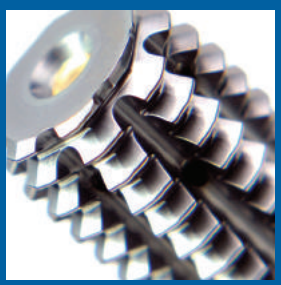
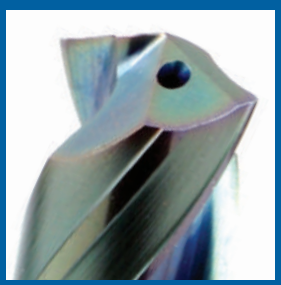
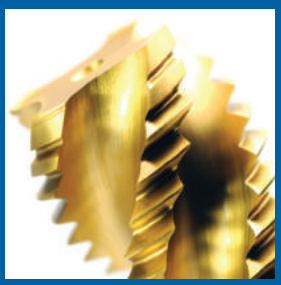
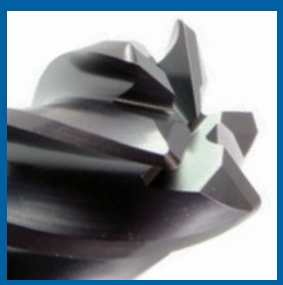
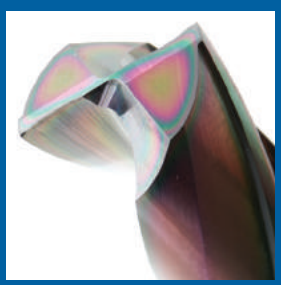
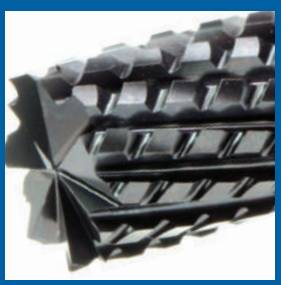
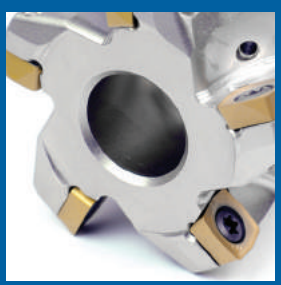
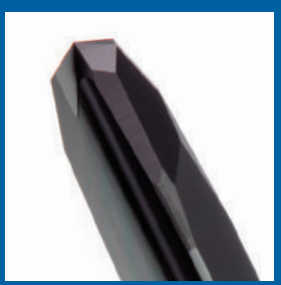
Cutting Tool Solutions

2017/18 Product Catalog





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

Tool Dimensions

- EXTRA LONG — Extra Long Length
- LH — Left Hand
- 3 Flute
- LONG — Long Length
- LHS — Left Hand Spiral
- 3 Flute Center Hole
- JOBBERS — Jobbers Length
- STI — Screw Thread Insert
- 4 Flute Center Cut
- MED — Medium Length
- Multi-Flute Center Cut
- 4 Flute Center Hole
- REG — Regular Length
- Multi-Flute Center Hole
- COOLANT THROUGH — Coolant-Through
- STUB — Stub Length
- 2 Flute

Finish

- FINE ROUGH — Fine Rough
- ROUGH — Rough
- ROUGH FINISH — Rough and Finish

Other Icons

- SPEED FEED — Speeds & Feeds
- 0° — Degrees
- SHRINK h6 — Shrink Fit
- INDEX. — Indexable

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OSG Product Overview

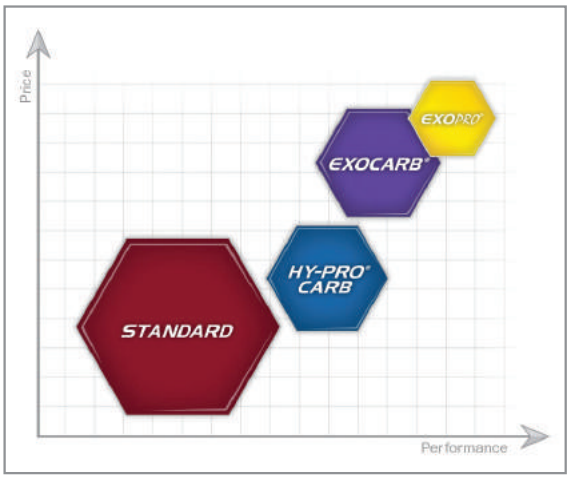
The Total Solution

The purpose of this brand guide is to illustrate OSG's brand heirarchy and to better help you select the best tool for your machining needs.

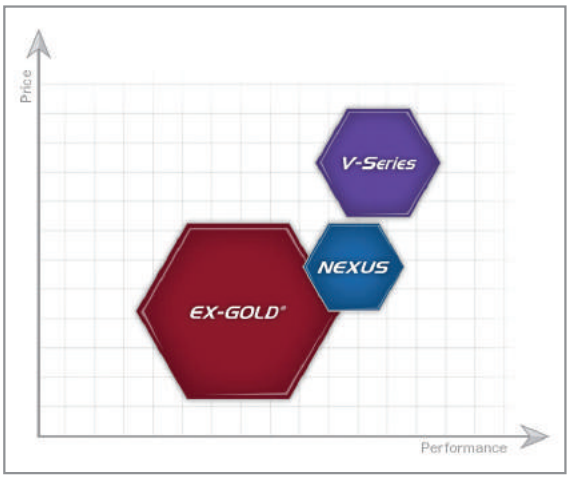
From the value products under our Standard and HSS-Co brands to the high performance products under the V-Series, EXOCARB® and EXOPRO® brands, OSG offers a broad range of tools to meet your application requirements.

When it comes to selecting the right drills, taps and end mills, look no further than OSG for all of your tooling needs.

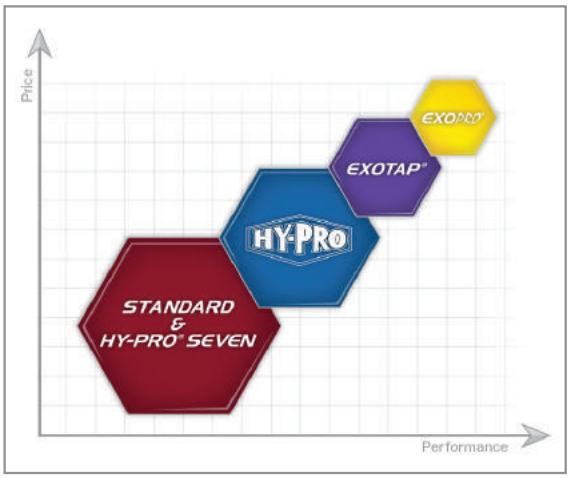
Drilling - Carbide



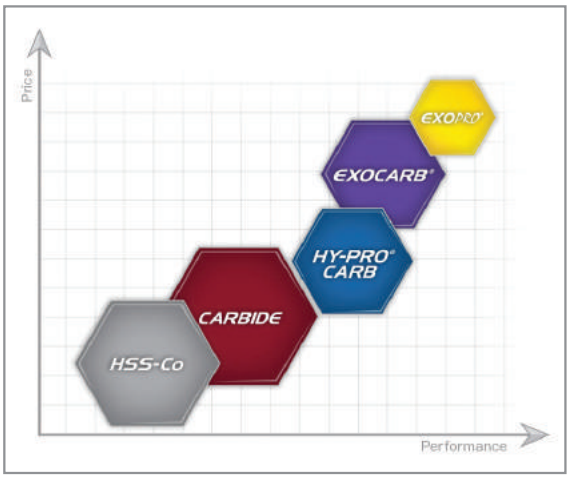
Drilling - HSS



Threading



Milling



See OSG's Complete Brand Index: pp12-35

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New Catalog Guide

Tour the New Catalog

Finding Your Tooling Needs

Master Index: *P1*
A snapshot of the entire catalog.

Brand Index: *P12-35*
A complete list of all stocked OSG products organized by brands.

Featured Drilling Products: *P38-39*
A snapshot of OSG's featured drilling products to make tooling selection for any material fast and easy.

Drilling Application Guide: *P40-41*
Each of OSG's drill series recommended according to materials

Drilling Illustrated Index: *P42-43*
All of OSG's drills listed according to length alongside their material recommendations.

Featured Threading Products: *P278-279*
A snapshot of OSG's featured threading products to make tooling selection for any material fast and easy.

Threading Application Guide: *P280-281*
OSG's threading products recommended according to materials with recommended SFM ranges. Compare tap performance when choosing your perfect tap.

Threading Illustrated Index: *P280-281*
All of OSG's threading products listed according to style alongside their material recommendations.

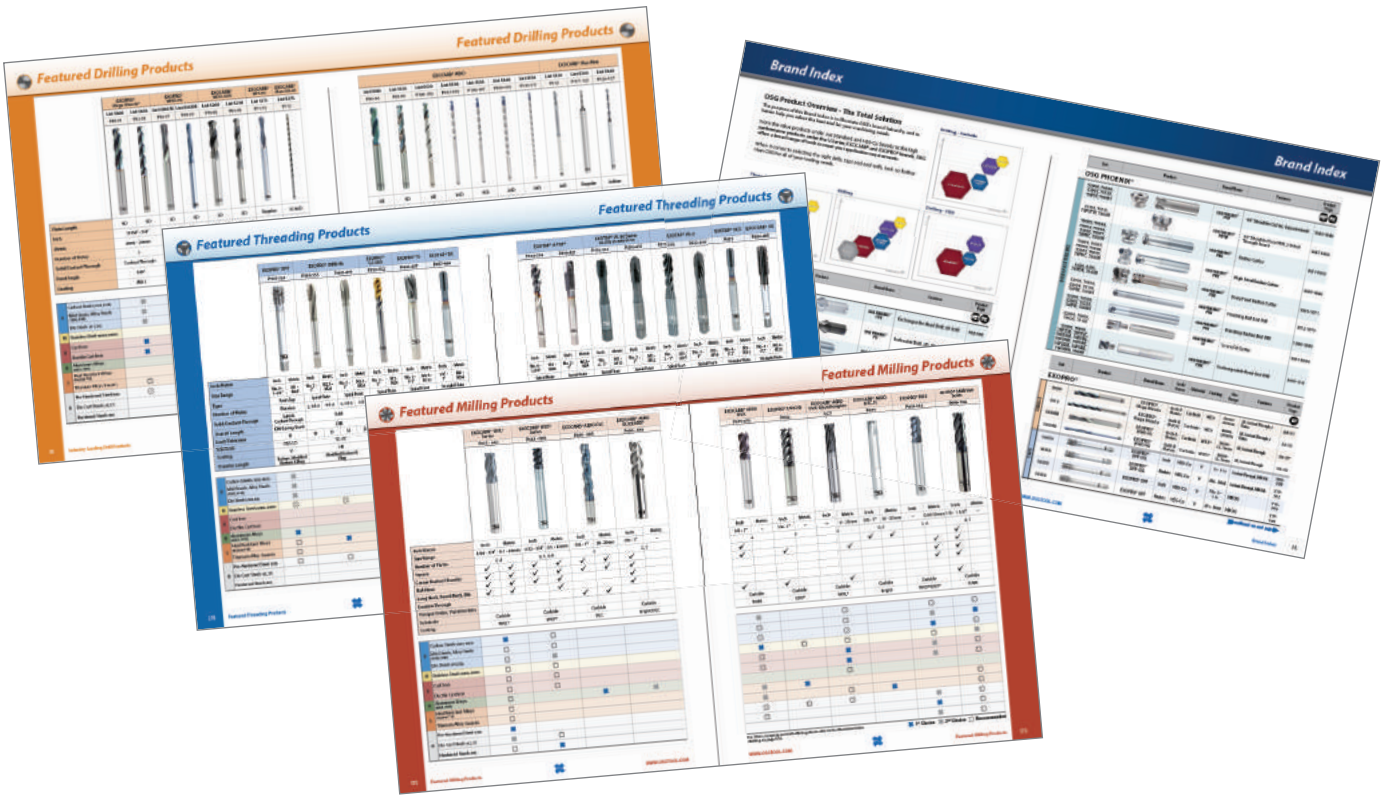
Featured Milling Products: *P572-573*
A snapshot of OSG's featured Milling products to make tooling selection for any material fast and easy.

Milling Illustrated Index: *P574-601*
All of OSG's Milling products listed according to brand alongside their material recommendations.

Indexable Illustrated Index: *P984-985*
All of OSG's Indexable products and their material recommendations.

Composites Illustrated Index: *P1124-1125*
All of OSG's Composite products and their material recommendations.

EDP Numerical Index: *P1179-1312*
All of OSG's Composite products and their material recommendations.



