by 30-200%





Cutting Conditions (PXRE)

Contouring

Hardness				Up to 30 HRC		30-45 HRC		45-55 HRC		55-60 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Depth of Cut		Aa=0.1r • Ar=0.3Dc									
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	5800	417.32	4000	255.91	3200	192.91	2700	129.92	2300	86.61
1/2	-	5475	393.65	3780	241.92	3020	182.11	2535	121.93	2170	81.59
5/8	-	4035	472.50	3025	305.53	2415	233.77	2030	155.90	1735	108.44
-	16	4000	468.50	3000	303.15	2400	232.28	2000	153.54	1700	106.30
3/4	-	3360	394.80	2520	268.63	2010	204.02	1690	137.23	1445	89.45
-	20	3200	375.98	2400	255.91	1900	192.91	1600	129.92	1400	86.61
-	25	2560	294.40	1920	192.00	1535	145.80	1280	102.40	1100	68.75
1	-	2520	289.80	1890	189.00	1510	143.45	1260	100.80	1090	67.50

1. Cutting conditions shown above are for contouring with L/D ≤ 3.5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD

Cutting Conditions (PXDR-P)

Contouring

Hardness				Up to 30 HRC		30-45 HRC		45-55 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels	
Depth of Cut		Aa=0.05r • Ar=0.25Dc						Aa=0.03r • Ar=0.25Dc	
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)								
-	12	3980	117.32	3980	94.10	3980	70.47	3980	46.85
1/2	-	3780	111.60	3780	89.30	3780	66.97	3780	44.65
5/8	-	3025	89.32	3025	74.45	3025	53.59	3025	35.73
-	16	2980	88.19	2980	70.47	2980	52.75	2980	35.43
3/4	-	2520	74.40	2520	59.53	2520	44.65	2520	29.76
-	20	2390	70.47	2390	56.30	2390	42.12	2390	28.35
-	25	1920	56.64	1920	45.12	1920	33.98	1920	22.46
1	-	1890	55.75	1890	44.41	1890	33.45	1890	22.11

1. Cutting conditions shown above are for contouring with L/D ≤ 5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 5xD





Cutting Conditions (PXDR-N)

Contouring

Hardness		Up to 30 HRC		30-45 HRC		45-55 HRC		55-60 HRC	
Work Material		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels		Hardened Steels	
Depth of Cut		Aa=0.03r • Ar=0.25Dc						Aa=0.02r • Ar=0.2Dc	
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)								
-	12	3980	117.32	3180	75.20	2650	37.40	2650	31.50
1/2	-	3780	111.60	3020	71.34	2520	34.72	2520	29.76
5/8	-	3025	89.32	2415	57.05	2015	28.56	2015	23.80
-	16	2980	88.19	2390	56.30	1990	28.35	1990	23.62
3/4	-	2520	74.40	2010	47.48	1680	23.15	1680	19.84
-	20	2390	70.47	1910	45.27	1590	22.44	1590	18.90
-	25	1920	56.64	1535	36.07	1275	17.85	1275	15.05
1	-	1890	55.75	1500	35.25	1250	17.50	1250	14.75

1. Cutting conditions shown above are for contouring with L/D ≤ 5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 5xD

Cutting Conditions (PXBE-P)

Hardness		Up to 30 HRC		30-45 HRC		45-55 HRC			
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Stainless Steels Hardened Steels		Hardened Steels Titanium Alloys	
Depth of Cut		$\varnothing 0.500$: Aa=0.07Dc • Ar=0.15Dc $\geq \varnothing 0.625$: Aa=0.10Dc • Ar=0.15Dc						$\varnothing 0.500$: Aa=0.05Dc • Ar=0.1Dc $\geq \varnothing 0.625$: Aa=0.03Dc • Ar=0.1Dc	
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)								
-	12	3980	70.47	3180	56.30	2650	46.85	2650	31.50
1/2	-	3780	66.97	3020	53.50	2520	44.65	2520	29.76
5/8	-	3025	53.60	2415	42.78	2015	35.70	2015	23.80
-	16	2980	52.75	2390	42.12	1990	35.43	1990	23.62
3/4	-	2520	44.65	2010	35.61	1680	29.76	1680	19.84
-	20	2390	42.12	1910	33.86	1590	28.35	1590	18.90
-	25	1920	33.98	1535	27.17	1275	22.57	1275	15.05
1	-	1890	33.45	1500	26.55	1250	22.12	1250	14.75

1. Cutting conditions shown above are for contouring with L/D ≤ 5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 5xD





Cutting Conditions (PXBE-N)

Contouring

Hardness				Up to 30 HRC		30-45 HRC		45-55 HRC		55-60 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Depth of Cut		Ø0.500: Aa=0.07Dc • Ar=0.15Dc ≥Ø0.625: Aa=0.05Dc • Ar=0.15Dc						Ø0.500: Aa=0.05Dc • Ar=0.1Dc ≥Ø0.625: Aa=0.03Dc • Ar=0.1Dc		Aa=0.03Dc • Ar=0.05Dc	
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	6600	116.14	6600	116.14	5300	74.80	3950	45.27	2600	15.75
1/2	-	6235	109.74	6235	109.74	4970	70.08	3715	42.72	2230	13.38
5/8	-	4990	89.32	4990	89.32	3975	57.24	2970	35.64	1925	11.94
-	16	4950	88.58	4950	88.58	3950	57.09	2950	35.43	1900	11.81
3/4	-	4155	72.30	4155	72.30	3310	47.66	2475	31.19	1680	10.25
-	20	3950	68.90	3950	68.90	3150	45.27	2350	29.53	1600	9.84
-	25	3160	55.30	3160	55.30	2520	36.29	1880	23.50	1280	7.68
1	-	3110	54.42	3110	54.42	2485	35.78	1850	23.12	1260	7.56

1. Cutting conditions shown above are for contouring with L/D ≤ 3.5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD

Cutting Conditions (PXBM)

Contouring

Hardness				Up to 30 HRC		30-45 HRC		45-55 HRC		55-60 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Depth of Cut		Aa=0.02Dc • Ar=0.05Dc									
Mill Dia.		Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
(in)	(mm)										
-	12	6600	153.54	6600	153.54	5300	98.42	3950	59.05	2600	21.65
1/2	-	6235	145.28	6235	145.28	4970	92.44	3715	55.35	2230	18.51
5/8	-	4990	178.64	4990	178.64	3975	114.88	2970	71.28	1925	23.87
-	16	4950	177.16	4950	177.16	3950	114.17	2950	70.87	1900	23.62
3/4	-	4155	145.01	4155	145.01	3310	95.00	2475	62.12	1680	20.66
-	20	3950	137.79	3950	137.79	3150	90.55	2350	59.05	1600	19.68
-	25	3160	110.60	3160	110.60	2520	71.82	1880	47.00	1280	15.75
1	-	3110	108.85	3110	108.85	2485	70.82	1850	46.25	1260	15.50

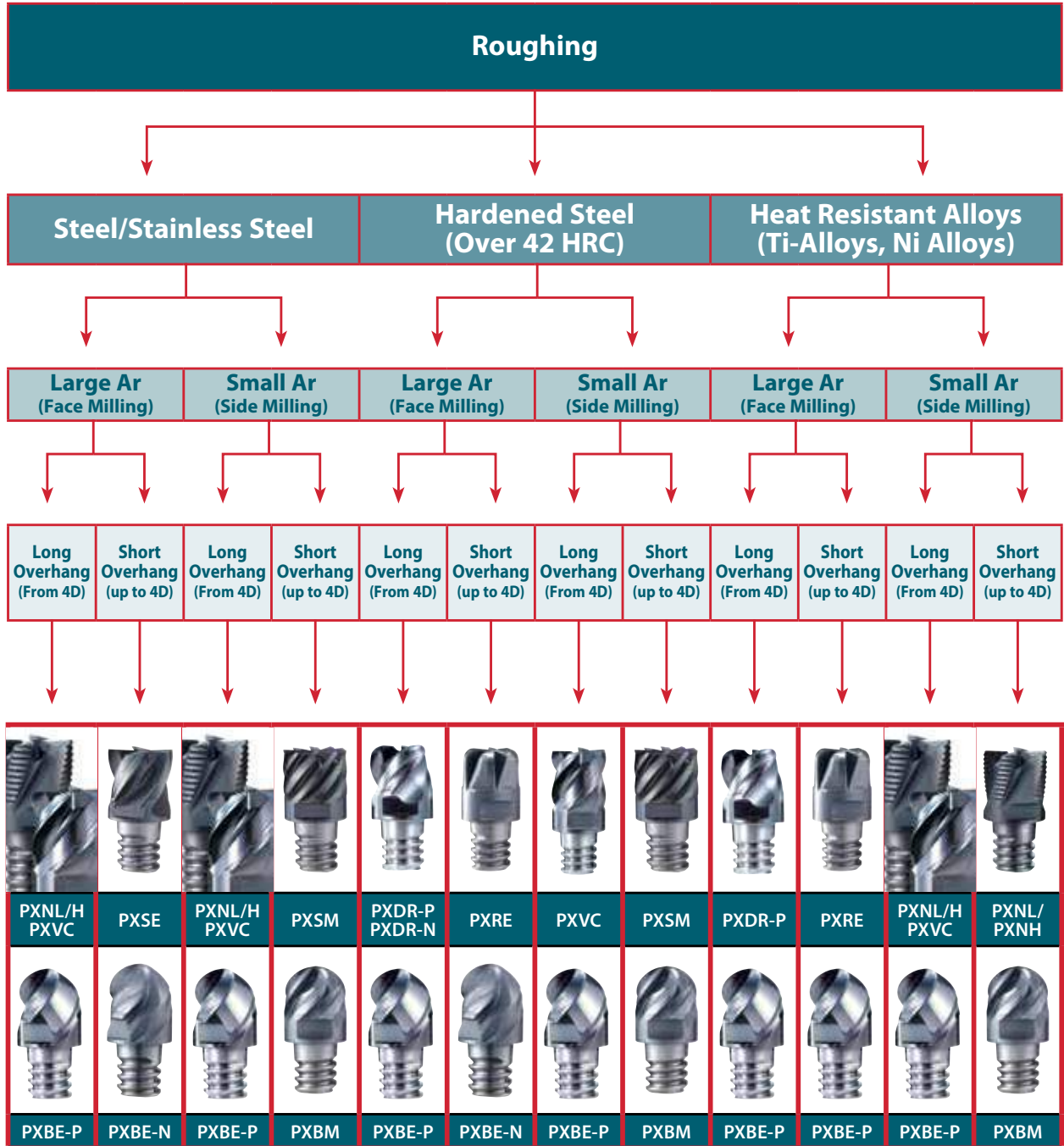
1. Cutting conditions shown above are for contouring with L/D ≤ 3.5xD
2. Adjust/reduce the cutting conditions when the overhang length is longer than 3.5xD



PXM Head Selector

» Roughing Operations

A guide for selecting head type based on application.