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Master Index



Drills 36-275

Featured Drilling Products....38-39
Drilling Application Guide....40-41
Illustrated Index/Application Guide....42-47
EXOPRO®....48-59
EXOCARB®....60-75
EXOCARB® WDO....76-111
EXOCARB® MAX....112-127
HY-PRO® CARB....128-149
Carbide....150-172
V-Series....173-196
NEXUS....197-201
EX-GOLD®....202-240
Drills Technical....241-272
Drill Reconditioning....273-275



Taps 276-569

Featured Threading Products....278-279
Threading Application Guide....280-281
Illustrated Index/Application Guide....282-299
Thread Mills....300-307
Forming Taps....308-349
Spiral Fluted Taps....350-405
Spiral Pointed Taps....406-454
Straight Fluted Taps....455-493
Screw Thread Insert Taps....494-517
Pipe Taps....518-526
Round Dies....527-530
Thread Gages....531-532
Threading Technical....533-569



End Mills 578-981

Featured Milling Products....572-573
Illustrated Index/Application Guide....574-601
EXOPRO®....602-614
EXOCARB® WXL®....615-642
EXOCARB® WXS®....643-660
EXOCARB® MAX....661-665
EXOCARB® Diamond....666-674
EXOCARB® AERO....675-695
HY-PRO® CARB Variable Geometry....696-704
HY-PRO® CARB Square End....705-715
HY-PRO® CARB Ball End....716-722
HY-PRO® CARB Corner Radius....723-726
Carbide Square & Corner Radius....727-740
Carbide Square End....741-746
Carbide Ball End....747-756
Carbide Double End....757-760
Carbide Routers....761-762
EXOMINI VC-10....763-764
EXOMILL VC-10®....765-768
HY-PRO® V....769-770
Roughing End Mills....771-778
Single End Mills....779-783
Single End Multiple Flute....784-793
Single End Tapered....794-797
Double End Mills....798-807
Carbide Burs....808-830
Milling Technical....831-978
End Mill Reconditioning....979-981



Indexable 982-1121

Illustrated Index....984-985
OSG PHOENIX®....986-1111
EXOCARB® DISC CUTTER....1112-1121
EXOCARB® Arbor....1118



Composites 1122-1154

Illustrated Index/Application Guide....1124-1125
Aerospace Drills....1126-1135
Aerospace Routers....1136-1143
Composite Technical....1145-1154



HY-PRO® Shrink 1156-1178



EDP Numerical Index 1179-1312

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OSG Mission Statement

To provide user-friendly service and product solutions for threading, holemaking, milling and associated products for our customers as measured by market share growth.



Hideo Osawa - Founder



Jiro Osawa
Chief Executive Officer



Mike Grantham
President

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Japan Corporate Headquarters

Global OSG Operations

OSG is celebrating its role as a truly "Global Company." OSG strives to be the world's leading round tool company by providing superior tool technology, experience and quality. In 1968, a time when globalization was still not popular among Japanese industries, OSG began overseas activities by opening an office in the United States. Since then OSG's business has expanded both in Japan and throughout the world. Currently OSG has business sites in 29 countries around the globe.



North American Headquarters

OSG USA, INC.'s Role

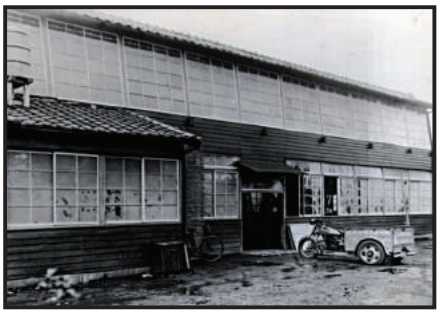
It is the role of OSG USA, as well as its subsidiary companies, to carry out the core philosophy of the parent company. This includes but is not limited to their policies, procedures, and appropriate civic behavior. It is also the role and duty of OSG USA to wisely utilize resources provided through the parent company's investment. OSG USA is bound by the parent company's trust to develop our markets to their fullest potential in a profitable manner ensuring future generations a source for their livelihood, well being in the workplace and continual growth for OSG worldwide.

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OSG History

Company History

Founded in 1938, OSG is now the largest solid round cutting tool manufacturer in the world. Our core competencies are the design and manufacturing of the world's finest quality taps, drills, and end mills from both high speed steel and carbide. Whether producing our own grinding machines or developing our own coating technology via our Research & Development Center, OSG takes pride in having complete control of our manufacturing capabilities. We do this for the singular purpose of providing the utmost quality, performance and service to our customers worldwide.



Osawa Screw Grinding Co., Ltd

1938

- Hideo Osawa established Osawa Screw Grinding Co., Ltd. in Musashiro, Tokyo and began the manufacturing and sales of taps and dies

1942

- Began the manufacturing and sales of screw gages

1943

- Completed Aichi Plant in Ichinomiya, Aichi

1956

- Began the manufacturing and sales of rolling dies

1961

- Completed Toyokawa Factory

1963

- Began the manufacturing and sales of rolling flat dies
- Changed company name to OSG Mfg. Company
- Established OSG Corporation as sole agent for OSG products in Japan

1967

- Completed Oike Factory
- Completed world's first automatic screw grinding machine

1968

- Established OSG Tap & Die, Inc. in Chicago, USA

1970

- Established a joint company, Taiho Tool Mfg. Co. Ltd., in Kaohsiung, Taiwan

1971

- Completed Toyohashi Factory

1973

- Acquired Sossner Corp., tap manufacturer, in USA

1974

- Established OSG Ferramentas De Precisao Ltda in Sao Paulo, Brazil

1982

- Completed Shinshiro Plant in Shinshiro, Aichi

1985

- Established OSG Korea Corporation in Taegu, Korea

1988

- Established OSG Canada Ltd. in Toronto, Canada

1990

- Completed Yana Plant in Shinshiro, Aichi
- Established OSG Asia PTE. Ltd. in Singapore

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1992

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

1994

- Established OSG Royco, S.A. de C.V. in Mexico

1996

- Established OSG Thailand Co., Ltd. in Bangkok, Thailand

1997

- Established Dabao (Dongguan) Molding & Cutting Tool Co., Ltd. in Guangzhou, China
- Established OSG Belgium s.a.n.v., OSG France s.a.r.l. and OSG Netherland b.v.

1999

- Established OSG Europe S.A. in Belgium as European Headquarters
- Changed Norman Taps and Die Ltd. in U.K. to OSG U.K. Ltd.

2001

- Established OSG (Shanghai) Corporation in Shanghai, China
- Acquired Quality Carbide Tools in USA and Carbide Cutting Tools in India

2002

- Established OSG Tooling Iberica, S.L. in Spain (current OSG Comaher)

2003

- Established OSG GmbH in Germany
- Established OSG Italia s.r.l. in Italy

2004

- Acquired Sterling Die, Inc. in USA
- Completed Design Center
- Established OSG Power Tools, Inc. in USA

2005

- Established OSG (India) PVT, Ltd.
- Acquired NAS Precision L.L.C. in USA

2006

- Acquired Hans Esslinger GmbH in Germany
- Joined corporate alliance with Toshiba
- Completed Global Technology Center

2007

- Acquired OSG Correct Tool Ltd. In Canada
- Acquired Comaher, S.A. in Spain
- Established PT. OSG Indonesia

2008

- Established OSG-Sterling Die, Inc.
- Established OSG Tungaloy de Argentina S.R.L.
- Acquired Mac World Trade in the Netherlands
- Established OSG Vietnam Co., Ltd
- Established OSG Philippines Corporation

2010

- Quality Carbide Tools in USA merged into OSG Tap & Die, Inc.

2011

- Opened new OSG-Sterling Die, Inc. facility

2012

- NAS Precision L.L.C. in USA merged into OSG Tap & Die, Inc.
- Established OSG Turkey
- Established Romsan International Company S.R.L. in Romania

2013

- OSG celebrated its 75th Anniversary

2014

- OSG Sterling Die, Inc. consolidated and merged with OSG Tap & Die, Inc.
- OSG Tap & Die, Inc. opened a new regional service center in Forest Park, Georgia

2015

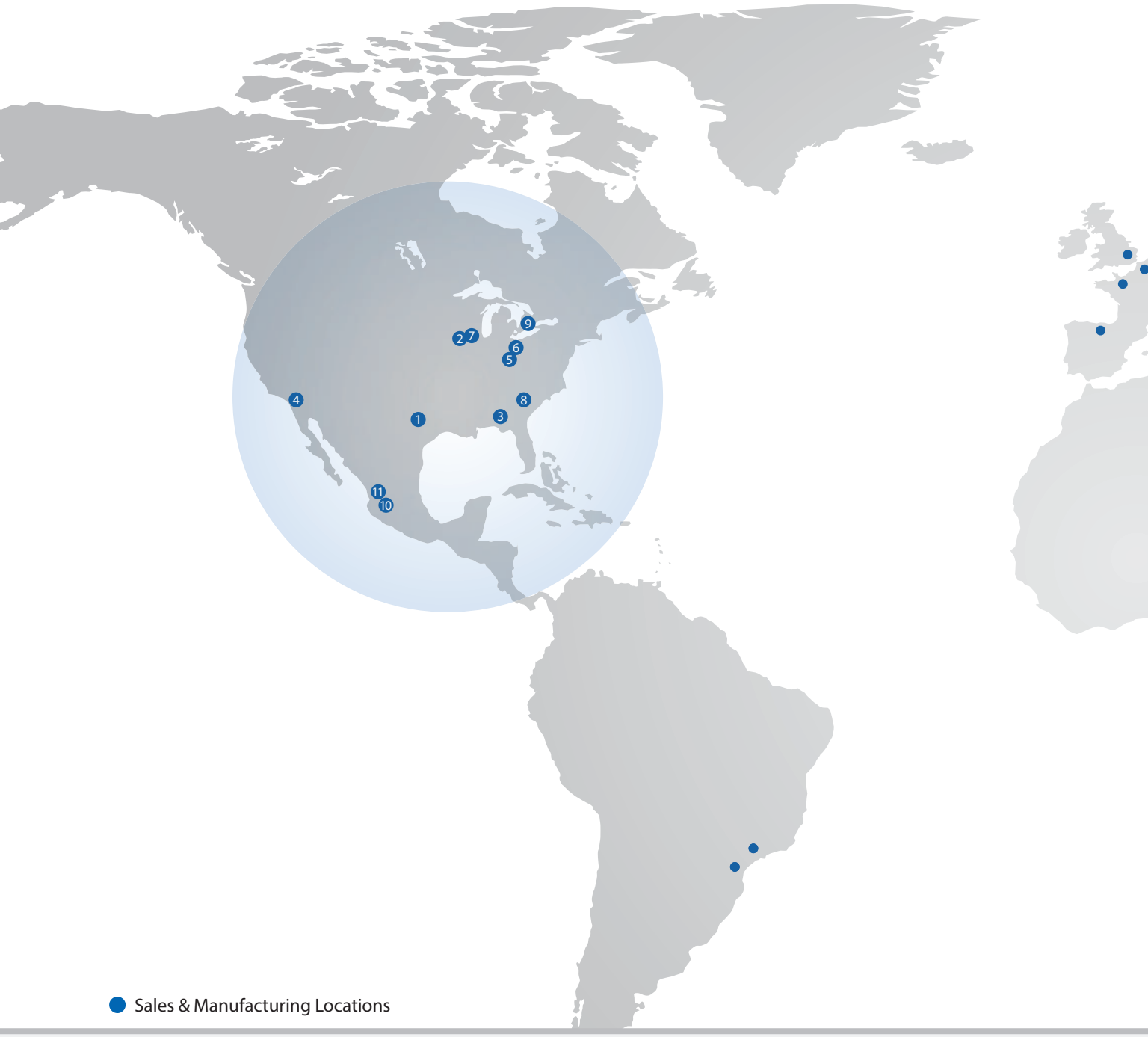
- OSG Tap & Die, Inc. officially changed its name to OSG USA, INC.
- OSG became a sponsor of Astroscale on the world's very first in-situ micro satellite "IDEA OSG 1" to collect and monitor data on sub-millimeter sized debris in the Low Earth Orbit (LEO) region in real-time

2016

- OSG USA acquired assets and manufacturing technology of IMU dies
- OSG USA acquired AMAMCO Tool & Supply Co., Inc.