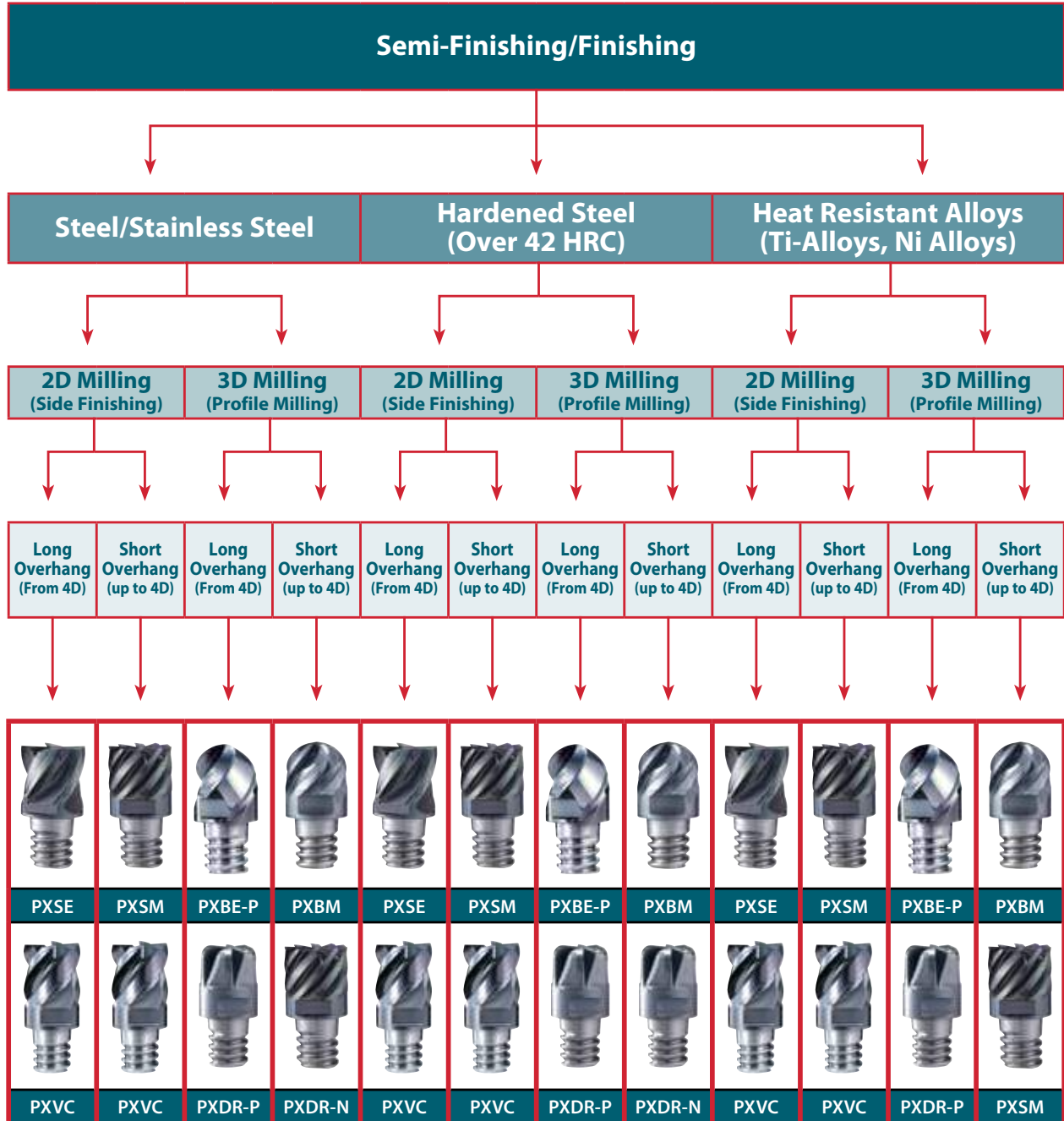




PXM Head Selector

» Semi-Finishing/Finishing Operations

A guide for selecting head type based on application.





EXOCARB® DISC CUTTER®

Face Mill Cutter for Small Machines

DISC CUTTER^{PRO}

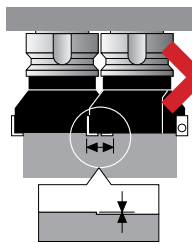
DISC CUTTER^S



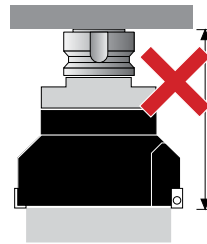
Revolutionary Face Milling Cutter for Small Machines

Roughing	DISC CUTTER® S
Finishing	DISC CUTTER® Pro

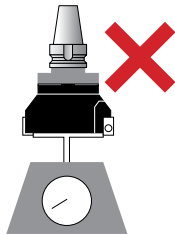
Why do we need the DISC CUTTER®?



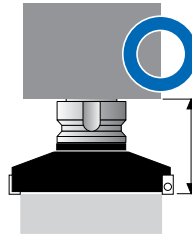
Multiple passes on large, wide work pieces are required for small diameter cutter bodies which result in blend lines on the finished part.



Larger cutter bodies remove material in fewer passes, but are typically heavier, requiring more weight and protrusion from the arbor.



On smaller machines, the total tool weight allowance including the arbor is 3kg (6.6lbs). A conventional 125mm cutter is too heavy for these machines.



OSG's Solution

EXOCARB® DISC CUTTER® solves these issues by designing a lighter, large diameter cutter without sacrificing rigidity.

Thin, Light and Steel Body

DISC CUTTER® S, $\phi 125\text{mm}$ = 1.0kg (2.2lbs)
DISC CUTTER® PRO, $\phi 125\text{mm}$ = 1.3kg (2.86lbs)

Arbor = 0.6kg (1.32lbs)



Less than 1/2 of the weight compared to competitors.

Short reach results in high rigidity.

High rigidity allows High - Speed & Feed milling.





DISC CUTTER®S

- Roughing
- Carbide Insert
- No Height Adjustment



DISC CUTTER®PRO

- Finishing
- PCD Brazed Insert
- Height Adjustment

Arbors



3 pin technology securely supports the cutter body while minimizing gage length.



Optional Internal Coolant Supply Clamping Bolt

The internal coolant supply improves surface finish and tool life by cooling the cutting edge & evacuating the chips.

Performance

DISC CUTTER®S

Tool	DC-S 125 x SL x 5J (125mm)
Insert	Carbide
Work Material	A7075
Speed	8,000 RPM
Feed	158 IPM (0.004 inch/t)
Depth of Cut	3mm (0.120 in)
Width of Cut	100mm (4.000 in)
Machine	Vertical Machining Center BT30 5.5kw

MRR : 1,200cm³/Min

DISC CUTTER®PRO

Tool	DC-P 125 x SL x 5J (125mm)
Insert	PCD
Work Material	A7075
Speed	5,000 RPM
Feed	100 IPM (0.004 inch/t)
Depth of Cut	0.5mm (0.02 in)
Width of Cut	100mm (4.000 in)
Machine	Vertical Machining Center BT30 5.5kw

Surface Roughness : Ra 0.171um



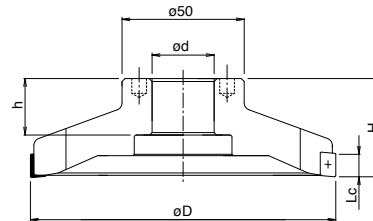


List 6440

DISC CUTTER® S for Roughing



SPEED
FEED
P1311



EDP No.	Designation	Cutter Diameter		No. of Teeth	Height		Length of Cut		Bore Diameter		Weight		Max. RPM
		D			H		Lc		d		(kg)	(lb)	
		(mm)	(inch)		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)			
8070255	80xSLx4J	80	3.150	4	40	1.575	9	0.354	25.4	1.000	0.44	0.97	15,000
8070256	100xSLx4J	100	3.937	4	40	1.575	9	0.354	25.4	1.000	0.60	1.32	13,400
8070257	125xSLx5J	125	4.921	5	40	1.575	9	0.354	25.4	1.000	1.00	2.20	12,000

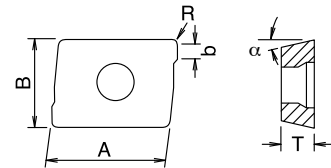
Accessories are included.
Packed: 1 pc.





List 6442

DISC CUTTER® S Inserts



EDP No.	Description	No. of Cutting Edges	Insert Size					Grade
			AxB (mm)	T (mm)	α	R (mm)	b (mm)	
8033300	APHT0903PPR-73	2	9.52 x 6.75	3.18	11°	0.4	1.5	K10T
8059301	APKT0903PPR-52	2	9.52 x 6.75	3.18	11°	0.4	1.2	K15CA
8091278	APMT0903PPR-F56	2	9.52 x 6.75	3.18	11°	0.4	1.2	WQM25

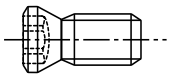
Packed: 10 pcs.



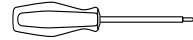
Accessories

DISC CUTTER® S Accessories



	EDP No.	Description
	8009023	FS923
Clamping Screw		

Packed: 10 pcs.

	EDP No.	Description
	8008430	FS230
Screwdriver		

Packed: 1 pc.



Recommended Materials by Application

Insert Grade	Chip Breaker	P	M	K	N	S
K10T	25°				<input type="checkbox"/>	
K15CA	16°			<input type="checkbox"/>		
WQM25	16°	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>

good best



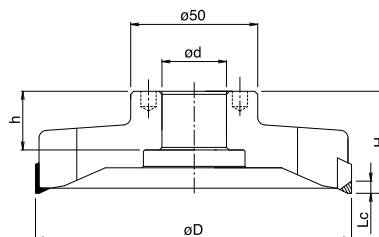


List 6441

DISC CUTTER® PRO for Finishing



SPEED
FEED
P1312



EDP No.	Designation	Cutter Diameter		No. of Teeth	Height		Length of Cut		Bore Diameter		Weight		Max. RPM
		D			H		Lc		d		(kg)	(lb)	
		(mm)	(inch)		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)			
8070265	80xSLx3J	80	3.150	3	40	1.575	4	0.157	25.4	1.000	0.48	1.06	15,500
8070266	100xSLx4J	100	3.937	4	40	1.575	4	0.157	25.4	1.000	0.70	1.54	13,800
8070267	125xSLx5J	125	4.921	5	40	1.575	4	0.157	25.4	1.000	1.30	2.87	12,400

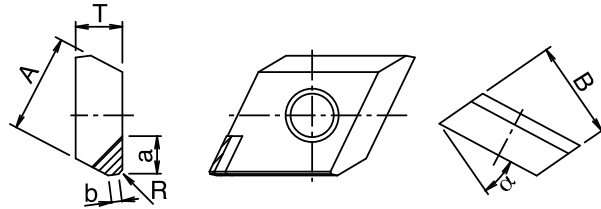
Accessories are included.
Packed: 1 pc.





List 6541

DISC CUTTER® PRO Inserts



EDP No.	Description	No. of Cutting Edges	Insert Size						Grade
			AxB (mm)	T (mm)	α	R (mm)	b (mm)	a (mm)	
8080801	XOHW1104PDR	1	9.52x9.52	4.76	30°	0.4x45°	4	1.1	PCD

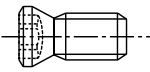
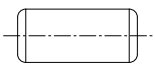


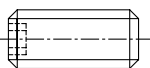
Packed: 1 pc.



Accessories

DISC CUTTER® PRO Accessories



EDP No.	Description	EDP No.	Description
 8008626	FS326	 8008748	FS748
 8008747	FS747	 7808208	T150 (Torx 15)
 8009063	FS963		

Packed: Clamping Screws = 10 pcs.; Adjusting Bolts = 10 pcs.; Set Screws = 10 pcs.; Pads = 10 pcs.; Screwdriver = 1 pc.



Recommended Materials by Application

Insert Grade	Chip Breaker	P	M	K	N	S
PCD	-				<input checked="" type="checkbox"/>	

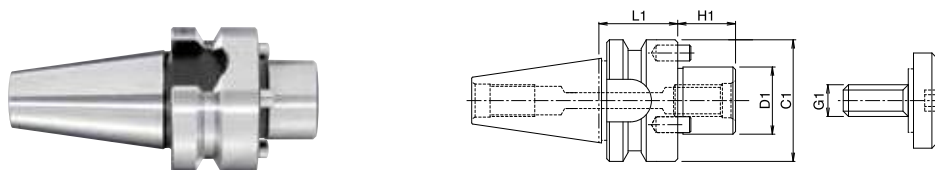
good best





List 6640

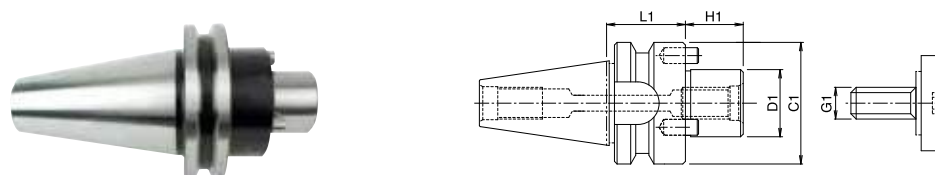
DISC CUTTER® Arbor



BT30

EDP No.	Description	D1		L1		C1		H1		G1	Weight	
		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		(kg)	(lb)
99640	BT30-FMOA25.4-29	25.4	1.000	29	1.142	46	1.811	19	0.748	M12	0.60	1.32

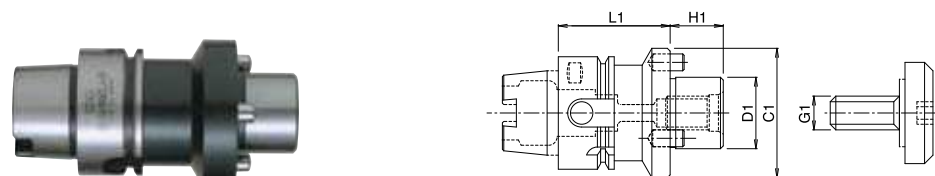
Packed: 1 pc.



CAT 40

EDP No.	Description	D1		L1		C1		H1		G1	Weight	
		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		(kg)	(lb)
664001	CAT40-FMOA25.4-49	25.4	1.000	35	1.378	44.45	1.750	19	0.748	M12	1.10	2.43

Packed: 1 pc.



HSK40A

EDP No.	Description	D1		L1		C1		H1		G1	Weight	
		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		(kg)	(lb)
99634	HSK40A-FMOA25.4-49	25.4	1.000	49	1.929	46	1.811	19	0.748	M12	0.60	1.32

Packed: 1 pc.



Accessories

Clamping Bolt for Coolant-Through Spindles (Optional)



EDP No.	Description	G1
99632	Coolant-Through Clamping Bolt (MBAH-M12)	M12

Packed: 1 pc.





Cutting Conditions (Roughing)

DISC CUTTER® S

DISC CUTTER® S

Roughing

Work Material	Cutting Speed (RPM)	Feed Rate (Inch/Tooth)
Carbon Steel 1018, 1050	325 - 1,050	0.0021 - 0.0060
Stainless Steel 300, 400	300 - 865	0.0018 - 0.0042
Cast Iron	450 - 5,100	0.0027 - 0.0098
Ductile Cast Iron	375 - 4,100	0.0027 - 0.0098
Aluminum A5052, A7075	3,280 - 10,000	0.0027 - 0.0098
Aluminum Alloy Casting ~ 13% Si	3,280 - 10,000	0.0027 - 0.0098
Aluminum Alloy Casting 13% Si ~	300 - 2,500	0.0027 - 0.0098
Copper	800 - 6,800	0.0027 - 0.0098

**DISC
CUTTER S**





Cutting Conditions (Finishing)

DISC CUTTER® PRO

DISC CUTTER® PRO

Finishing

Work Material	Cutting Speed (RPM)	Feed Rate (Inch/Tooth)
Aluminum A5052, A7075	3,280 - 13,120	0.0027 - 0.0059
Aluminum Alloy Casting ~ 13% Si	3,280 - 13,120	0.0027 - 0.0059
Aluminum Alloy Casting 13% Si ~	300 - 2,500	0.0027 - 0.0059
Copper	800 - 6,800	0.0027 - 0.0059

DISC CUTTER PRO





OSG  **PHOENIX**®



1945 West Walnut Hill Lane • Irving, Texas 75038 • 800-837-2223 • www.osgtool.com




SHRINK FIT TOOLING





Product	Page	Inch/Metric	Tool Features
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HY-PRO® SHRINK Machines

HR-B Handy Unit		1317- 1319	-	General Purpose Shrink Device - By Hot Air & Accessories
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List	Product	Page	Inch/Metric	Tool Features
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HY-PRO® SHRINK Tooling

-	HSK Holders		1325- 1326	Metric	HSK-E25, HSK-E32, and HSK-E40 Holders for standard coolant-through the tool operations.
-	Base Holders		1327	Inch/Metric	Base Holders for general purpose & coolant-through the tool operations - BT, CT, and HSK.
-	Nozzle Holders		1328	Inch/Metric	Nozzle Type Holders for coolant-through the holder operations - BT, CT, and HSK.
-	Regular Extensions		1329	Inch/Metric	Regular Type Shrink Extensions for general purpose & coolant-through the tool operations.
-	Flush Type Extensions		1330	Inch/Metric	Flush Type Shrink Extensions for coolant-through the collet operations.
-	Slim Type Extensions		1331- 1332	Inch/Metric	Slim Type Shrink Extensions for long reach & coolant-through the tool operations.
-	Straight Regular Extensions		1333	Inch/Metric	Straight Regular Type Shrink Extensions for standard milling / end mill chucks.
-	Straight Slim Extensions		1334- 1335	Inch/Metric	Straight Slim Type Shrink Extensions for standard milling / end mill chucks.
-	Carbide Straight Extensions		1336	Metric	Straight Type Shrink Extensions for increased rigidity and reach.
-	Carbide Straight Slim Extensions		1336	Metric	Taper Type Shrink Extensions for increased rigidity and reach.



HR-B Handy Unit



Features

- Small Foot Print
- Light Weight
- 120 V AC Current
- Easy-adjust slide

Benefits

- Fits on a table top
- Portable
- Works with any standard wall outlet
- Fast and simple height adjustments
- Cost effective!

Machine Specifications


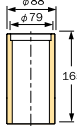

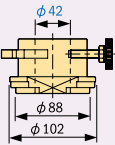

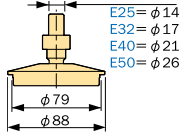

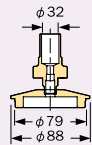

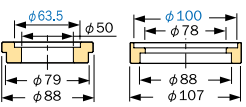
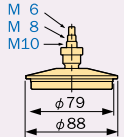
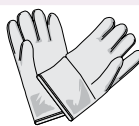
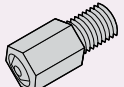
EDP Number	68802B
Name	HRB-02S-120NA SHRINK UNIT
Voltage required	120V
Power rating	1200W
Dimensions	362mm x 105mm x 570mm
Shrink fit capabilities	All OSG HY-PRO® Shrink holders
Heating cycle time	120 seconds
Included Accessories	Heat resistant gloves, timer, tool tweezer
Weight	16.5 lbs.

Safe Use of Shrink Devices

- 1** DO NOT allow contact between hot air from the system and the body as there is a possibility of burns.
- 2** DO NOT use this system near flammable gases and substances.
- 3** DO NOT apply water to the system.
- 4** Recommended cool-down time is five minutes.



HR-B Handy Unit Accessories

	Item Name	EDP No.	Size	Specification
 	Base	9910232	BAA-01	To hold the appropriate adapter for positioning a shrink fit holder or extension during assembly and disassembly.
 	Adjustable Base Adapter	9910222	BAS-02	To position 10-40mm straight type shrink extensions during assembly and disassembly. Can be used in conjunction with the BAA-01 base.
 	Adapter	9910224	ADH-HSK25	Used with HSK25 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder.
		9910225	ADH-HSK32	Used with HSK32 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder.
		9910226	ADH-HSK40	Used with HSK40 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder.
		9910227	ADH-HSK50	Used with HSK50 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder.
 	Adapter	9910228	ADH-BT30	Used with BT30 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder.
 	Adapter	9910229	ADH-40	Used with BT40 and CT40 series tool holders. It fits into the top of the BA-01 Base and accepts the tool holder.
		9910230	ADH-50	Used with BT50 and CT50 series tool holders. It fits into the top of the BA-01 Base and accepts the tool holder.
	Base Adapter	9910220	ADH-SLK	Used with regular, flush and slim type shrink extensions. It fits into the top of the BAA-01 Base.
	Heat Resistant Gloves	8910171	HBT-01	
	F Type Nozzle	8910251	NOZ-M4-12	Optional nozzles for BT and HSK Flush Type Holders