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Global Network

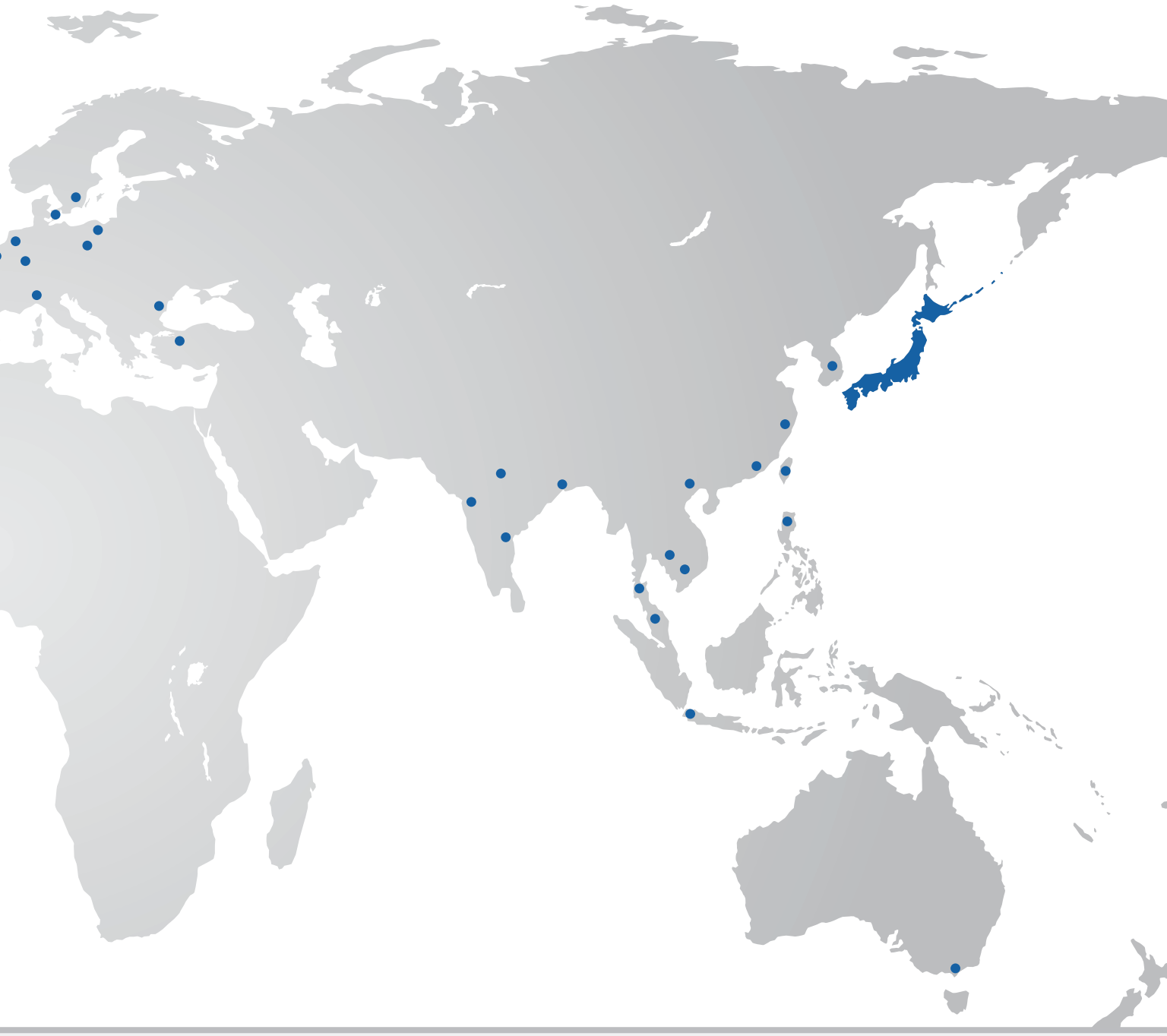


● Sales & Manufacturing Locations

1. **OSG National Headquarters, Irving, Texas**
2. OSG Illinois National Service Center
3. OSG Georgia Regional Service Center
4. OSG California Regional Service Center
5. OSG Ohio Sales Office
6. OSG Mfg. Fastener Products Division, Parma, Ohio
7. OSG Mfg. Carbide Products Division, Bensenville, IL
8. AMAMCO Tool & Supply Co., Inc.
9. OSG Canada, Canada
10. OSG Royco, Mexico (Toluca Plant)
11. OSG Royco, Mexico (Silau Tech Center)

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Global Network



Founded in 1938, OSG is now the largest solid round cutting tool manufacturer in the world. With manufacturing and sales locations in 29 countries, we have created a global network that can meet the needs of customers in multiple regions.

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North America Locations

U.S.A.

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Canada

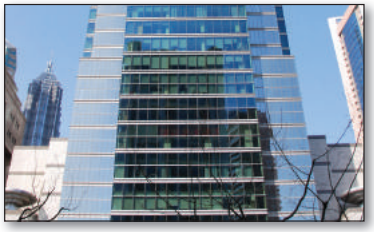
Canada



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Mexico

Mexico



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Fax: (52) 55-5119-3370
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Calle Nicolas Gogol 11371
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OSG Product Treatments

OSG's surface treatments are designed to meet customer needs through comprehensive technology by providing coatings and treatments that excel in 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
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.

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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.
N	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.

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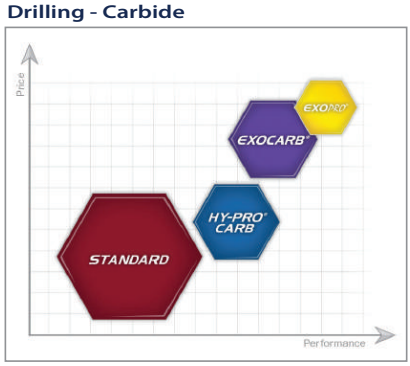
OSG Product Overview - The Total Solution

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

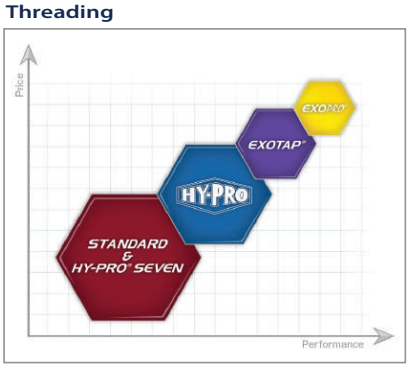
From the value products under our Standard and HSS-Co brands to the high performance products under the V-Series, EXOCARB® and EXOPRO® brands, OSG offers a broad range of tools to meet your application requirements.

When it comes to selecting the right drills, taps and end mills, look no further than OSG for all of your tooling needs.

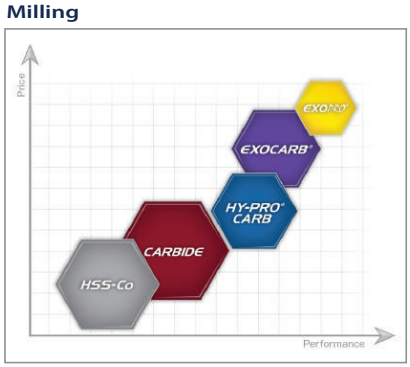
Drilling - Carbide



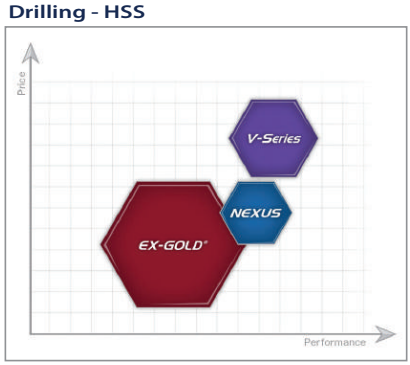
Threading



Milling



Drilling - HSS



	List	Product	Brand/Name	Features	Product Page
	OSG PHOENIX®				PXT PXI
INDEXABLE DRILLING	52400, 78310 78PXD, 7808H		OSG PHOENIX® PXD	Exchangeable Head Drill, 3D & 5D	992-998
	52502, 78031, 52503, 78032, 52504, 78033, 52505, 78027, 78P5D, 7808H		OSG PHOENIX® PD	Indexable Drill, 2D, 3D, 4D & 5D	999-1015
	78001, 78PHP, 7808H		OSG PHOENIX® PHP	High Performance Drill, 3D	1016-1018
INDEXABLE MILLING	52700, 78020, 78PAS, 7808H		OSG PHOENIX® PAS	45° Face Mill, Square Insert	1019-1021
	52800, 78120, 78PAO, 7808H		OSG PHOENIX® PAO	45° Face Mill, Octagon Insert	1022-1026
	78013, 78011, 78012, 78010, 52601, 78016, 78PSE, 7808H		OSG PHOENIX® PSE	90° Shoulder Cutter	1027-1037
	53000, 78029, 53001, 78028, 78PSE, 7808H		OSG PHOENIX® PSEL	90° Roughing Cutter	1038-1042

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OSG PHOENIX®

PXT PXI

List	Product	Brand/Name	Features	Product Page
INDEXABLE MILLING				
52900, 78030, 52901, 78130, 78PSF, 7808H		OSG PHOENIX® PSF	90° Shoulder Cutter, Square insert	1043-1046
53100, 78131, 78PSTW, 7808H		OSG PHOENIX® PSTW	90° Shoulder Face Mill, 2-Sided Triangle Insert	1047-1050
78005, 78003, 78004, 78002, 52602, 78017, 78PRC, 7808H		OSG PHOENIX® PRC	Radius Cutter	1051-1058
78009, 78007, 78008, 78006, 52603, 78015, 78PHC, 7808H		OSG PHOENIX® PHC	High Feed Radius Cutter	1059-1068
6420, 6450, 78PDR, 7808H		OSG PHOENIX® PDR	Deep Feed Radius Cutter	1069-1071
52100, 78014, 52604, 78114, 78PFB, 7808H		OSG PHOENIX® PFB	Finishing Ball End Mill	1072-1079
52200, 78320, 52605, 78220, 78PFR, 7808H		OSG PHOENIX® PFR	Finishing Radius End Mill	1080-1090
52600, 78019, 78025, 78125		OSG PHOENIX® SF	Screw Fit Cutter	1091-1094
52300, 78018, 78PXSE, 78PXVC, 78PXSM, 78PXNL, 78PXNH, 78PXRE, 78PXDR, 78PXBE, 78PXBM, 7808H		OSG PHOENIX® PXM	Exchangeable Head End Mill	1095-1111

EXOPRO®

EP

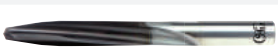
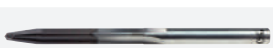
List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
DRILLS								
5600		EXOPRO® Mega Muscle®	Inch & Metric	Carbide	WD1	4mm-20mm	3D, Coolant-Through, 3 Flutes	48-51
5610		EXOPRO® Mega Muscle®	Inch & Metric	Carbide	WD1	4mm-20mm	5D, Coolant-Through, 3 Flutes	52-55
5950Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm-12.7mm	3D, Coolant-Through	56-57
5955Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm-12.7mm	5D, Coolant-Through	58-59
TAPS								
16050		EXOPRO® XPF-OIL	Inch	HSS-Co	V	¼ - 1 ¾"	Form Tap, Coolant-Through, DIN OAL	308-309
16150		EXOPRO® XPF-OIL	Metric	HSS-Co	V	M6 - M45	Form Tap, Coolant-Through, DIN OAL	310-312
16250		EXOPRO® XPF	Inch	HSS-Co	V	No. 0 - 1 ¾"	Form Tap, DIN OAL	313-316
16350		EXOPRO® XPF	Metric	HSS-Co	V	M1 - M45	Form Tap, DIN OAL	317-320

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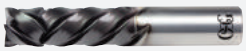
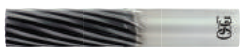
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EXOPRO® (Continued)