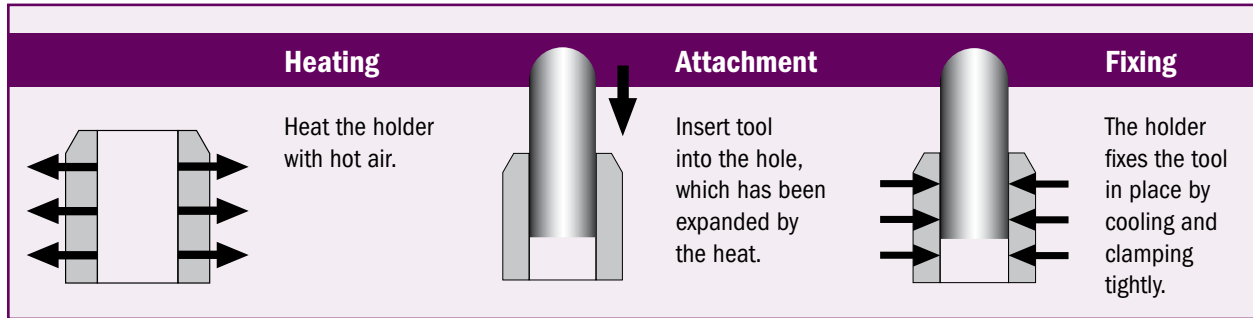


HR-B Handy Unit Accessories

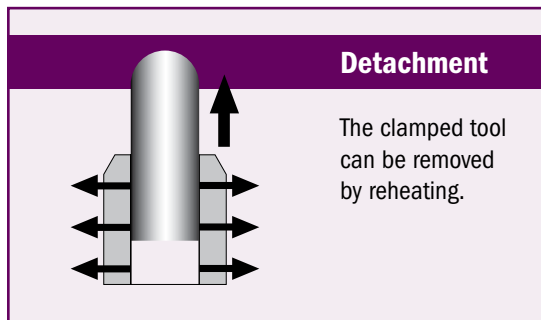
	Item Name	EDP No.	Size	Specification
<p>$\phi D = \phi 3 \sim \phi 25$</p> <p>Insertion</p> <p>Shrink-fit Projection Insertion Length</p> <p>Set either the overhang length or insertion length of the cutting tool.</p> <p>Removing</p> <p>Clearance HEATING Clearance disappears Ready to remove!</p>	Coil spring (type depth stops)	8910172	HSA-3	3mm shanks, 10 pcs.
		8910174	HSA-4	4mm shanks, 10 pcs.
		9910213	HSA-5	5mm shanks, 10 pcs.
		8910176	HSA-6	6mm shanks, 10 pcs.
		9910215	HSA-7	7mm shanks, 10 pcs.
		8910178	HSA-8	8mm shanks, 10 pcs.
		9910217	HSA-9	9mm shanks, 10 pcs.
		8910180	HSA-10	10mm shanks, 10 pcs.
		9910219	HSA-11	11mm shanks, 10 pcs.
		8910182	HSA-12	12mm shanks, 10 pcs.
		8910183	HST-F	Set 3-12mm, 10 pcs.
		9910170	HSA-1/8	1/8" shanks, 10 pcs.
		9910173	HSA-3/16	3/16" shanks, 10 pcs.
		9910176	HSA-1/4	1/4" shanks, 10 pcs.
9910177	HSA-5/16	5/16" shanks, 10 pcs.		
9910179	HSA-3/8	3/8" shanks, 10 pcs.		
9910182	HSA-1/2	1/2" shanks, 10 pcs.		
	Shrink Extension Stand	9910201	SDKT-RE (Red)	Vertical stand holds up to 25 extensions.
		9910202	SDKT-BL (Blue)	
		9910203	SDKT-GR (Green)	
		9910204	SDKT-GD (Gold)	
	Wrench	8910020	W-135	Used for the assembly and disassembly of the HY-PRO® Shrink two piece tooling system extensions and base holders.



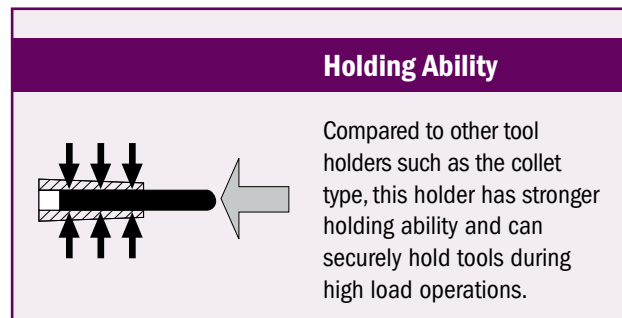
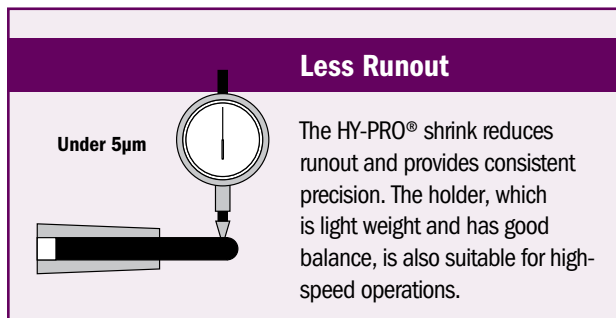
Tool Insertion



Tool Removal

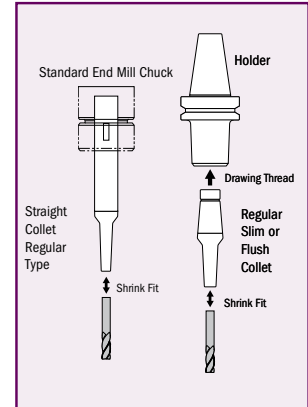


Features





Holders		Shrink Extensions	Cutting Tools
Basic BT30 BT40 BT50 CT-40 CT-50 HSK-A63 HSK-A100 HSK-F63M	Nozzle BT40 BT50 CT-40 CT-50 HSK-A63 HSK-A100	Slim Regular } Ø 3-12 Flush } Ø 1/4-1/2 in.	Carbide End Mills Carbide Drills Other Carbide Tools



Holders

Type	Specifications	BT, CT Holders	HSK Holders
Basic Holders	Holder for Shrink Extension (without nozzle)	BT-30, -40, -50 CT-40, -50	A63, A100 F63M
Nozzel Holders	Holder for Shrink Extention (Coolant Supply Nozzle is Optional)	BT-40, -50 CT-40, -50	A63, A100

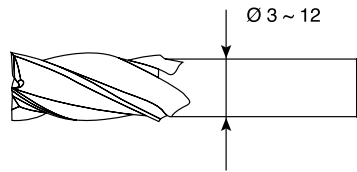
Extensions

Type	Application	Dimension/Size
Regular Type	For General Operations and Coolant-Through Tool	
Slim Type	Use this type when a slim holder is needed to avoid interference between the tool and the work piece	
Flush Type	Use this type when you want coolant supplied from the end face of the extension	

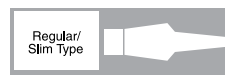


For Small Shank Diameter use h7 Shanks

The HY-PRO[®] Shrink System can be used for tools with a minimum shank diameter of 3mm. If the shank diameter is between 6mm and 12mm, the system requires at least an h7 shank tolerance. A wide variety of tools are applicable.



Various Coolant Supply Devices



Through the Tool

Suitable when using a tool with internal coolant to supply the point of the cutting edge. This is especially effective for drilling because the coolant is guaranteed to reach the cutting area.



Through the Holder

Supplies coolant from the front face of the holder. This is used for tools without internal coolant supply and regular or slim type extensions.



Through the Collet

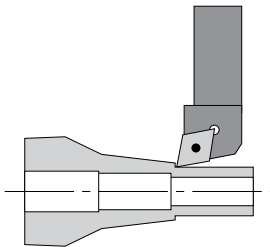
Supplies coolant from the front face of the shrink extensions. Although the diameter of the collet end face increases, coolant supply becomes even more effective.



Do-It-Yourself Extensions

Notes

If necessary, the shape of the shrink extension can be easily modified. This design provides the best holder shape for operations that have major interference with work materials.



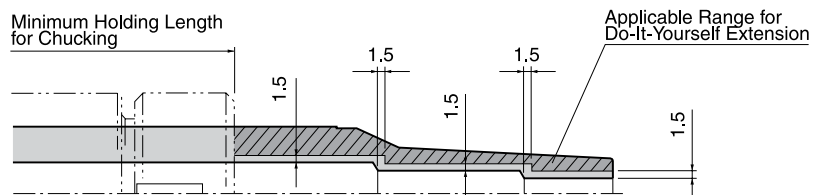
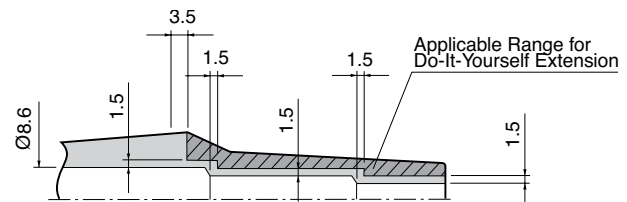
1. The shape of the flush collet cannot be adjusted.
2. Other adjustments should be based on the ranges described below. (Wall thickness should be at least 1.5mm)
3. DO NOT change the overall length.
4. For details, please refer to the instruction manual attached to the product package.

Recommended Cutting Conditions for Extension Modification

Notes

1. The cutting depth should be kept small.
2. Use water soluble coolant.
3. Use positive-rake inserts for stainless steel.

Cutting Speed (m/min)	Cutting Speed (m/min)	Feed (mm/rev)	Cutting Depth (mm)
Roughing	30 - 50	0.1	0.2
Finishing	30 - 50	0.05	0.1





HY-PRO[®] Shrink - Proper Care Information

Please follow these guidelines to ensure your HY-PRO[®] Shrink extensions stay looking and performing like new for years to come:

- When not in use, remove tool and clean/dry the inside & outside of holder as thoroughly as possible. Apply rust-proofing oil (WD-40[®] for example) to help inhibit oxidation. Excessive internal rusting will lead to hairline fractures in the steel.
- Be sure to use cutters with shank diameters that adhere to ISO tolerance requirements. Remember, HY-PRO[®] Shrink holders are made to accommodate the following:

ø3~5mm	→	h6 tolerance ONLY!
ø6~25mm	→	h7 tolerance ONLY!

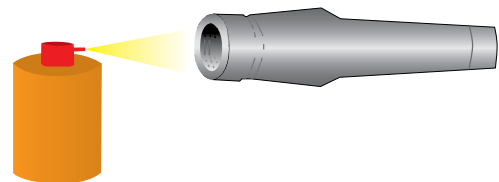
- Failure to use tools that adhere to these standards may result in complications with respect to inserting and removing tools.
- Be sure to observe minimum chucking lengths on extensions. Failure to do so can result in poor accuracy, deformation, or cracking of tool or extension.

Care Tips:

- Simple household bleach will remove oxidation from the outside of extensions. Use it to clean metal powder and debris from the insides as well to help prevent scratching & abrasions.



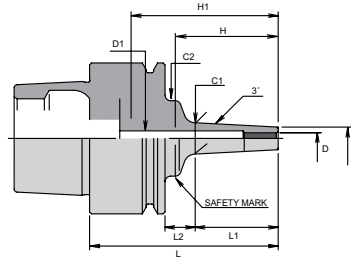
- Be sure to keep threads on the end of the extensions well oiled to allow for easy installation and removal from the holders.





HSK-E25 Mono Series

For Standard & Coolant-Through the Tool Operations



Metric Sizes

Type	EDP No.	Description	D	L	C	D1	L1	L2	C1	C2	H	H1
Regular	9911101	E25-SLRA3-35	3	35	7.5	4	17	8	9.3	18	9	29
	9911102	E25-SLRA4-35	4	35	10	4.3	17	8	11.8	18	12	29
	9911103	E25-SLRA6-35	6	35	12	6.6	17	8	13.8	18	18	26
Slim	9911104	E25-SLSA3-35	3	35	6	4	17	8	7.8	18	9	29
	9911105	E25-SLSA3-50	3	50	6	4	32	8	9.4	18	9	44
	9911106	E25-SLSA3.175-35	3.175	35	6.175	4	17	8	8	18	9	29
	9911107	E25-SLSA3.175-50	3.175	50	6.175	4	32	8	9.6	18	9	44
	9911108	E25-SLSA4-35	4	35	7	4.3	17	8	8.8	18	12	29
	9911109	E25-SLSA4-50	4	50	7	4.3	32	8	10.4	18	12	44
	9911110	E25-SLSA5-35	5	35	8	5.6	17	8	9.8	18	15	26
	9911111	E25-SLSA6-35	6	35	9	6.6	17	8	10.8	18	18	26
	9911112	E25-SLSA6-50	6	50	9	6.6	32	8	12.4	18	18	39



HSK-E32 Mono Series

For Standard & Coolant-Through the Tool Operations

Metric Sizes

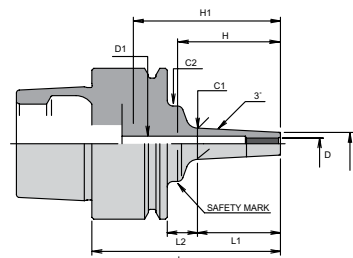
Type	EDP No.	Description	D	L	C	D1	L1	L2	C1	C2	H	H1
Regular	9911001	E32-SLRA3-50	3	50	7.5	4	22	8	9.9	20	9	42
	9911017	E32-SLRA3-70	3	70	7.5	4	42	8	11.9	20	9	62
	9911002	E32-SLRA4-50	4	50	10	5	22	8	12.4	20	12	35
	9911018	E32-SLRA4-70	4	70	10	5	42	8	14.4	20	12	54
	9911003	E32-SLRA6-50	6	50	12	6.6	22	8	14.4	26	18	39
	9911019	E32-SLRA6-70	6	70	12	7	42	8	16.4	26	18	54
	9911004	E32-SLRA8-50	8	50	14	8.6	22	8	16.4	26	24	39
	9911005	E32-SLRA10-55	10	55	16	10.6	22	13	18.4	26	30	44
	9911006	E32-SLRA12-55	12	55	20	12.6	22	13	22.4	26	30	44
Slim	9911008	E32-SLSA3-50	3	50	6	4	22	8	8.4	20	9	42
	9911009	E32-SLSA3-70	3	70	6	4	42	8	10.5	20	9	62
	9911010	E32-SLSA3.175-50	3.175	50	6.175	4	22	8	8.5	20	9	42
	9911011	E32-SLSA3.175-70	3.175	70	6.175	4	42	8	10.6	20	9	62
	9911012	E32-SLSA4-50	4	50	7	5	22	8	9.4	20	12	34
	9911013	E32-SLSA4-70	4	70	7	5	42	8	11.5	20	12	54
	9911014	E32-SLSA5-50	5	50	8	6	22	8	10.4	20	15	34
	9911015	E32-SLSA5-70	5	70	8	6	42	8	12.5	20	15	54
	9911016	E32-SLSA6-70	6	70	9	7	42	8	13.5	20	18	54





HSK-E40 Mono Series

For Standard & Coolant-Through the Tool Operations



Metric Sizes

Type	EDP No.	Description	D	L	C	D1	L1	L2	C1	C2	H	H1
Regular	9911040	E40-SLRA3-50	3	50	7.5	4	22	8	9.8	20	9	42
	9911041	E40-SLRA3-70	3	70	7.5	4	42	8	11.9	20	9	62
	9911042	E40-SLRA4-50	4	50	10	5	22	8	12.3	20	12	42
	9911043	E40-SLRA4-70	4	70	10	5	42	8	14.4	20	12	62
	9911020	E40-SLRA6-50	6	50	12	6.6	22	8	14.4	26	18	39
	9911044	E40-SLRA6-70	6	70	12	6.6	42	8	16.4	26	18	54
	9911021	E40-SLRA8-50	8	50	14	8.6	22	8	16.4	26	24	39
	9911045	E40-SLRA8-85	8	85	14	9	42	23	18.4	25	24	69
	9911022	E40-SLRA10-55	10	55	16	10.6	22	13	18.4	26	30	44
	9911046	E40-SLRA10-85	10	85	16	11	42	23	20.4	25	30	64
	9911023	E40-SLRA12-55	12	55	20	12.6	22	13	22.4	30	30	44
	9911047	E40-SLRA12-85	12	85	20	13	42	23	24.4	32	30	74
	Slim	9911026	E40-SLSA3-50	3	50	6	4	22	8	8.4	20	9
9911027		E40-SLSA3-70	3	70	6	4	42	8	10.5	20	9	62
9911028		E40-SLSA3.175-50	3.175	50	6.175	4	22	8	8.5	20	9	42
9911029		E40-SLSA3.176-70	3.175	70	6.175	4	42	8	10.6	20	9	62
9911030		E40-SLSA4-50	4	50	7	5	22	8	9.4	20	12	42
9911031		E40-SLSA4-70	4	70	7	5	42	8	11.5	20	12	62
9911032		E40-SLSA5-50	5	50	8	6	22	8	10.4	20	15	34
9911033		E40-SLSA5-70	5	70	8	6	42	8	12.5	20	15	54
9911034		E40-SLSA6-50	6	50	9	6.6	22	8	11.4	20	18	39
9911035		E40-SLSA6-70	6	70	9	7	42	8	13.5	20	18	54
9911036		E40-SLSA8-60	8	60	11	8.6	22	18	13.4	26	24	49
9911037		E40-SLSA8-80	8	80	11	8.6	42	18	15.5	26	24	64
9911038		E40-SLSA10-60	10	60	13	10.6	22	18	15.4	26	30	49
9911039		E40-SLSA10-80	10	80	13	10.6	42	18	17.5	26	30	64



Applicable Machine Tools:

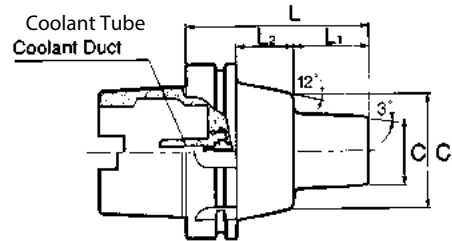
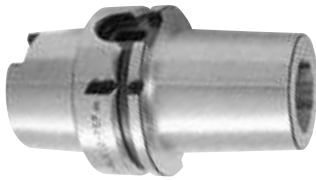
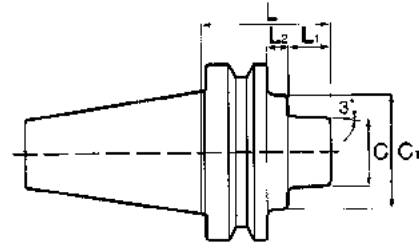
HSK-E25	HSK-E32	HSK-E40
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Base Holders: BT, CT and HSK 2PC Series

For Standard & Coolant-Through the Tool Operations



CAT Holders

EDP No.	Description	L	L1	C	C1
9910002	CT40-SLK12-45	1.77	1.02	1.61	1.75
9910004	CT50-SLK12-75	2.95	1.57	1.5	2.75



BT Holders

EDP No.	Description	L	L1	L2	C	C1
8910000	BT30-SLK12-35 - 45 Deg.	35	13	—	38	—
8910001	BT30-SLK12-35 - 60 Deg.	35	13	—	38	—
8910002	BT40-SLK12-45	45	18	—	38	—
8910003	BT40-SLK12-75	75	48	—	38	—
8910004	BT50-SLK12-75	75	25	12	38	65



HSK Holders

EDP No.	Description	L	L1	L2	C	C1
9910005	HSK-E50-SLK12-75	75	49	—	38	—
8910005	HSK-A63-SLK12-75	75	49	—	38	—
8910006	HSK-A63-SLK12-135	135	109	—	38	—
9910006	HSK-F63M-SLK12-75	75	49	—	38	—
8910007	HSK-A100-SLK12-105	105	43	33	38	65

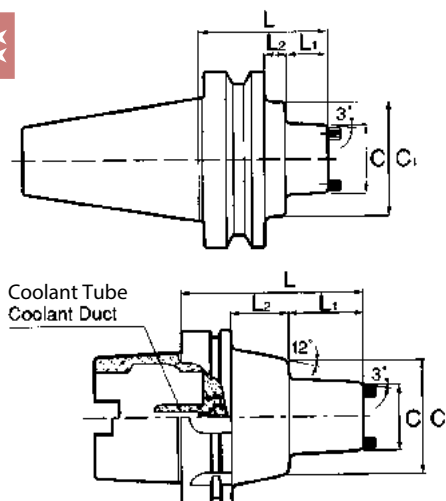
For extended gage lengths, please contact OSG's technical department for application advice.





Nozzle Type Holders: BT, CT and HSK 2PC Series

For Coolant-Through the Holder Operations



CAT Holders

EDP No.	Description	L	L1	C	C1
9910008	CT40-SLK12-45F	1.77	1.02	1.61	1.75
9910011	CT50-SLK12-75F	2.95	1.57	1.61	2.75



BT Holders

EDP No.	Description	L	L1	L2	C	C1
8910008	BT40-SLK12-45F	45	18	—	41	—
8910009	BT40-SLK12-75F	75	48	—	41	—
8910010	BT40-SLK12-135F	135	108	—	41	—
8910011	BT50-SLK12-75F	75	25	12	41	65
8910012	BT50-SLK12-105F	105	55	12	41	65
8910013	BT50-SLK12-135F	135	85	12	41	65



HSK Holders

EDP No.	Description	L	L1	L2	C	C1
8910014	HSK-A63-SLK12-75F	75	49	—	41	—
8910015	HSK-A63-SLK12-135F	135	109	—	41	—
8910016	HSK-A100-SLK12-105F	105	43	33	41	65
8910017	HSK-A100-SLK12-135F	135	73	33	41	65

The nozzles are optional.

For lubricating through the oil holes of tools, replace the nozzle with a coolant stop screw.

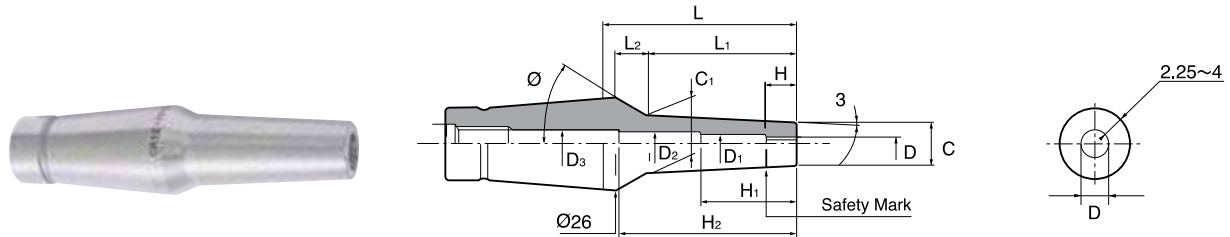
The pressure limit of the coolant stop screw is 3 MPa.