EP

	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
TAPS	16255		EXOPRO® XPF-LS	Inch	HSS-Co	V	No. 5 - 1"	Form Tap, Long Shank	321-322
	16355		EXOPRO® XPF-LS	Metric	HSS-Co	V	M3 - M20	Form Tap, Long Shank	323-324
	16260		EXOPRO® XPF	Inch	HSS-CO	V	No. 2 - 1"	Form Tap, STI, Forming Tap, DIN OAL	494-495
	16360		EXOPRO® XPF	Metric	HSS-CO	V	M2 - M24	Form Tap, STI, Forming Tap, DIN OAL	496
	13063		EXOPRO® Ti	Inch	VC-10	V	No. 2 - ½"	RHC/LHS	406
	13163		EXOPRO® Ti	Metric	VC-10	V	M2.5 - M12	RHC/LHS	407
	335Ni		EXOPRO®WHR-Ni	Inch	VC10	HR	No. 2 - 1"	DIN OAL	353-354
	336Ni		EXOPRO®WHR-Ni	Metric	VC10	HR	M2.5 - M24	DIN OAL	355
	337Ni		EXOPRO®WHR-Ni	Inch	VC-10	HR	No. 2 - 1"	DIN OAL	408
	338Ni		EXOPRO®WHR-Ni	Metric	VC-10	HR	M2.5 - M24	DIN OAL	409
	16450		EXOPRO®CC-SUS	Inch	HSSE	TiN	No. 2- 1"	Variable Helix, DIN OAL	350-351
	16455		EXOPRO®CC-SUS	Metric	HSSE	TiN	M2 - M24	Variable Helix, DIN OAL	352
END MILLS	2055		EXOPRO®UVX-Ni	Inch	Carbide	EXO	1/4 - 1"	UVX-Ni, Corner Radius	602
	9510		EXOPRO® PHX®	Metric	Carbide	EXO®	1mm - 12mm	Phoenix® Deep Feed, Ball End	603
	9590		EXOPRO® PHX®	Metric	Carbide	WXS®	0.6mm - 6mm	Phoenix® Long Neck, Ball End	604
	9581		EXOPRO® PHX®	Metric	Carbide	WXS®	1mm - 12mm	Phoenix® Pencil-Neck, Deep Feed, Ball End	605-607
	9592		EXOPRO® PHX®	Metric	Carbide	WXS®	0.8mm - 3mm	Phoenix® Pencil Neck, Deep Feed, Corner Radius	608
	9575		EXOPRO® PHX®	Metric	Carbide	WXS®	6mm - 20mm	Phoenix® Deep Feed, Corner Radius	609
	9576		EXOPRO® PHX®	Metric	Carbide	WXS®	4mm - 16mm	Phoenix® Long Neck, Deep Feed, Corner Radius	610
	9580		EXOPRO® PHX®	Metric	Carbide	WXS®	2mm - 20mm	Phoenix® Pencil Neck, Deep Feed, Corner Radius	611-613
	9570		EXOPRO® PHX®	Metric	Carbide	EXO®	1mm - 20mm	Phoenix® High-Feed, Corner Radius	614
COMPOSITE TOOLING	7501		EXOPRO® AERO-STAD	Inch	Carbide	Dia.	#40 - 1/2"	Triple Angle	1126
	7520		EXOPRO® AERO-LHX	Inch	Carbide	Dia.	#40 - 1/2"	Low Helix	1127
	7500		EXOPRO® AERO-D-REAM	Inch	Carbide	Dia.	#40 - 1/2"	Tapered Reamer	1128
	7530		EXOPRO® AERO-S	Inch	Carbide	Dia.	#40 - 1/2"	High Helix, Stack Drill	1129

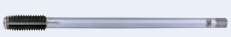
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List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
EXOPRO® (Continued)								EP
COMPOSITE TOOLING								
7534		EXOPRO® AERO-N	Inch	Carbide	Dia.	#11 - 3/8"	Stack Drill with Nick	1130
7532		EXOPRO® AERO-H	Inch	Carbide	Dia.	#40 - 1/2"	Stack Drill for All Stacks	1131
2061		EXOPRO® AERO-BNC	Inch	Carbide	Dia.	1/8 - 1/2"	Nick Router	1136
2066		EXOPRO® AERO-HBC	Inch	Carbide	Dia.	1/8 - 1/2"	Compression Router, 30˚ Helix	1137
2064		EXOPRO® AERO-HBC 45	Inch	Carbide	Dia.	1/4 - 1/2"	Compression Router, 45˚ Helix	1138
2068		EXOPRO® AERO-HBC 60	Inch	Carbide	Dia.	1/4 - 1/2"	Compression Router, 60˚ Helix	1139
2680		EXOPRO® AERO-REC	Inch	Carbide	Dia.	15/64 - 1/2"	Rougher Router	1140
2650		EXOPRO® AERO-MFR	Inch	Carbide	Dia.	1/4 - 1/2"	Finishing Router	1141
EXOCARB®								HTE
DRILLS								
5200		EXOCARB® WDO-SUS	Inch & Metric	Carbide	WXL®	2.8mm-20mm	3D, Coolant-Through	76-82
5210		EXOCARB® WDO-SUS	Inch & Metric	Carbide	WXL®	2.76mm-20mm	5D, Coolant-Through	83-89
5400		EXOCARB® WD	Inch & Metric	Carbide	WD1	2mm-20mm	2D, Solid	63-66
5410		EXOCARB® WD	Inch & Metric	Carbide	WD1	2mm-20mm	4D, Solid	67-70
5500		EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-20mm	3D, Coolant-Through	90-94
5510		EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-20mm	5D, Coolant-Through	95-99
5520		EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-15.88mm	8D, Coolant-Through	100-102
5530		EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-14.29mm	10D, Coolant-Through	103-105
5535		EXOCARB® WDO	Inch & Metric	Carbide	WD1	3mm-14.29mm	15D, Coolant-Through	106-107
5540		EXOCARB® WDO	Inch & Metric	Carbide	WD1	3mm-14.29mm	20D, Coolant-Through	108-109
5550		EXOCARB® WDO	Inch & Metric	Carbide	WD1	3mm-14.29mm	30D, Coolant-Through	110-111
5275		EXOCARB® MAX-OIL AL	Metric	Carbide	Bright	3mm-10mm	15-30D, Coolant-Through	112
5700		EXOCARB® ADF	Inch & Metric	Carbide	EgiAs	2mm-20mm	2D, Solid, Flat Drill	60-62
5171		EXOCARB® WH70	Metric	Carbide	WXS®	2mm-18.6mm	5D	71-73
5172		EXOCARB® XH	Metric	Carbide	Bright	2mm-12mm	Solid, Tap Extractor	74
5310		EXOCARB® MAX-MINI	Metric	Carbide	EXO®	1mm-3mm	10-20D, Solid, Miniature, 3 Flutes	113

continued on next page

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EXOCARB® (Continued)

	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
DRILLS	5315		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.05mm	Solid, Miniature, Pilot Drill	114
DRILLS	5320		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm-0.08mm	5D, Solid, Miniature	115
DRILLS	5325		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm-0.08mm	10D, Solid, Miniature	116
DRILLS	5330		EXOCARB® MAX-MINI	Metric	Carbide	TiAlN	0.2mm-5mm	3D, Solid, Miniature	117-125
DRILLS	5340		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.5mm-3mm	10D, Solid, Miniature	126-127
DRILLS	5180		EXOCARB® LDS	Metric	Carbide	EXO®	0.5mm-25mm	Solid, 90° Spot Drill	75
TAPS	41200		EXOCARB® Mini Threadmill	Inch	Carbide	WXS® SS	No. 0 - No. 8	Miniature, Helical Flute	300
TAPS	41300		EXOCARB® Mini Threadmill	Metric	Carbide	WXS® SS	M1 - M5	Miniature, Helical Flute	301
TAPS	41000		EXOCARB® Threadmill	Inch	Carbide	EXO®	No. 10 - 1"	Helical Flute	302-303
TAPS	41100		EXOCARB® Threadmill	Metric	Carbide	EXO®	M6 - M24	Helical Flute	304
TAPS	41050		EXOCARB® Oil Threadmill	Inch	Carbide	EXO®	¼ - 1"	Coolant-Through, Long Length, Helical Flute	305
TAPS	41150		EXOCARB® Oil Threadmill	Metric	Carbide	EXO®	M6 - M24	Coolant-Through, Long Length, Helical Flute	306
TAPS	42000		EXOCARB® Pipe Threadmill	Inch	Carbide	EXO®	1/16 - 2 ½"	NPT, Helical Flute	307
TAPS	42001		EXOCARB® Pipe Threadmill	Inch	Carbide	EXO®	1/16 - 2 ½"	NPTF, Helical Flute	307
TAPS	14153		EXOCARB®	Metric	Carbide	Bright	M6 - M10	Form Tap, Carbide Inlaid, DIN/DIN	347
TAPS	369		EXOCARB®	Metric	Carbide	Bright	M3 - M12	Form Tap, JIS	348
TAPS	357		EXOCARB®	Metric	Carbide	Bright	M6 - M12	Form Tap, JIS, Long Shank	349
TAPS	389		EXOCARB®	Metric	Carbide	Bright	M3 - M12	JIS	405
TAPS	311		EXOCARB®VX	Inch	Carbide	V	No. 4 - ½"	DIN OAL	484
TAPS	341		EXOCARB®VX	Metric	Carbide	V	M2.6 - M20	JIS	485
TAPS	329		EXOCARB® Diamond	Inch	Carbide	DIA	No. 4 - ½"	UNJC, UNJF, DIN OAL	486
TAPS	359		EXOCARB® Diamond	Metric	Carbide	DIA	M3 - M12	JIS	487
TAPS	379		EXOCARB®	Metric	Carbide	EXO®	M6 - M12	Synchronized, Coolant-Through, JIS	488
TAPS	319		EXOCARB®	Inch	Carbide	Bright	No. 4 - ½"	DIN OAL	489
TAPS	10059		EXOCARB®	Inch	Carbide	Bright	No. 10 - 3/8"		490

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EXOCARB® (Continued)

	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
TAPS	10061		EXOCARB®	Metric	Carbide	Bright	M3 - M10	DIN OAL	491
TAPS	349		EXOCARB®	Metric	Carbide	Bright	M1.4 - M24	JIS	492
TAPS	356		EXOCARB®	Metric	Carbide	Bright	M6 - M12	JIS, Long Shank	493
END MILLS	2050		EXOCARB® AERO UVX	Inch	Carbide	EXO®	1/8 - 1"	UVX , Square End, for Exotics	675
END MILLS	2052		EXOCARB® AERO UVX	Inch	Carbide	EXO®	1/8 - 1"	UVX , Corner Radius, for Exotics	676
END MILLS	3915		EXOCARB® AERO UVX Silent Rougher	Metric	Carbide	WXL®	6mm - 25mm	UVX SIlent Rougher, Low Helix	677
END MILLS	3920		EXOCARB® AERO UVX Silent Rougher	Metric	Carbide	WXL®	6mm - 25mm	UVX SIlent Rougher, High Helix	677
END MILLS	2015		EXOCARB® AERO Rougher	Inch	Carbide	TiAlN	1/4 - 1"	Rougher, for Exotics	678
END MILLS	2080		EXOCARB® AERO HFC-Ti	Inch	Carbide	Bright	5/8 - 1"	HFC-Ti, High Feed Radius Cutter for Titanium	679
END MILLS	2081		EXOCARB® AERO HFC-Ti	Metric	Carbide	Bright	16mm - 25mm	HFC-Ti, High Feed Radius Cutter for Titanium	679
END MILLS	2843		EXOCARB® AERO DLC	Inch	Carbide	DLC	5/8 - 1"	DLC-AERO	680
END MILLS	2943		EXOCARB® AERO DLC	Metric	Carbide	DLC	20mm - 25mm	DLC-AERO	680
END MILLS	2873		EXOCARB® AERO DLC	Inch	Carbide	DLC	5/8 - 1"	DLC-AERO-CR, Corner Radius	681
END MILLS	2973		EXOCARB® AERO DLC	Metric	Carbide	DLC	20mm - 25mm	DLC-AERO-CR, Corner Radius	682
END MILLS	2844		EXOCARB® AERO DLC	Inch	Carbide	DLC	5/8 - 1"	DLC-AERO-OIL, Coolant-Through	683
END MILLS	2944		EXOCARB® AERO DLC	Metric	Carbide	DLC	20mm - 25mm	DLC-AERO-OIL, Coolant-Through	683
END MILLS	2874		EXOCARB® AERO DLC	Inch	Carbide	DLC	3/4 - 1"	DLC-AERO-OIL-CR, Corner Radius	684
END MILLS	2974		EXOCARB® AERO DLC	Metric	Carbide	DLC	20mm - 25mm	DLC-AERO-OIL-CR, Corner Radius	685
END MILLS	3610		EXOCARB® WXL®	Inch	Carbide	WXL®	1/32 - 1/2"	Ball End	615
END MILLS	3710		EXOCARB® WXL®	Metric	Carbide	WXL®	0.1mm - 20mm	Ball End	616
END MILLS	3670		EXOCARB® WXL®	Inch	Carbide	WXL®	1/16 - 1/2"	Corner Radius	617

continued on next page

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EXOCARB® (Continued)

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
END MILLS								
3604		EXOCARB® WXL®	Inch	Carbide	WXL®	1/16 - 3/4"		618
3690		EXOCARB® WXL®	Inch	Carbide	WXL®	1/64 - 1/4"	Ball End, Long Neck, ±5µm Radius Tolerance	619
3790		EXOCARB® WXL®	Metric	Carbide	WXL®	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	620-622
3620		EXOCARB® WXL®	Inch	Carbide	WXL®	1/16 - 3/4"		623
3621		EXOCARB® WXL®	Inch	Carbide	WXL®	1/16 - 3/4"		623
3704		EXOCARB® WXL®	Metric	Carbide	WXL®	1mm - 12mm		624
3742		EXOCARB® WXL®	Metric	Carbide	WXL®	3mm - 26mm		625
3791		EXOCARB® WXL®	Metric	Carbide	WXL®	0.2mm - 5mm	Long Neck	626-627
3711		EXOCARB® WXL®	Metric	Carbide	WXL®	1mm - 18mm	Ball End, Long Shank	628
3720		EXOCARB® WXL®	Metric	Carbide	WXL®	0.1mm - 6mm		629
3721		EXOCARB® WXL®	Metric	Carbide	WXL®	0.1mm - 20mm		630
3712		EXOCARB® WXL®	Metric	Carbide	WXL®	0.2mm - 6mm	Pencil Neck, Ball End	631-636
3722		EXOCARB® WXL®	Metric	Carbide	WXL®	0.1mm - 20mm		637
3723		EXOCARB® WXL®	Metric	Carbide	WXL®	0.2mm - 12mm		638
3770		EXOCARB® WXL®	Metric	Carbide	WXL®	0.6mm - 12mm	Corner Radius	639
3771		EXOCARB® WXL®	Metric	Carbide	WXL®	3mm - 12mm	Corner Radius	640
3794		EXOCARB® WXL®	Metric	Carbide	WXL®	1mm - 3mm	Long Neck	641-642
4410		EXOCARB® WXS®	Inch	Carbide	WXS®	1/32 - 1/2"	Ball End	643
4510		EXOCARB® WXS®	Metric	Carbide	WXS®	1mm - 12mm	Ball End	644
4440		EXOCARB® WXS®	Inch	Carbide	WXS®	1/16 - 3/4"		645
4540		EXOCARB® WXS®	Metric	Carbide	WXS®	1mm - 12mm		646
4471		EXOCARB® WXS®	Inch	Carbide	WXS®	1/16 - 1/2"	Corner Radius	647
4571		EXOCARB® WXS®	Metric	Carbide	WXS®	3mm - 12mm	Corner Radius	648
4470		EXOCARB® WXS®	Inch	Carbide	WXS®	1/8 - 1/2"	Corner Radius, High Feed	649
4570		EXOCARB® WXS®	Metric	Carbide	WXS®	2mm - 13mm	Corner Radius, High Feed	649

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EXOCARB® (Continued)

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
END MILLS								
4592		EXOCARB® WXS®	Metric	Carbide	WXS®	0.4mm - 3mm	Corner Radius, Long Neck, ±5µm Radius Tolerance	650-652
4590		EXOCARB® WXS®	Metric	Carbide	WXS®	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	653-655
4430		EXOCARB® WXS®	Inch	Carbide	WXS®	1/4 - 1/2"	Ball End, True 4 Flute	656
4530		EXOCARB® WXS®	Metric	Carbide	WXS®	1/8 - 1/2"	Ball End, True 4 Flute	656
4445		EXOCARB® WXS®	Inch	Carbide	WXS®	6mm - 12mm	High Helix, Corner Radius	657
4513		EXOCARB® WXS®	Metric	Carbide	WXS®	1mm - 12mm	Ball End, Sphere Type	658
4581		EXOCARB® WXS®	Metric	Carbide	WXS®	1mm - 2.5mm	Ball End, Tapered	659
4541		EXOCARB® WXS®	Metric	Carbide	WXS®	3mm - 12mm	Corner Radius	660
9010		EXOCARB® MAX	Inch	Carbide	WXS®	1/32 - 1/2"	Ball End	661
9110		EXOCARB® WXS®	Metric	Carbide	WXS®	1mm - 10mm	Ball End	661
9011		EXOCARB® WXS®	Inch	Carbide	WXS®	1/32 - 3/8"	Ball End, Long Shank	662
9111		EXOCARB® WXS®	Metric	Carbide	WXS®	1mm - 10mm	Ball End, Long Shank	662
9140		EXOCARB® WXS®	Metric	Carbide	WXS®	3mm - 12mm	Square End	663
9144		EXOCARB® WXS®	Metric	Carbide	WXS®	6mm - 12mm	Corner Radius	663
9191		EXOCARB® WXS®	Metric	CBN	Bright	0.4mm - 3mm	CBN, Ball End	664
9192		EXOCARB® WXS®	Metric	CBN	Bright	0.4mm - 3mm	CBN, Super Long Neck, Ball Nose	664
9181		EXOCARB® WXS®	Metric	CBN	Bright	0.5mm - 3mm	CBN, Corner Radius	665
9182		EXOCARB® MAX	Metric	CBN	Bright	0.5mm - 3mm	Long Neck, CBN, Corner Radius	665
7020		EXOCARB® Diamond	Inch	Carbide	Dia.	1/64 - 1/2"		666
7120		EXOCARB® Diamond	Metric	Carbide	Dia.	1mm - 12mm		667
7040		EXOCARB® Diamond	Inch	Carbide	Dia.	1/16 - 1/2"		667
7041		EXOCARB® Diamond	Inch	Carbide	Dia.	1/8 - 1/2"		668
7042		EXOCARB® Diamond	Inch	Carbide	Dia.	1/16 - 1/2"	Long Shank	668
7072		EXOCARB® Diamond	Inch	Carbide	Dia.	1/8 - 1/2"	Long Shank, Corner Radius	669
7010		EXOCARB® Diamond	Inch	Carbide	Dia.	1/32 - 1/2"	Ball End	669

continued on next page

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Brand Index

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
EXOCARB® (Continued)								HTE
END MILLS	7110	EXOCARB® Diamond	Metric	Carbide	Dia.	1mm - 12mm	Ball End	670
	7030	EXOCARB® Diamond	Inch	Carbide	Dia.	1/32 - 1/2"	Ball End	670
	7031	EXOCARB® Diamond	Inch	Carbide	Dia.	3/16 - 1/2"	Ball End	671
	7032	EXOCARB® Diamond	Inch	Carbide	Dia.	1/16 - 1/2"	Ball End, Long Shank	671
	7173	EXOCARB® Diamond	Metric	Carbide	Dia.	0.5mm - 12mm	Ball End, Long Shank	672
	7132	EXOCARB® Diamond	Metric	Carbide	Dia.	3mm - 12mm	Long Shank, Corner Radius	673
	7140	EXOCARB® Diamond	Metric	Carbide	Dia.	1mm - 12mm		673
	7230	EXOCARB® Diamond	Inch	Carbide	Dia.	1/64 - 1/4"	High Precision, Ball End	674
	7231	EXOCARB® Diamond	Inch	Carbide	Dia.	1/64 - 1/4"	High Precision, Ball End, Long Reach	674
	8120	EXOCARB® AERO	Metric	Carbide	Bright	1mm - 16mm		695
	5732	EXOCARB® AERO-H	Inch	Carbide	TiAlN	#11 - 1/2"	Stack Drill for All Stacks	1132
BLIZZARD®								BLZ
END MILLS	2021	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/8 - 1"	Square & Corner Radius	686
	2022	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/8 - 1"	Square & Corner Radius	687
	2023	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/4 - 1"	Reduced Neck,Square & Corner Radius	688
	2024	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/4 - 1"	Reduced Neck, Square & Corner Radius	689
	2041	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/8 - 1"	Square & Corner Radius	690
	2042	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/8 - 1"	Square & Corner Radius	691
	2043	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/4 - 1"	Reduced Neck,Square & Corner Radius	692
	2048	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/4 - 1"	Reduced Neck, Square & Corner Radius	693
	2010	EXOCARB® AERO BLIZZARD®	Inch	Carbide	Bright	1/8 - 1"	Ball End	694
HY-PRO® CARB								HPC
DRILLS	HP243	HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	1mm-20mm	3D, Solid	128-131
	HP253	HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	3mm-20mm	3D, Coolant-Through	136-139
	HP245	HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	1mm-20mm	5D, Solid	132-135

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HY-PRO® CARB

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
DRILLS	HP255		HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	3mm-20mm	5D, Coolant-Through	140-143
DRILLS	HP258		HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	3mm-20mm	8D, Coolant-Through	144-147
END MILLS	VG441		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	1/8 - 1"	Square End	696
END MILLS	VG434		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	1/8 - 1"	Corner Radius	697
END MILLS	VG436		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	1/8 - 1"	Corner Chamfer	698
END MILLS	VG446		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	1/4 - 1"	Red. Neck, Corner Radius/ Long Corner Chamfer	699
END MILLS	VG464		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	1/4 - 1"	Extended Length, Square End/Corner Chamfer	700
END MILLS	VG441BN		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	1/8 - 1 1/4"	Ball Nose	701
END MILLS	VG541		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	1/8 - 1"	Square End	702
END MILLS	VG534		HY-PRO® CARB VGX	Inch	Carbide	TiAlN	3/16 - 1"	Corner Radius	703-704
END MILLS	HP421		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	3/64 - 1" 3mm-25mm		705-706
END MILLS	HP441		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	3/64 - 1" 3mm-25mm		705-706
END MILLS	HP460		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8 - 1" 3mm-25mm	High Helix	707
END MILLS	HP450		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8 - 1" 3mm-25mm		708
END MILLS	HP453		HY-PRO® CARB	Metric	Carbide	TiAlN	4mm - 20mm	Super Tough Mills	709
END MILLS	HP456		HY-PRO® CARB	Metric	Carbide	TiAlN	6mm - 12mm	Super Tough Mills, Corner Radius	709
END MILLS	HP451		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8 - 1" 4mm-20mm	Super Tough Mills	710
END MILLS	HP400		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/4 - 1" 3mm - 25mm	Rougher	711
END MILLS	HP410		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/32 - 3/16" 0.5mm-2.5mm	Short Length, Long Neck	712
END MILLS	HP410L		HY-PRO® CARB	Metric	Carbide	TiAlN	0.5mm - 2mm	Short Length, Long Neck	713
END MILLS	HP411		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8 - 1/4" 3mm - 6mm	Short Length, Long Neck	714
END MILLS	HP455		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8 - 1" 3mm - 25mm	Corner Protection	715
END MILLS	HP421BN		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	3/64 - 1" 1mm-20mm	Ball End	716-717
END MILLS	HP441BN		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	3/64 - 1" 1mm-20mm	Ball End	716-717
END MILLS	HP416		HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/32 - 1/2" 1mm-25mm	Ball End	718

continued on next page

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Brand Index

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
HY-PRO® CARB								HPC
END MILLS	HP418	HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	3/22 - 3/8" 1mm-12mm	Ball End, Pencil Neck	719
END MILLS	HP419	HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/32 - 3/16" 0.5mm-6mm	Ball End, Long Neck	720
END MILLS	HP419L	HY-PRO® CARB	Metric	Carbide	TiAlN	0.6mm - 3mm	Ball End, Long Neck	721
END MILLS	HP413	HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/32 - 3/16" 1mm-6mm	Ball End	722
END MILLS	HP432	HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8 - 1" 3mm-12mm	Corner Radius	723-724
END MILLS	HP434	HY-PRO® CARB	Inch/ Metric	Carbide	TiAlN	1/8 - 1" 3mm-12mm	Corner Radius	723-724
END MILLS	HP433	HY-PRO® CARB	Metric	Carbide	TiAlN	3mm - 12mm	Corner Radius	725
END MILLS	HP435	HY-PRO® CARB	Metric	Carbide	TiAlN	3mm - 12mm	Corner Radius	726
	HP700	HY-PRO CARB® NEPTUNE®	Inch	Carbide	TiAlN	#40 - 1/4"	Hand Drill	1133
CARBIDE								HYE
DRILLS	200	CARBIDE	Inch & Metric	Carbide	Bright	1.18mm-12.7mm	Jobbers, Solid, Straight Flute	159-161
DRILLS	215	CARBIDE	Inch & Metric	Carbide	Bright	1mm-12.7mm	Jobbers, Solid, Slow Spiral	150-154
DRILLS	220D	CARBIDE		Carbide	Bright	1.18mm - 12.7mm		155-157
DRILLS	233	CARBIDE	Inch & Metric	Carbide	Bright	3mm-19.05mm	Jobbers, Solid, 3 Flutes	158
DRILLS	101E	CARBIDE	Inch	Carbide	Bright	0.090"-0.360"	Solid, Single Flute, Steel Shank	169
DRILLS	750	CARBIDE	Inch	Carbide	Bright	1/16"-3/8"	Solid, Grinding/ Deburring	168
DRILLS	700	CARBIDE	Inch	Carbide	Bright	1/8"-1"	Solid, Countersink, Single Flute	170
DRILLS	701	CARBIDE	Inch	Carbide	Bright	1/8"-1"	Solid, Countersink, Multiple Flutes	171
DRILLS	706	CARBIDE	Inch	Carbide	Bright	1/8"-1"	Solid, Countersink, Multiple Flutes	172
DRILLS	235	CARBIDE	Inch	Carbide	Bright	3/64"-7/32"	Solid, Drill/Countersink	162
END MILLS	400	CARBIDE	Inch/ Metric	Carbide	Bright*	1/4 - 1" 6mm-25mm	Roughy Mills	727
END MILLS	415	CARBIDE	Inch	Carbide	Bright*	1/8 - 1"	Toughy Mills, Standard Cut	728
END MILLS	415C	CARBIDE	Inch	Carbide	Bright*	1/8 - 1"	Toughy Mills, Coarse Cut	728
END MILLS	402	CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32 - 1" 5mm-25mm	General Purpose	729-731