Regular Type Shrink Extensions

For Standard & Coolant-Through the Tool Operations



Inch Sizes

EDP No.	Description	D	D1	D2	D3	L	L1	L2	H	H1	H2	C	C1	θ°	Insertion Limit
9910031	CR12-1/8-55	1/8	-	-	-	2.17	1.65	0.37	0.39	-	-	0.36	0.53	33.5	3.35
9910034	CR12-3/16-55	3/16	-	-	-	2.17	1.65	0.37	0.39	-	-	0.42	0.6	29.6	3.35
9910037	CR12-1/4-55	1/4	-	-	-	2.17	1.65	0.37	0.71	-	-	0.49	0.66	25.9	3.35
9910040	CR12-5/16-55	5/16	-	-	-	2.17	1.65	0.37	0.98	-	-	0.55	0.72	22.1	3.35
9910043	CR12-3/8-55	3/8	-	-	-	2.17	1.65	0.37	1.18	-	-	0.61	0.78	18	2.36
9910048	CR12-7/16-55	7/16	-	-	-	2.17	1.65	0.37	1.18	-	-	0.67	0.85	12.9	2.36
9910046	CR12-1/2-55	1/2	-	-	-	2.17	1.99	0.17	1.18	-	-	0.81	-	-	2.36

The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.



Metric Sizes

EDP No.	Description	D	D1	D2	D3	L	L1	L2	H	H1	H2	C	C1	θ°	Insertion Limit
8910030	CR12-3-35	3	-	-	4.0	35	22	9.5	9.7	-	-	7.5	9.8	49.3	65
8910031	CR12-3-55	3	-	-	4.0	55	42	9.5	9.7	-	-	7.5	11.9	44.2	85
8910032	CR12-3-80	3	4	6	8.6	80	67	9.5	9.7	39.4	74.2	7.5	14.6	36.9	110
8910033	CR12-4-35	4	-	-	5.0	35	22	9.5	11.7	-	-	10	12.3	43.1	65
8910034	CR12-4-55	4	-	-	5.0	55	42	9.5	11.7	-	-	10	14.4	37.2	85
8910035	CR12-4-80	4	5	7	8.6	80	67	9.5	11.7	39.7	74.5	10	17.1	29.1	110
8910036	CR12-6-35	6	-	-	7.0	35	22	9.5	17.7	-	-	12	14.3	37.5	65
8910037	CR12-6-55	6	7	-	8.6	55	42	9.5	17.7	49.5	-	12	16.4	31.1	85
8910038	CR12-6-80	6	7	-	8.6	80	67	9.5	17.7	49.5	-	12	19.1	22.6	110
8910039	CR12-8-35	8	-	-	8.6	35	22	9.5	24.8	-	-	14	16.3	31.4	65
8910040	CR12-8-55	8	-	-	8.6	55	42	9.5	24.8	-	-	14	18.4	24.6	85
8910041	CR12-8-80	8	-	-	8.6	80	67	9.5	24.8	-	-	14	21.1	16.0	110
8910042	CR12-10-35	10	-	-	11.0	35	22	9.5	30.0	-	-	16	18.3	25.0	60
8910043	CR12-10-55	10	-	-	11.0	55	42	9.5	30.0	-	-	16	20.4	18.0	60
8910044	CR12-10-80	10	-	-	11.0	80	67	9.5	30.0	-	-	16	23.1	9.4	60
8910045	CR12-12-35	12	-	-	13.0	35	22	9.5	30.0	-	-	20	22.3	11.7	60
8910046	CR12-12-55	12	-	-	13.0	55	42	9.5	30.0	-	-	20	24.4	5.0	60
8910047	CR12-12-80	12	-	-	13.0	80	-	-	30.0	-	-	20	25.5	-	60

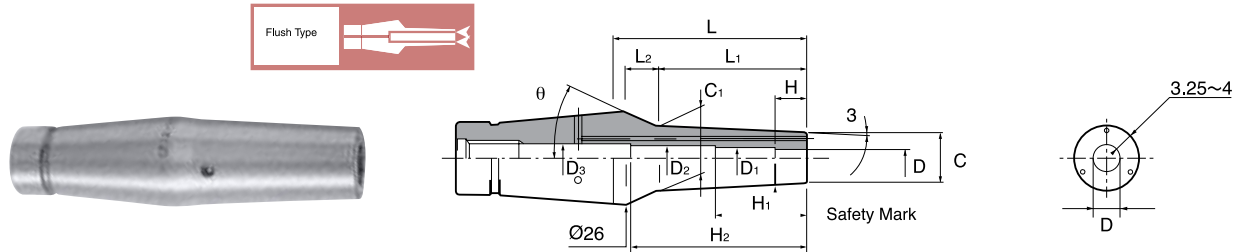
The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.





Flush Type Shrink Extensions

For Coolant-Through the Collet Operations



Inch Sizes

EDP No.	Description	D	D1	D2	D3	L	L1	L2	H	H1	H2	C	C1	θ°	Insertion Limit
9910051	CF12-1/8-55	1/8	-	-	-	2.17	1.65	0.37	0.39	-	-	0.38	0.55	32.4	3.35
9910054	CF12-3/16-55	3/16	-	-	-	2.17	1.65	0.37	0.59	-	-	0.5	0.68	24.7	3.35
9910057	CF12-1/4-55	1/4	-	-	-	2.17	1.65	0.37	0.71	-	-	0.56	0.74	20.7	3.35
9910060	CF12-5/16-55	5/16	-	-	-	2.17	1.65	0.37	0.98	-	-	0.63	0.8	16.6	3.35
9910063	CF12-3/8-55	3/8	-	-	-	2.17	1.65	0.37	1.18	-	-	0.69	0.86	12.2	2.36
9910068	CF12-7/16-55	7/16	-	-	-	2.17	1.65	0.37	1.18	-	-	0.75	0.93	6.9	2.36
9910066	CF12-1/2-55	1/2	-	-	-	2.17	1.99	0.17	1.18	-	-	0.81	-	-	2.36

The tool should be inserted deeper than the safety mark.
 The collet cannot be customized.
 Do not exceed the insertion limit.



Metric Sizes

EDP No.	Description	D	D1	D2	D3	L	L1	L2	H	H1	H2	C	C1	θ°	Insertion Limit
8910050	CF12-3-35	3	-	-	4.0	35	22	9.5	9.7	-	-	9.5	11.8	44.4	65
8910051	CF12-3-55	3	-	-	4.0	55	42	9.5	9.7	-	-	9.5	13.9	38.7	85
8910052	CF12-3-80	3	4	6	8.6	80	67	9.5	9.7	39.4	74.2	9.5	16.5	30.7	110
8910053	CF12-4-35	4	-	-	5.0	35	22	9.5	11.7	-	-	12	14.3	37.5	65
8910054	CF12-4-55	4	-	-	5.0	55	42	9.5	11.7	-	-	12	16.4	31.1	85
8910055	CF12-4-80	4	5	7	8.6	80	67	9.5	11.7	39.7	74.5	12	19.0	22.6	110
8910056	CF12-6-35	6	-	-	7.0	35	22	9.5	17.7	-	-	14	16.3	31.4	65
8910057	CF12-6-55	6	7	-	8.6	55	42	9.5	17.7	49.5	-	14	18.4	24.6	85
8910058	CF12-6-80	6	7	-	8.6	80	67	9.5	17.7	49.5	-	14	21.0	16.0	110
8910059	CF12-8-35	8	-	-	8.6	35	22	9.5	24.8	-	-	16	18.3	25.0	65
8910060	CF12-8-55	8	-	-	8.6	55	42	9.5	24.8	-	-	16	20.4	18.0	85
8910061	CF12-8-80	8	-	-	8.6	80	67	9.5	24.8	-	-	16	23.0	9.4	110
8910062	CF12-10-35	10	-	-	11.0	35	22	9.5	30.0	-	-	18	20.3	18.3	60
8910063	CF12-10-55	10	-	-	11.0	55	42	9.5	30.0	-	-	18	22.4	11.4	60
8910064	CF12-10-80	10	-	-	11.0	80	-	-	30.0	-	-	18	-	-	60
8910065	CF12-12-35	12	-	-	13.0	35	22	9.5	30.0	-	-	20	22.3	11.7	60
8910066	CF12-12-55	12	-	-	13.0	55	42	9.5	30.0	-	-	20	22.4	5.0	60
8910067	CF12-12-80	12	-	-	13.0	80	-	-	30.0	-	-	20	-	-	60

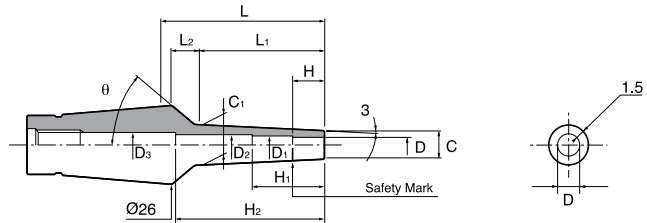
The tool should be inserted deeper than the safety mark.
 The collet cannot be customized.
 Do not exceed the insertion limit.





Slim Type Shrink Extensions

For Long Reach & Coolant-Through the Tool Operations



Inch Sizes

EDP No.	Description	D	D1	D2	D3	L	L1	L2	H	H1	H2	C	C1	θ°	Insertion Limit
9910076	CS12-1/8-80	1/8	-	-	-	3.15	2.64	0.37	0.39	-	-	0.24	0.52	34.0	4.33
9910077	CS12-1/8-110	1/8	-	-	-	4.33	3.82	0.37	0.39	-	-	0.24	0.64	27.2	5.51
9910084	CS12-3/16-80	3/16	-	-	-	3.15	2.64	0.37	0.59	-	-	0.42	0.58	30.7	4.33
9910085	CS12-3/16-110	3/16	-	-	-	4.33	3.82	0.37	0.59	-	-	0.42	0.71	22.7	5.51
9910088	CS12-1/4-80	1/4	-	-	-	3.15	2.64	0.37	0.71	-	-	0.37	0.64	27.2	4.33
9910089	CS12-1/4-110	1/4	-	-	-	4.33	3.82	0.37	0.71	-	-	0.37	0.77	18.7	5.51
9910096	CS12-5/16-80	5/16	-	-	-	3.15	2.64	0.37	0.98	-	-	0.43	0.71	22.7	4.33
9910097	CS12-5/16-110	5/16	-	-	-	4.33	3.82	0.37	0.98	-	-	0.43	0.83	14.4	5.51
9910104	CS12-3/8-80	3/8	-	-	-	3.15	2.64	0.37	1.18	-	-	0.49	0.77	18.7	2.36
9910105	CS12-3/8-110	3/8	-	-	-	4.33	3.82	0.37	1.18	-	-	0.49	0.89	10.0	2.36
9910108	CS12-7/16-80	7/16	-	-	-	3.15	2.64	0.37	1.18	-	-	0.67	0.95	5.4	2.36
9910109	CS12-7/16-110	7/16	-	-	-	4.33	-	-	1.18	-	-	0.67	-	-	2.36
9910112	CS12-1/2-80	1/2	-	-	-	3.15	2.64	0.37	1.18	-	-	0.62	0.89	10.0	2.36
9910113	CS12-1/2-110	1/2	-	-	-	4.33	-	-	1.18	-	-	0.62	-	-	2.36

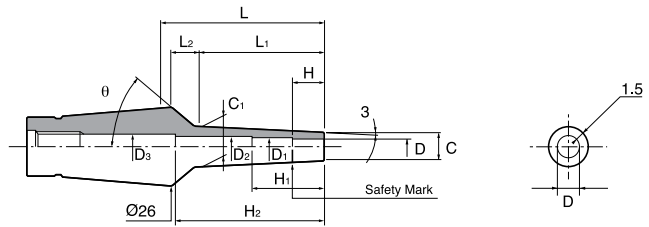
This slim collet successfully avoids interference with the work material.