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CARBIDE (Continued)

HYE

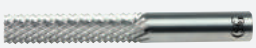
END MILLS

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
403		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32 - 1" 5mm-25mm	General Purpose	729-731
404		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32 - 1" 5mm-25mm	General Purpose	729-731
408		CARBIDE	Inch	Carbide	Bright*	1/8 - 1"	Slow Spiral	732
409		CARBIDE	Inch	Carbide	Bright*	1/16 - 1"	Slow Spiral	732
452		CARBIDE	Inch	Carbide	Bright*	1/16 - 1"	Plus Tolerance	733
454		CARBIDE	Inch	Carbide	Bright*	1/16 - 1"	Plus Tolerance	733
412		CARBIDE	Inch/ Metric	Carbide	Bright*	1/32 - 3/4" 1mm-12mm	Stub Length	734-735
414		CARBIDE	Inch/ Metric	Carbide	Bright*	1/32 - 3/4" 1mm-12mm	Stub Length	734-735
462		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Long Length	736-737
464		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Long Length	736-737
482		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Extra-Long Length	738-739
484		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Extra-Long Length	738-739
495		CARBIDE	Inch	Carbide	Bright*	1/8 - 1"	Corner Radius	740
496		CARBIDE	Inch	Carbide	Bright*	1/8 - 1"	Corner Radius	740
455C		CARBIDE	Inch	Carbide	Bright*	1/8 - 1"	Corner Protection	741
460C		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 6mm - 25mm	High Helix	742
445		CARBIDE	Inch/ Metric	Carbide	Bright*	1/16 - 1" 1mm-20mm		743
461		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm		744
447		CARBIDE	Inch	Carbide	Bright*	1/16 - 1"	RHC/LHS	745
492		CARBIDE	Inch	Carbide	Bright*	0.015 - 0.060"	Miniature	746
494		CARBIDE	Inch	Carbide	Bright*	0.015 - 0.060"	Miniature	746
402BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	747-749
403BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	747-749
404BN		CARBIDE	Inch/ Metric	Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	747-749
452BN		CARBIDE	Inch	Carbide	Bright*	1/16 - 1"	Ball End, Plus Tolerance	750

continued on next page

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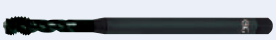
CARBIDE (Continued)

	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
END MILLS	412BN		CARBIDE	Inch/ Metric	Carbide	Bright*	1/32 - 3/4" 1mm - 12mm	Ball End, Stub Length	751-752
END MILLS	414BN		CARBIDE	Inch/ Metric	Carbide	Bright*	1/32 - 3/4" 1mm - 12mm	Ball End, Stub Length	751-752
END MILLS	462BN		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Ball End, Long Length	753
END MILLS	464BN		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Ball End, Long Length	753
END MILLS	482BN		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Ball End, Extra Long Length	754-755
END MILLS	484BN		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-25mm	Ball End, Extra Long Length	754-755
END MILLS	497		CARBIDE	Inch/ Metric	Carbide	Bright*	1/8 - 1" 3mm-20mm	Ball End, Long Shank	756
END MILLS	500		CARBIDE	Inch	Carbide	Bright	3/32 - 1/2"	2 Flute, Straight	761
END MILLS	502		CARBIDE	Inch	Carbide	Bright	3/32 - 1/2"	3 Flute, Straight	761
END MILLS	640		CARBIDE	Inch	Carbide	Bright	1/16 - 1/2"	Fiberglass Routers, Diamond Cut	762
END MILLS	442		CARBIDE	Inch	Carbide	Bright*	1/8 - 1/2"		757
END MILLS	444		CARBIDE	Inch	Carbide	Bright*	1/8 - 1/2"		757
END MILLS	422		CARBIDE	Inch	Carbide	Bright*	1/32 - 1/2"	Stub Length	758
END MILLS	423		CARBIDE	Inch	Carbide	Bright*	1/32 - 1/2"	Stub Length	758
END MILLS	424		CARBIDE	Inch	Carbide	Bright*	1/32 - 1/2"	Stub Length	758
END MILLS	442BN		CARBIDE	Inch	Carbide	Bright*	1/8 - 1/2"	Ball End	759
END MILLS	444BN		CARBIDE	Inch	Carbide	Bright*	1/8 - 1/2"	Ball End	759
END MILLS	422BN		CARBIDE	Inch	Carbide	Bright*	1/32 - 1/2"	Ball End, Stub Length	760
END MILLS	423BN		CARBIDE	Inch	Carbide	Bright*	1/32 - 1/2"	Ball End, Stub Length	760
END MILLS	424BN		CARBIDE	Inch	Carbide	Bright*	1/32 - 1/2"	Ball End, Stub Length	760
COMPOSITE	257		AERO-D-REAM	Inch	Carbide	Bright	#40 - 1/2"	Tapered Reamer	1134-1135
COMPOSITE	668		AERO-HBC 60	Inch	Carbide	Bright	1/4 - 1/2"	Compression Router, 60˚ Helix	1142
COMPOSITE	641R		AERO-HFR	Inch	Carbide	Bright	3/16 - 1/2"	Hand Router	1143

CARBIDE REAMER

	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
DRILL	300D		STANDARD CARBIDE	Inch & Metric	Carbide	Bright	0.80mm-13mm	Solid, Multiple Flutes, RH Cutting	163-167

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List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
HY-PRO® MULTI PURPOSE								HYM
DRILL 738		HY-PRO® CARB	Inch	Carbide	Bright	Multiple	Indexable, Spot Drill/ Countersink/Chamfer	148-149
EXOTAP®								EXT
TAPS 14050		EXOTAP® NRT®	Inch	VC-10	V	No. 0 - 3/8"	Form Tap	325-327
14150		EXOTAP® NRT®	Metric	VC-10	V	M1.6 - M12	Form Tap	328-329
313TI		EXOTAP® VC-10 TI	Inch	VC-10	V	No. 2 - 1"		356
315TI		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Fluted	497
345TI		EXOTAP® VC-10 TI	Metric	VC-10	V	M2.5 - M12		357
313NI		EXOTAP® VC-10 NI	Inch	VC-10	V, S/O	No. 2 - 1"		358-359
315NI		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Fluted	498
345NI		EXOTAP® VC-10 NI	Metric	VC-10	S/O	M2.5 - M12		360
313		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - ¾"		361-362
345		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12		363
16505		EXOTAP® A-TAP®	Inch	VC-10	V	No. 4 - 2"	Variable Helix, DIN OAL	364-366
16500		EXOTAP® A-TAP®	Metric	VC-10	V	M1.4 - M45	Variable Helix, DIN OAL	367-369
16545		EXOTAP® A-TAP®-OIL	Inch	VC-10	V	¼ - 2"	Variable Helix, Coolant-Through, DIN OAL	370
16540		EXOTAP® A-TAP®-OIL	Metric	VC-10	V	M6 - M56	Variable Helix, Coolant-Through, DIN OAL	371
16525		EXOTAP® A-TAP®-LS	Inch	VC-10	V	No. 6 - 1"	Variable Helix, Long Shank	372
16520		EXOTAP® A-TAP®-LS	Metric	VC-10	V	M3 - M24	Variable Helix, Long Shank	373-374
303		EXOTAP VA-3®	Inch	HSSE	V, TiN, S/O	No. 2 - 1"		375-377
343		EXOTAP VA-3®	Metric	HSSE	V, TiN, S/O	M3 - M18		378
398		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - 5/8"	Long Shank	379
312TI		EXOTAP® VC-10 TI	Inch	VC-10	V	No. 2 - 1"		410
314TI		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Pointed	507
344TI		EXOTAP® VC-10 TI	Metric	VC-10	V	M3 - M12		411

continued on next page

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EXOTAP® (Continued)

EXT

	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
TAPS	312NI		EXOTAP® VC-10 NI	Inch	VC-10	V, S/O	No. 2 - 1"		412
	314NI		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Pointed	508
	344NI		EXOTAP® VC-10 NI	Metric	VC-10	V, S/O	M2.5 - M12		413
	312		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - ¾"		414
	344		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12		415
	16515		EXOTAP®A-TAP®	Inch	VC-10	V	No. 2 - 1"	DIN OAL	416
	16510		EXOTAP®A-TAP®	Metric	VC-10	V	M1.4 - M24	DIN OAL	417
	16555		EXOTAP® A-TAP®-OIL	Inch	VC-10	V	¼ - 1"	Coolant-Through, DIN OAL	418
	16550		EXOTAP® A-TAP®-OIL	Metric	VC-10	V	M6 - M24	Coolant-Through, DIN OAL	419
	16535		EXOTAP® A-TAP®-LS	Inch	VC-10	V	No. 6 - 1"	Long Shank	420
	16530		EXOTAP® A-TAP®-LS	Metric	VC-10	V	M3 - M24	Long Shank	421
	300		EXOTAP VA-3®	Inch	HSSE	V, TiN, S/O	No. 2 - 1"		422
	342		EXOTAP VA-3®	Metric	HSSE	V, TiN, S/O	M3 - M18		423
	397		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - $^{5}/_{8}$"	Long Shank	424
	320		EXOTIN	Inch	HSSE	TiN	No. 4 - ¾"		425
	10051		EXOTAP® VCX	Inch	XPM	V	No. 6 - ½"		455
	11051		EXOTAP® VCX	Metric	XPM	V	M3 - M12		455
	305		EXOTAP-MOLD®	Inch	HSS-CO	Bright	No. 4 - ¾"	JIS	456
	10052		EXOTAP® DC	Inch	VC-10	V	¼ - 1"	DIN OAL	457
	11052		EXOTAP® DC	Metric	VC-10	V	M6 - M24	DIN OAL	458
	10053		EXOTAP® DC-OIL	Inch	VC-10	V	¼ - 1"	Coolant-Through, DIN OAL	459
	11053		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M24	Coolant-Through, DIN OAL	460
	11054		EXOTAP® DC	Metric	VC-10	V	M6 - M10	DIN Shank, DIN OAL	461
	11055		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M12	Coolant-Through, DIN Shank, DIN OAL	462
	10056		EXOTAP® DC	Inch	VC-10	V	¼ - ¾"		463

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List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
EXOTAP® (Continued)								EXT
TAPS								
11056		EXOTAP® DC	Metric	VC-10	V	M6 - M14		463
10057		EXOTAP® DC-OIL	Inch	VC-10	V	¼ - ½"	Coolant-Through	464
11057		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M14	Coolant-Through	464
315		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Fluted	499
345STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Fluted	500
302		EXOTAP® VA-3®	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Fluted	501-502
343STI		EXOTAP VA-3®	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Fluted	503
314		EXOTAP VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Pointed	509
344STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Pointed	510
301		EXOTAP VA-3®	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Pointed	511
342STI		EXOTAP VA-3®	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Pointed	512
308		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16 - 1"	NPT	518
318		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16 - 1"	NPTF	519
328		EXOTAP-MOLD®	Inch	HSS-CO	Bright	1/8 - ¾"	NPT, ANPT	521
15001		GENERAL	Inch	HSS	Bright	No. 2 - 1 ½"	GO/NOGO Set, Class 2B	531
15002		GENERAL	Metric	HSS	Bright	M3 - M24	GO/NOGO Set, Class 6H	532
EXOMINI/EXOMILL								EXM
END MILLS								
673		EXOMINI VC-10	Inch	VC-10	TiN	1/32 - 3/16"		763
676		EXOMINI VC-10	Inch	VC-10	TiN	1/16 - 3/16"	Center Hole (smaller than 1/8)	764
677		EXOMINI VC-10	Inch	VC-10	TiN	1/16 - 3/16"	Center Hole (smaller than 1/8)	764
690		EXOTIN Roughing	Inch	HSS-Co	TiN	1/4 - 2"	EXOTIN®, Center Hole	771
620		EXOMILL VC-10®	Inch	VC-10	Bright*	1/8 - 1 1/2"		765
621		EXOMILL VC-10®	Inch	VC-10	Bright*	1/8 - 1 1/2"	Ball End	765
641		EXOMILL VC-10®	Inch	VC-10	Bright*	1/8 - 2"		766
644		EXOMILL VC-10®	Inch	VC-10	Bright*	3/8 - 1 1/2"	Ball End	767

continued on next page

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Brand Index

	List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
EXOMINI/EXOMILL									EXM
END MILLS	646		EXOMILL VC-10®	Inch	VC-10	Bright*	1/4 - 2"		768
END MILLS	660		EXOMILL VC-10®	Inch	VC-10	Bright*	1/4 - 1"	Super High Helix	768
OIL-HOLE DRILL									OHD
	1700		V-HO GDR	Inch & Metric	HSS-CO	V	5.95mm-31.75mm	Jobbers, Coolant-Through	185-186
EX-GOLD®									EXD
DRILLS	1750		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-17.86mm	10D, Solid, Parabolic	187-189
DRILLS	1760		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-17.86mm	15D, Solid, Parabolic	190-191
DRILLS	1770		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-17.86mm	20D, Solid, Parabolic	192-193
DRILLS	1900		VPH GDS	Inch & Metric	XPM	V	0.5mm-20mm	Stub, Solid	173-179
DRILLS	1950		VPH GDR	Inch & Metric	XPM	V	1.99mm-17.46mm	Jobbers, Solid	180-181
DRILLS	2000		VP® GDR	Inch & Metric	XPM	V	2mm-32mm	Jobbers, Solid, Parabolic	182-184
DRILLS	1800		V-Select	Inch & Metric	HSSE	V	2mm-13mm	Jobbers, Solid	194-196
DRILLS	1000		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm-12.7mm	Stub, Solid	202-204
DRILLS	1500		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm-19.05mm	Jobbers, Solid	205-207
DRILLS	1100		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	0.5mm-32mm	Stub, Solid	208-225
DRILLS	1600		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	2mm-32mm	Jobbers, Solid	226-238
DRILLS	1150		NEXUS	Inch & Metric	HSSE	WD1	1mm-12.7mm	Stub, Solid	197-199
DRILLS	1650		NEXUS	Inch & Metric	HSSE	WD1	2mm-12.7mm	Jobbers, Solid	200-201
DRILLS	1200		EX-SPOT	Metric	HSS	TiN, TiAlN	3mm-12mm	Solid, 60°/90°/120° Spot Drill	239
DRILLS	1250		EX-SPOT	Metric	HSS	Bright	3mm-25mm	Solid, 90° Spot Drill, Long Shank	240
HY-PRO® TAP									HYT
TAPS	14001		HY-PRO® NRT®	Inch	HSS-CO	TiCN, TiN, Bright, S/O	No. 0 - ¾"	Form Tap	330-342
TAPS	14101		HY-PRO® NRT®	Metric	HSS-CO	TiCN, TiN, Bright, S/O	M1.6 - M12	Form Tap	343-345
TAPS	220		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - 2"	DIN OAL	380
TAPS	229		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	DIN OAL	381

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List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
HY-PRO® TAP (Continued)								HYT
230		HY-PRO® DIN	Inch	HSSE	TiN	¼ - 1"	Coolant-Through, DIN OAL	382
239		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Coolant-Through, DIN OAL	382
13013		HY-PRO® ALLOY	Inch	HSSE	V	¼ - ¾"	Coolant-Through, DIN OAL	383
13113		HY-PRO® ALLOY	Metric	HSSE	V	M6 - M20	Coolant-Through, DIN OAL	383
13058		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - ½"	Synchronized	392
13158		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Synchronized	392
295		HY-PRO® AL	Inch	HSSE	Bright	No. 4 - 3/8"		393
296		HY-PRO® AL	Metric	HSSE	Bright	M3 - M10		393
13039		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - ½"	STI, Spiral Fluted	504
13019		HY-PRO® AL-DIN	Inch	HSSE	N	No. 2 - 7/16"	DIN OAL	394
13119		HY-PRO® AL-DIN	Metric	HSSE	N	M3 - M10	DIN OAL	394
290		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 ½"		395-397
299		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30		398
250		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - ¾"	DIN OAL	426
259		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	DIN OAL	427
260		HY-PRO® DIN	Inch	HSSE	TiN	¼ - 1"	Coolant-Through, DIN OAL	428
269		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Coolant-Through, DIN OAL	429
11015		HY-PRO® AERO-F	Inch	HSS-Co	TiN	No. 4 - 1"	Ideal for For Aerospace Fasteners	430-432
11115		HY-PRO® AERO-F	Metric	HSS-Co	TiN	M3 - M14	Ideal for For Aerospace Fasteners	433-434
13059		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - ½"	Synchronized, LHS, For Through Holes	436
13159		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Synchronized, LHS, For Through Holes	436
11016		HY-PRO®AL-DIN	Inch	HSSE	N	No. 2 - ½"	DIN OAL	437
11116		HY-PRO®AL-DIN	Metric	HSSE	N	M3 - M12	DIN OAL	437
13036		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - ½"	STI, Spiral Pointed	513
11017		HY-PRO®V DIN	Inch	HSSE	V	No. 4 - ½"	DIN OAL	438

TAPS

continued on next page

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Brand Index

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
HY-PRO® TAP (Continued)								HYT
TAPS 11117		HY-PRO®V DIN	Metric	HSSE	V	M3 - M12	DIN OAL	438
TAPS 280		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 ½"		439-441
TAPS 289		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30		442
TAPS 240		HYPRO® DC	Inch	HSSE	N, Bright	No. 2 - ½"		465
TAPS 241		HYPRO® DC	Metric	HSSE	N	M3 - M12		466
TAPS 12053		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8 - 1"	NPT, Interrupted	520
TAPS 12054		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8 - 1"	NPTF, Interrupted	520
HY-PRO® LARGE								HYL
TAPS 13014		HY-PRO® HXL	Inch	HSSE	S/O	½ - 2 ½"	DIN OAL	384
TAPS 13024		HY-PRO® HXL-OIL	Inch	HSSE	S/O	½ - 2 ½"	Coolant-Through, DIN OAL	385
TAPS 13015		HY-PRO® VXL	Inch	HSSE	S/O	½ - 2 ½"	DIN OAL	386
TAPS 13025		HY-PRO® VXL-OIL	Inch	HSSE	S/O	½ - 2 ½"	Coolant-Through, DIN OAL	387
TAPS 13116		HY-PRO® HXL-W	Metric	HSSE	S/O	M16 - M42	DIN OAL	388
TAPS 13126		HY-PRO® HXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Coolant-Through, DIN OAL	389
TAPS 13117		HY-PRO® VXL-W	Metric	HSSE	S/O	M16 - M42	DIN OAL	390
TAPS 13127		HY-PRO® VXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Coolant-Through, DIN OAL	391
TAPS 13118		HY-PRO® RXL-W	Metric	HSSE	V	M16 - M42	DIN OAL & Extended OAL, For Through Holes, LHS	435
GENERAL PURPOSE END MILLS								STE
END MILLS 573		HY-PRO® V	Inch	HSSE	TiCN, Bright*	1/8 - 1"		769
END MILLS 574		HY-PRO® V	Inch	HSSE	TiCN, Bright*	1/8 - 1"		770
END MILLS 450		Roughing Cut	Inch	HSS-Co	Bright	3/16 - 2"	Fine Pitch, Center Hole	772
END MILLS 455		Roughing Cut	Inch	HSS-Co	TiCN, Bright*	1/4 - 2"	Roughing Cut, Fine Pitch	773
END MILLS 420		Roughing Cut	Inch	HSS-Co	Bright*	1/4 - 1 1/2"	Fine Pitch	774
END MILLS 460		Roughing Cut	Inch	HSS-Co	Bright*	1/2 - 1 1/2"	Fine Pitch	774
END MILLS 410		Roughing Cut	Inch	HSS-Co	Bright*	1/2 - 1"	Regular Pitch	775

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GENERAL PURPOSE END MILLS (Continued)

STE

END MILLS

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
430E		Roughing Cut	Inch	HSS-Co	Bright	3/8 - 1 1/2"		775
490		Roughing Cut	Inch	HSS-Co	Bright*	1/4 - 2"	Regular Pitch, General Purpose, Center Hole	776
440		Roughing Cut	Inch	HSS-Co	Bright*	1/2 - 2"	Regular Pitch, Ball End, General Purpose	777
470		Roughing Cut	Inch	HSS-Co	Bright*	1/4 - 2"	Rough & Finish	778
520		Single End	Inch	HSS-Co	TiN, Bright*	1/8 - 2"		779
580		Single End	Metric	HSS-Co	Bright*	3mm - 50mm		780
525		Single End	Inch	HSS-Co	Bright*	3/8 - 2"		781
527		Single End	Inch	HSS-Co	Bright*	1/8 - 1 1/4"	Reduced Neck	781
530		Single End	Inch	HSS-Co	Bright*	1/4 - 2"	High Helix	782
535		Single End	Inch	HSS-Co	Bright*	1/4 - 2"	High Helix	782
521		Single End	Inch	HSS-Co	Bright*	1/8 - 1 1/2"	Ball End	783
526		Single End	Inch	HSS-Co	Bright*	1/8 - 1"	Ball End, Reduced Neck	783
531		Single End	Inch	HSS-Co	Bright*	1/8 - 2"		784
581		Single End	Metric	HSS-Co	Bright*	3mm - 45mm	Center Hole	785
536		Single End	Inch	HSS-Co	Bright*	1/4 - 2"		786
541		Single End	Inch	HSS-Co	TiCN, TiN Bright*	1/8 - 2"		787
548		Single End	Inch	HSS-Co	TiCN, Bright*	5/8 - 1 1/2"		788
546		Single End	Inch	HSS-Co	TiCN, Bright*	1/4 - 2"		788
558		Single End	Inch	HSS-Co	TiCN, Bright*	1/4 - 2"		789
544		Single End	Inch	HSS-Co	Bright*	3/8 - 1 1/2"	Ball End	790
540		Single End	Inch	HSS-Co	TiN, Bright*	1/8 - 2"	Center Hole	791
547		Single End	Inch	HSS-Co	Bright*	1 - 2"	Center Hole	792
545		Single End	Inch	HSS-Co	Bright*	1/4 - 2"	Center Hole	792
557		Single End	Inch	HSS-Co	Bright*	1/4 - 2"	Center Hole	793
591		Single End	Inch	HSS-Co	Bright*	1/16 - 5/8"		794

continued on next page

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List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
GENERAL PURPOSE END MILLS (Continued)								STE
END MILLS								
593		Single End	Inch	HSS-Co	Bright*	1/16 - 5/8"		794
594		Single End	Inch	HSS-Co	Bright*	3/32 - 1/2"		795
595		Single End	Inch	HSS-Co	Bright*	3/32 - 1/2"		796
596		Single End	Inch	HSS-Co	Bright*	5/64 - 1/2"		797
597		Single End	Inch	HSS-Co	Bright*	3/32 - 1/4"		797
522		Double End	Inch	HSS-Co	TiN, Bright*	1/8 - 1"		798
582		Double End	Metric	HSS-Co	Bright*	1mm - 25mm		799
532		Double End	Inch	HSS-Co	Bright*	1/8 - 1"		800
542		Double End	Inch	HSS-Co	TiN, Bright*	1/8 - 1"	Center Hole	801
543		Double End	Inch	HSS-Co	Bright*	1/8 - 1"		802
523		Double End	Inch	HSS-Co	Bright*	1/8 - 1"	Ball End	802
562		Double End	Inch	HSS-Co	Bright*	1/32 - 3/16"		803
563		Double End	Inch	HSS-Co	Bright*	1/32 - 3/16"		803
564		Double End	Inch	HSS-Co	Bright*	1/16 - 3/16"		804
566		Double End	Inch	HSS-Co	Bright*	1/16 - 3/16"		804
567		Double End	Inch	HSS-Co	Bright*	1/16 - 3/16"		805
568		Double End	Inch	HSS-Co	Bright*	1/16 - 3/16"		805
570		Double End	Inch	HSS-Co	Bright*	1/16 - 3/16"	Ball End	806
571		Double End	Inch	HSS-Co	Bright*	1/16 - 3/16"	Ball End	807
HY-PRO® SEVEN								HY7
TAPS								
285		HY-PRO® SEVEN	Inch	HSS	TiCN, TiN, Bright	No. 0 - ½"	Form Tap	346
286		HY-PRO® SEVEN	Metric	HSS	TiCN, TiN, Bright	M3 - M12	Form Tap	346
287		HY-PRO® SEVEN	Inch/ Metric	HSS	TiN, S/O, Bright	No. 0 - ½"		443
288		HY-PRO® SEVEN	Inch/ Metric	HSS	TiN, S/O, Bright	M3 - M12		443
297		HY-PRO® SEVEN	Inch	HSS	TiN, S/O, Bright	No. 3 - ½"		399
298		HY-PRO® SEVEN	Metric	HSS	TiN, S/O, Bright	M3 - M12		399