Slim Type Shrink Extensions

For Long Reach & Coolant-Through the Tool Operations



Metric Sizes

EDP No.	Description	D	D1	D2	D3	L	L1	L2	H	H1	H2	C	C1	θ °	Insertion Limit
8910070	CS12-3-35	3	-	-	4.0	35	22	9.5	9.7	-	-	6	8.3	52.7	65
8910071	CS12-3-55	3	-	-	4.0	55	42	9.5	9.7	-	-	6	10.4	47.9	85
8910072	CS12-3-80	3	4	6	8.6	80	67	9.5	9.7	39.4	74.2	6	13.0	41.2	110
8910073	CS12-3-110	3	4	6	8.6	110	97	9.5	9.7	39.4	104.2	6	16.2	31.8	140
8910074	CS12-3.175-35	3.175	-	-	4.0	35	22	9.5	9.7	-	-	6	8.3	52.6	65
8910075	CS12-3.175-55	3.175	-	-	4.0	55	42	9.5	9.7	-	-	6	10.4	47.9	85
8910076	CS12-3.175-80	3.175	4	6	8.6	80	67	9.5	9.7	39.4	74.2	6	13.0	41.2	110
8910077	CS12-3.175-110	3.175	4	6	8.6	110	97	9.5	9.7	39.4	104.2	6	16.2	31.8	140
8910078	CS12-4-35	4	-	-	5.0	35	22	9.5	11.7	-	-	7	9.3	50.4	65
8910079	CS12-4-55	4	-	-	5.0	55	42	9.5	11.7	-	-	7	11.4	45.5	85
8910080	CS12-4-80	4	5	7	8.6	80	67	9.5	11.7	39.7	74.5	7	14.0	38.3	110
8910081	CS12-4-110	4	5	7	8.6	110	97	9.5	11.7	39.7	104.5	7	17.2	28.7	140
8910082	CS12-5-35	5	-	-	6.0	35	22	9.5	14.7	-	-	8	10.3	48.1	65
8910083	CS12-5-55	5	6	-	8.6	55	42	9.5	14.7	49.2	-	8	12.4	42.8	85
8910084	CS12-5-80	5	6	-	8.6	80	67	9.5	14.7	49.2	-	8	15.0	35.4	110
8910085	CS12-5-110	5	6	-	8.6	110	97	9.5	14.7	69.2	-	8	18.2	25.4	140
8910086	CS12-6-35	6	-	-	7.0	35	22	9.5	17.7	-	-	9	11.3	45.7	65
8910087	CS12-6-55	6	7	-	8.6	55	42	9.5	17.7	49.5	-	9	13.4	40.1	85
8910088	CS12-6-80	6	7	-	8.6	80	67	9.5	17.7	49.5	-	9	16.0	32.3	110
8910089	CS12-6-110	6	7	-	8.6	110	97	9.5	17.7	69.5	-	9	19.2	22.1	140
8910090	CS12-7-35	7	-	-	8.6	35	22	9.5	19.5	-	-	10	12.3	43.1	65
8910091	CS12-7-55	7	-	-	8.6	55	42	9.5	19.5	-	-	10	14.4	37.2	85
8910092	CS12-7-80	7	-	-	8.6	80	67	9.5	19.5	-	-	10	17.0	29.1	110
8910093	CS12-7-110	7	-	-	8.6	110	97	9.5	19.5	-	-	10	20.2	18.8	140
8910094	CS12-8-35	8	-	-	8.8	35	22	9.5	24.8	-	-	11	13.3	40.4	65
8910095	CS12-8-55	8	-	-	8.8	55	42	9.5	24.8	-	-	11	15.4	34.2	85
8910096	CS12-8-80	8	-	-	8.8	80	67	9.5	24.8	-	-	11	18.0	25.9	110
8910097	CS12-8-110	8	-	-	8.8	110	97	9.5	24.8	-	-	11	21.2	15.5	140
8910098	CS12-9-35	9	-	-	10.0	35	22	9.5	30.0	-	-	12	14.3	37.5	60
8910099	CS12-9-55	9	-	-	10.0	55	42	9.5	30.0	-	-	12	16.4	31.1	60
8910100	CS12-9-80	9	-	-	10.0	80	67	9.5	30.0	-	-	12	19.0	22.6	60
8910101	CS12-9-110	9	-	-	10.0	110	97	9.5	30.0	-	-	12	22.2	12.2	60
8910102	CS12-10-35	10	-	-	11.0	35	22	9.5	30.0	-	-	13	15.3	34.5	60
8910103	CS12-10-55	10	-	-	11.0	55	42	9.5	30.0	-	-	13	17.4	27.9	60
8910104	CS12-10-80	10	-	-	11.0	80	67	9.5	30.0	-	-	13	20.0	19.3	60
8910105	CS12-10-110	10	-	-	11.0	110	97	9.5	30.0	-	-	13	23.2	8.9	60
8910106	CS12-11-35	11	-	-	12.0	35	22	9.5	30.0	-	-	14	16.3	31.4	60
8910107	CS12-11-55	11	-	-	12.0	55	42	9.5	30.0	-	-	14	18.4	24.6	60
8910108	CS12-11-80	11	-	-	12.0	80	67	9.5	30.0	-	-	14	21.0	16.0	60
8910109	CS12-11-110	11	-	-	12.0	110	97	9.5	30.0	-	-	14	24.2	5.7	60
8910110	CS12-12-35	12	-	-	13.0	35	22	9.5	30.0	-	-	15	17.3	28.2	60
8910111	CS12-12-55	12	-	-	13.0	55	42	9.5	30.0	-	-	15	19.4	21.3	60
8910112	CS12-12-80	12	-	-	13.0	80	67	9.5	30.0	-	-	15	22.0	12.7	60
8910113	CS12-12-110	12	-	-	13.0	110	-	-	30.0	-	-	15	-	-	60

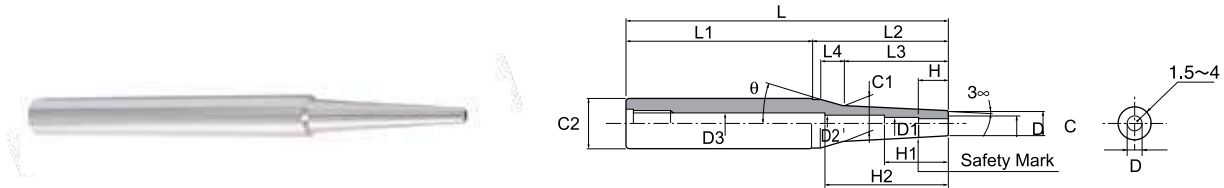
This slim collet successfully avoids interference with the work material. The tool should be inserted deeper than the safety mark. Do not exceed the insertion limit.





Straight Regular Type Shrink Extensions

For Standard Milling/End Mill Chucks



Inch Sizes

EDP No.	Description	L	L1	L2	L3	L4	D	C	C1	C2	H	Insertion Limit
9910136	ST19.05-SLR1/4-110	4.33	2.95	1.38	0.87	0.374	0.25	0.49	0.58	0.75	0.71	3.66
9910142	ST19.05-SLR5/16-110	4.33	2.95	1.38	0.87	0.374	0.3125	0.55	0.64	0.75	0.98	3.66
9910147	ST19.05-SLR3/8-110	4.33	2.95	1.38	-	-	0.375	0.61	-	0.75	1.18	2.36
9910139	ST25.4-SLR 1/4-203	8.0	5.9	2.17	1.65	0.51	0.25	0.49	1.0	1.0	0.71	7.36
9910144	ST25.4-SLR 5/16-203	8.0	5.9	2.17	1.65	0.51	0.3125	0.55	1.0	1.0	0.98	7.36
9910149	ST25.4-SLR 3/8-127	5.0	3.5	1.38	0.87	0.51	0.375	0.61	1.0	1.0	1.18	2.36
9910151	ST25.4-SLR 3/8-190	7.5	5.3	2.17	1.65	0.51	0.375	0.61	1.0	1.0	1.18	2.36
9910156	ST25.4-SLR 1/2-114	4.5	3.0	1.38	0.87	0.51	0.5	0.81	1.0	1.0	1.18	2.36
9910158	ST25.4-SLR 1/2-178	7.0	4.7	2.17	1.43	0.74	0.5	0.81	1.0	1.0	1.18	2.36

Shrink holder with straight shank for ordinary milling chucks.
Provides high performance of shrink fit without holder.
The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.



Metric Sizes

EDP No.	Description	D	D1	D2	L	L1	L2	L3	H	H1	H2	C	C1	C2	Insertion Limit
8910401	ST16-SLRA 3-140-M 67	3	4.0	6.0	140	60	80	67	9	52.5	82.5	6	13.0	16	112
8910413	ST16-SLRA 4-140-M 60	4	5.0	8.6	140	80	60	60	12	62.5	85.0	10	-	16	112
8910424	ST20-SLRB 6-120-M 42	6	7.0	8.6	120	70	50	42	18	52.5	60.0	14	18.4	20	92
8910435	ST20-SLRB 8-100-M 30	8	8.6	-	100	70	30	30	24	40.0	-	18	-	20	72
8910406	ST25-SLRA 3-245-M 97	3	4.0	5.0	245	120	125	97	9	47.5	99.5	6	16.2	25	217
8910415	ST25-SLRA 4-245-M 97	4	5.0	6.0	245	120	125	97	12	50.5	110.5	7	17.2	25	287
8910428	ST25-SLRB 6-240-M 42	6	7.0	8.6	240	170	70	42	18	45.5	50.0	14	18.4	25	212
8910440	ST25-SLRB 8-210-M 90	8	8.6	-	210	120	90	90	24	70.0	-	18	-	25	182
8910449	ST25-SLRB10-120-M 35	10	10.6	-	120	85	35	35	30	50.0	-	22	-	25	60
8910450	ST25-SLRB10-210-M 90	10	10.6	-	210	120	90	90	30	70.0	-	22	-	25	60
8910457	ST25-SLSB12-120-M 42	12	12.6	-	120	42	50	42	30	50.0	-	19	23.4	25	60
8910458	ST25-SLSB12-150-M 80	12	12.6	-	150	80	80	80	30	60.0	-	19	-	25	60

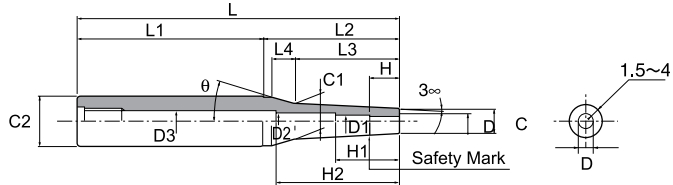
Shrink holder with straight shank for ordinary milling chucks.
Provides high performance of shrink fit without holder.
The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.





Straight Slim Type Shrink Extensions

For Standard Milling/End Mill Chucks



Inch Sizes

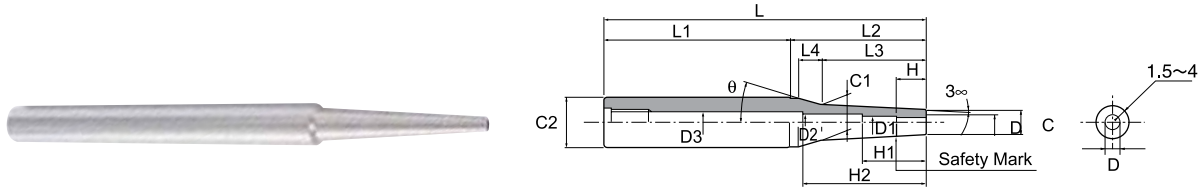
EDP No.	Description	L	L1	L2	L3	L4	D	C	C1	C2	H	Insertion Limit
9910120	ST9.525-SLS1/8-80	3.15	1.75	1.4	-	-	0.125	0.24	-	0.375	0.39	2.72
9910123	ST9.525-SLS3/16-80	3.15	1.75	1.4	-	-	0.1875	0.306	-	0.375	0.59	2.71
9910137	ST12.7-SLS1/4-80	3.15	1.75	1.4	-	-	0.25	0.368	-	0.5	0.71	2.72
9910121	ST15.875-SLS1/8-110	4.33	2.19	2.14	1.63	0.374	0.125	0.24	0.41	0.625	0.39	3.66
9910124	ST15.875-SLS3/16-110	4.33	2.19	2.14	1.63	0.374	0.1875	0.306	0.48	0.625	0.59	3.66
9910122	ST19.05-SLS1/8-205	8.07	3.61	4.46	3.95	0.374	0.125	0.24	0.66	0.75	0.39	7.4
9910125	ST19.05-SLS3/16-205	8.07	3.61	4.46	-	-	0.1875	0.306	-	0.75	0.59	7.4
9910138	ST19.05-SLS1/4-110	4.33	2.95	1.38	0.87	0.374	0.25	0.368	0.46	0.75	0.71	3.66
9910143	ST19.05-SLS5/16-110	4.33	2.95	1.38	0.87	0.374	0.3125	0.43	0.52	0.75	0.98	3.66
9910148	ST19.05-SLS3/8-110	4.33	2.95	1.38	0.87	0.374	0.375	0.49	0.58	0.75	1.18	2.36
9910140	ST25.4-SLS 1/4-228	9.0	4.7	4.33	3.82	0.51	0.25	0.37	1.0	1.0	0.71	8.34
9910145	ST25.4-SLS 5/16-228	9.0	4.7	4.33	3.82	0.51	0.3125	0.43	1.0	1.0	0.98	8.34
9910150	ST25.4-SLS3/8-155	6.1	3.6	2.5	1.99	0.374	0.375	0.49	0.7	1.0	1.18	2.36
9910152	ST25.4-SLS 3/8-228	9.0	4.7	4.33	3.82	0.51	0.375	0.49	1.0	1.0	1.18	2.36
9910157	ST25.4-SLS1/2-155	6.1	4.1	2.0	1.49	0.374	0.5	0.62	0.77	1.0	1.18	2.36
9910159	ST25.4-SLS 1/2-228	9.0	4.7	4.33	3.82	0.51	0.5	0.62	1.0	1.0	1.18	2.36

This slim collet successfully avoids interference with the work material. The tool should be inserted deeper than the safety mark. Do not exceed the insertion limit.



Straight Slim Type Shrink Extensions

For Standard Milling/End Mill Chucks



Metric Sizes

EDP No.	Description	D	D1	D2	L	L1	L2	L3	H	H1	H2	C	C1	C2	Insertion Limit
8910120	ST10-SLS3-80	3	4.0	—	80	45	35	35	9	40.0	—	6	—	10	64
8910121	ST10-SLS3.175-80	3.175	4.0	—	80	45	35	35	9.7	40.0	—	6	—	10	64
8910122	ST10-SLS4-80	4	5.0	—	80	45	35	35	12	40.0	—	7	—	10	64
8910123	ST10-SLS5-80	5	6.0	—	80	45	35	35	15	61.5	—	8	—	10	70
8910124	ST12-SLS6-80	6	7.0	—	80	45	35	35	15	40.0	—	9	—	12	52
8910125	ST16-SLS3-115	3	4.0	—	115	60	55	42	9	51.5	—	6	10.4	16	87
8910126	ST16-SLS4-115	4	5.0	—	115	60	55	42	12	60.0	—	7	11.4	16	87
8910127	ST16-SLS6-115	6	7.0	—	115	60	55	42	18	60.0	—	9	13.4	16	87
8910129	ST20-SLS3-200	3	4.0	6	200	90	110	97	9	52.5	102.5	6	16.2	20	172
8910131	ST20-SLS4-200	4	5.0	7	200	90	110	97	12	37.5	102.5	7	17.2	20	172
8910132	ST20-SLS5-200	5	6.0	8.6	200	90	110	110	15	69.2	161.5	8	—	20	182
8910434	ST20-SLSB 8-145-M 70	8	8.6	—	145	75	70	70	24	85.0	—	—	19.5	20	117
8910138	ST25-SLS5-290	5	6.0	8.6	290	180	97	97	15	69.2	241.5	8	18.2	25	272
8910140	ST25-SLS6-230	6	7.0	8.6	230	120	110	97	18	92.5	160.0	9	19.2	25	202
8910426	ST25-SLSA 6-305-M 185	6	7.0	8	305	120	185	185	18	75.5	160.5	9	—	25	277
8910142	ST25-SLS7-230	7	8.0	8.6	230	120	110	97	20	69.8	181.5	10	20.2	25	212
8910143	ST25-SLS7-320	7	8.0	8.6	320	210	110	97	20	69.8	271.5	10	20.2	25	302
8910145	ST25-SLS8-230	8	8.6	—	230	120	110	97	24	160.0	—	11	21.2	25	202
8910436	ST25-SLSA 8-280-M 160	8	8.6	—	280	120	160	160	24	140.0	—	11	—	25	252
8910147	ST25-SLS9-230	9	9.6	—	230	120	110	97	30	181.5	—	12	22.2	25	60
8910148	ST25-SLS9-320	9	9.6	—	320	210	110	97	30	271.5	—	12	22.2	25	60
8910443	ST20-SLSA10-145-M 70	10	10.6	—	145	75	70	70	30	85.0	—	13	—	20	60
8910445	ST25-SLSA 10-255-M 135	10	10.6	—	255	120	135	135	30	115.0	—	13	—	25	60
8910451	ST32-SLSA10-340-M210	10	10.6	12	340	130	210	210	30	59.5	167.5	13	—	32	312
8910154	ST25-SLS11-230	11	11.6	—	230	120	110	110	30	181.5	—	14	—	25	60
8910155	ST25-SLS11-320	11	11.6	—	320	210	110	110	30	271.5	—	14	—	25	60
8910456	ST20-SLSA12-120-M 50	12	12.6	—	120	70	50	50	30	60.0	—	15	—	20	60
8910159	ST25-SLS12-230	12	12.6	—	230	120	110	110	30	160.0	—	15	—	25	60
8910460	ST32-SLSA12-315-M185	12	13.0	—	315	130	185	185	30	165.0	—	15	—	32	287

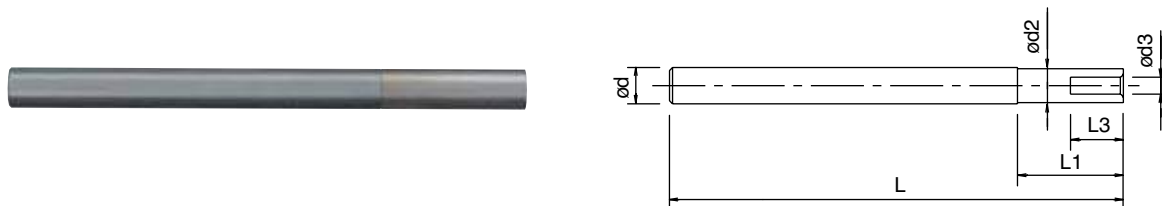
Shrink holder with straight shank for ordinary milling and end mill chucks.
Provides high performance of shrink fit without holder.





Carbide Straight Type Shrink Extensions

For Increased Rigidity and Reach



Metric Sizes

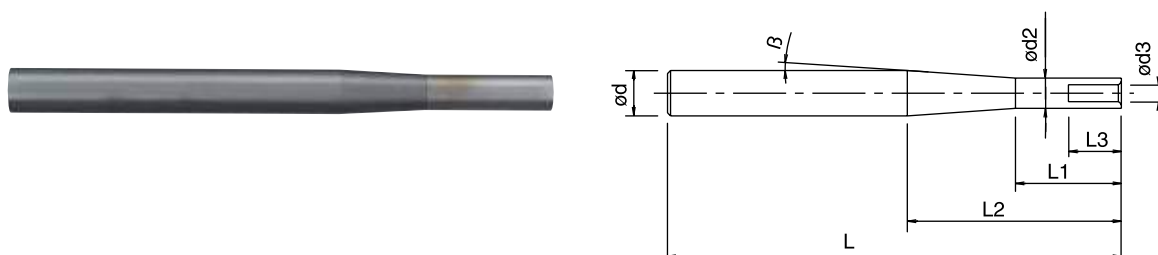
EDP No.	Description	L	d3	d2	d	L1	L3
8910244	ST10-6-200CS	200	6	9.9	10	40	22
8910245	ST12-6-200CS	200	6	11.9	12	42	22
8910240	ST16-10-250CS	250	10	15.9	16	60	33
8910241	ST20-12-250CS	250	12	19.9	20	70	38

Packed: 1 pc.



Carbide Straight Slim Type Shrink Extensions

For Increased Rigidity and Reach



Metric Sizes

EDP No.	Description	L	d3	d2	d	L1	L2	β	L3
8910246	PC16-6-9.9-250CS	250	6	9.9	16	40	124	2°	22
8910247	PC16-6-11.9-250CS	250	6	11.9	16	42	80	3°	22
8910242	PC20-10-300CS	300	10	15.9	20	60	98	3°	33
8910243	PC25-12-300CS	300	12	19.9	25	70	118	3°	38

Packed: 1 pc.



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