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GENERAL PURPOSE TAP

STT

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
TAPS	107		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 3 - ¾"		400
	143		GENERAL PURPOSE	Metric	HSS	TiCN, TiN, S/O, Bright	M3 - M12		401
	13020		GENERAL PURPOSE	Inch	HSSE	S/O	No. 6 - 5/8"		402
	123		GENERAL PURPOSE	Metric	HSSE	Bright	M3 - M24	JIS	403
	918		GENERAL PURPOSE	Inch	HSS	Bright	No. 4 - 5/8"	Long Shank	404
	105		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - ¾"		444-446
	105B		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 0 - 7/16"		447
	105A		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - ½"	Assembly Type Taps	448
	105+		GENERAL PURPOSE	Inch	HSS	TiN, Bright	No. 4 - No. 10	H7 Taps	448
	105H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	No. 6 - ¾"	+.005" Oversize	449
	142H		GENERAL PURPOSE	Metric	HSS	Bright	M4 - M12	+.005" Oversize	449
	142		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M1.6 - M20		450
	122		GENERAL PURPOSE	Metric	HSSE	S/O, Bright	M3 - M24	JIS	451
	917		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - 5/8"	Long Shank	452
	11118		GENERAL PURPOSE	Metric	HSS	S/O	M4 - M12	Extended Length	453
	S111		GENERAL PURPOSE	Inch	HSS	Bright	No. 00	Miniature	454
	101C		GENERAL PURPOSE	Inch	HSS	N, S/O	¼ - ¾"		467
	141C		GENERAL PURPOSE	Metric	HSS	N, S/O	M6 - M12		467
	101		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	¼ - 1 ½"		468-469
	101H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	¼ - ¾"	+.005" Oversize	470
	102		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - No. 12		471-472
	102H		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 6 - No. 10	+.005" Oversize	473
	103		GENERAL PURPOSE	Inch	HSS	TiN, S/O, Bright	No. 8 - ½"	Three Flute	474

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GENERAL PURPOSE TAP (Continued)

STT

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
TAPS	104		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 2 - 5/16"	Two Flute	475
	101N		GENERAL PURPOSE	Inch	HSS	Bright	No. 12 - 1"	UNEF	476
	141		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M1.6 - M36		477
	121		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M2 - M36	JIS	478
	916		GENERAL PURPOSE	Inch	HSS	S/O	¼ - ¾"	Pulley Taps, Long Shank	479
	S110		GENERAL PURPOSE	Inch	HSS	Bright	No. 00 - No. 000	Miniature	480
	114		GENERAL PURPOSE	Inch	HSS-CO	N	No. 2 - ¼"	For Plastic	481
	180		GENERAL PURPOSE	Inch	HSS	Bright	1 1/8 - 2 ¼"	8 Pitch	482
	101L		GENERAL PURPOSE	Inch	HSS	Bright	No. 6 - 1"	Left Hand	483
	S108		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Fluted	505
	S109		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Fluted	506
	125		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Pointed	514
	127		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Pointed	515
	126		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Straight Fluted	516
	128		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Straight Fluted	517
	108		TAPER PIPE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16 - 2"	NPT, ANPT	522
	108AL		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - 1"	NPT	522
	118		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16 - 2"	NPTF	523
	108G		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8 - 2"	NPT, NPTF, ANPT, Interrupted Thread	524
	S125		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8 - 1"	NPT, NPTF, Short Projection	524
	12006		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - ¾"	NPTF, Special Short Projection	525
	12007		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - ¾"	NPT	525

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GENERAL PURPOSE TAP (Continued)

List	Product	Brand/Name	Inch/ Metric	Material	Coating	Size Range	Features	Product Page
TAPS 109		GENERAL PURPOSE	Inch	HSS	S/O, Bright	1/8 - 1"	NPS, NPSF	526
TAPS 134		GENERAL	Inch	HSS	Bright	No. 0 - 1 ½"	Solid & Adjustable Round Split Dies	527-528
TAPS 134P		GENERAL	Inch	HSS	Bright	1/8 - ½"	Adjustable Round Split Dies, Taper Pipe	529
TAPS 135		GENERAL	Metric	HSS	Bright	M2 - M30	Adjustable Round Split Dies	530

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DRILLING

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.

EXOCARB®
High performance sub-micrograin carbide drills with OSG's proprietary EXO® EgiAs coatings.

EXOCARB® WDO®
The latest development in coolant-through carbide drills, featuring OSG's proprietary WD1 coating.

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

HY-PRO® CARB
Premium micrograin carbide drills with OSG TiAlN coating. Perfect blend of performance and cost-efficiency.

CARBIDE
Micrograin carbide drills and reamers.

V Products
Premium powdered metal and cobalt high speed steel drills with OSG's proprietary V or WD1 coating.

NEXUS
Premium high speed steel drills with OSG's proprietary WD1 coating.

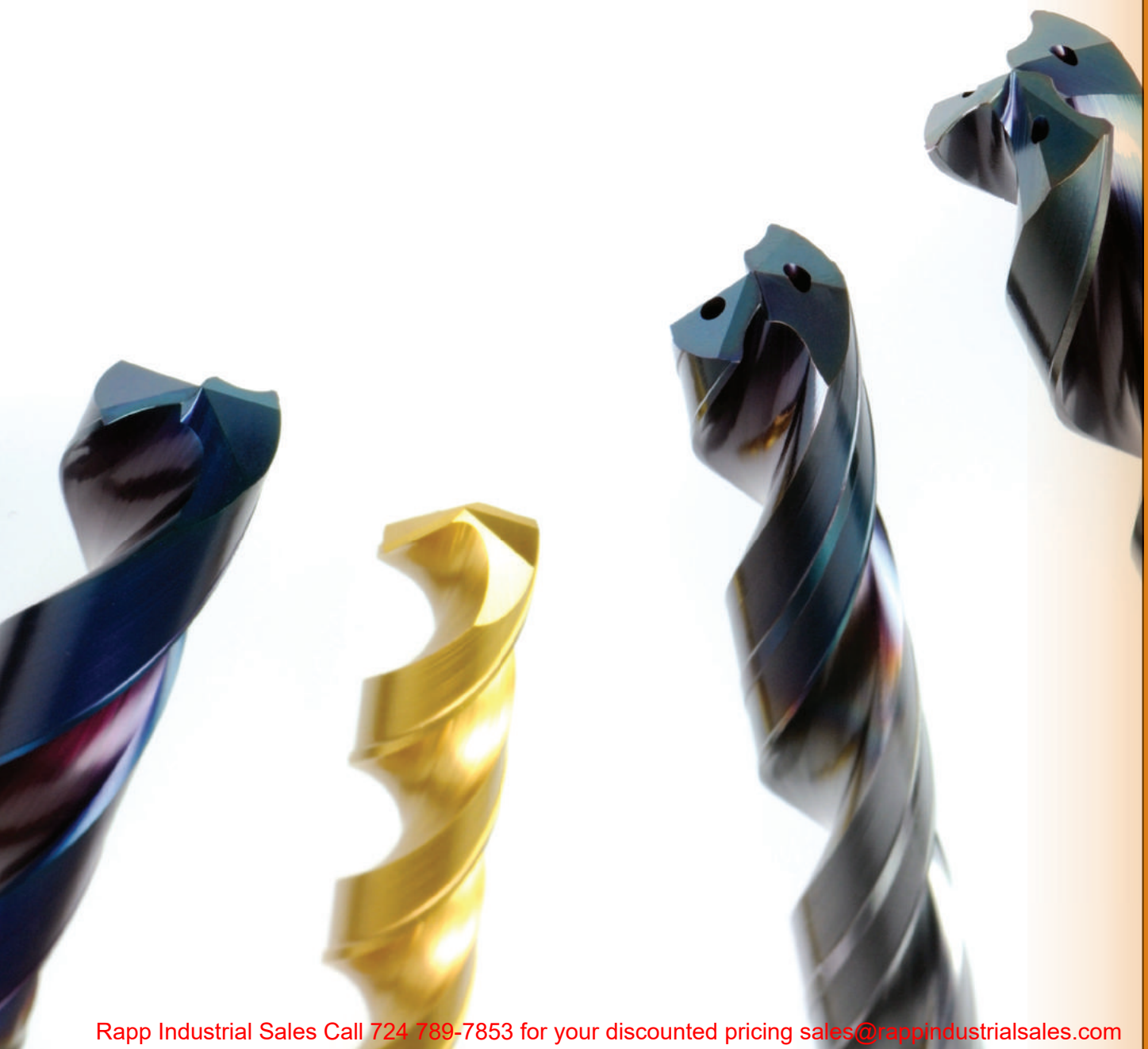
EX-GOLD®
Premium high speed steel drills with TiN coating.





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DRILLING



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Featured Drilling Products

	EXOPRO® Mega Muscle®		EXOPRO® WHO-Ni		EXOCARB® WDO-SUS		EXOCARB® WH-70	EXOCARB® MAX-OIL Al
	List 5600	List 5610	List 5950Ni	List 5955Ni	List 5200	List 5210	List 5171	List 5275
	P48-51	P52-55	P56-57	P58-59	P76-82	P83-89	P71-73	P112
								
Flute Length	3D	5D	3D	5D	3D	5D	Regular	15-30D
Inch	11/64″ - 3/4″		1/8″ - 1/2″		1/8″ - 3/4″	1/8″ - 3/4″	–	–
Metric	4mm - 20mm		3mm - 12.7mm		2.8mm - 20mm	2.76mm - 20mm	2mm - 18.6mm	3mm - 10mm
Number of Flutes	3		2		2		2	2
Solid/Coolant-Through	Coolant-Through		Coolant-Through		Coolant-Through		Solid	Coolant-Through
Point Angle	140°		140°		140°		120°	130°
Coating	WD1		WXS		WXL		WXS	Bright

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)			✖			✖	

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EXOCARB® WDO							EXOCARB® MAX-MINI		
List 5500	List 5510	List 5520	List 5530	List 5535	List 5540	List 5550	List 5310	List 5330	List 5340
P90-94	P95-99	P100-102	P103-105	P106-107	P108-109	P110-111	P113	P117-125	P126-127
									
3D	5D	8D	10D	15D	20D	30D	20D	Regular	Jobber
3/32"-3/4"		3/32"-5/8"	3/32"-9/16"	1/8" - 9/16"			–	–	–
2mm - 20mm		2mm - 15.88mm	2mm - 14.29mm	3mm - 14.29mm			1mm - 3mm	0.20mm - 5mm	0.50mm - 3mm
2							3	2	2
Coolant-Through							Solid	Solid	Solid
140°							140°, 120°	140°, 130°	120°
WD1							EXO	TiALN	TiALN

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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

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	Page Number				
	Work Material	Material Designation	Material Condition	Hardness	
				BHN	HRC
P	Low Carbon Steel	1010, 1018	Normalized	~190	~10
P	Medium Carbon Steel	1035, 1045	Normalized	~208	~15
P	High Carbon Steel	1065, 1095	Normalized	~253	~25
P	Alloy Steel	4140, 4340, 8620	Normalized	253~301	25~32
P		4140, 4340, 8620	Hardened	327~390	35~42
M	Stainless Steel	300 Series / 400 Series	Annealed	~253	~25
M		300 Series / 400 Series	Hardened	327~390	35~42
M		17-4, 15-5, A286	Annealed	~253	~25
M		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	
N	Die Cast Aluminum	356AL, 390AL	As Cast	~150	
S	Nickel Based Alloy	Inconel 718, 625	Annealed	253~301	25~32
S		Inconel 718	Hardened	327~390	35~42
S		Hastelloy, Waspaloy	Normalized		25~40
S		Kovar	Normalized		25~40
S	Titanium Alloy	6Al4V	Annealed	253~301	25~32
S		6Al4V, 6AL6V	Hardened	327~390	35~42
H	Tool Steel	D2, H13, P20, S7	Annealed	190~253	10~25
H		H13	Hardened	327~450	35~48
H		D2, A2	Hardened		48~55
H		D2, A2	Hardened		55~70
Other	Magnesium			~100	
Other	Brass, Bronze			~150	
Other	Copper			~150	
Other	Beryllium Copper			~253	~25
Other	Cobalt-Chrome	Stellite			



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Carbide												Powdered Metal			HSS-Va & HSS-Co					
48-55	56-59	60-62	63-70	71-73	76-89	90-102	103-111	112	113-127	136-147	128-135	173-179	180-181	182-184	185-186	187-193	194-196	197-201	202-207	208-238
EXOPRO® Mega Muscle *Coolant-Through*	EXOPRO® WHO-Ni *Coolant-Through*	EXOCARB® ADF	EXOCARB® WD	EXOCARB® WH70	EXOCARB® WDO-SUS *Coolant-Through*	EXOCARB® WDO 3D-8D *Coolant-Through*	EXOCARB® WDO 10D-30D *Coolant-Through*	EXOCARB® MAX-OIL AL *Coolant-Through*	EXOCARB® MAX-MINI*	HY-PRO® CARB *Coolant-Through*	HY-PRO® CARB	VPH GDS	VPH GDR	VP® GDR	V-HO GDR *Coolant-Through*	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

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
≤2D									
5700	 NEW!	EXOCARB® ADF	Inch & Metric	Carbide	EgiAs	2mm-20mm	2D, Solid, Flat Drill	60-62	244
5400		EXOCARB® WD	Inch & Metric	Carbide	WD1	2mm-20mm	2D, Solid	63-66	245
5172		EXOCARB® XH	Metric	Carbide	Bright	2mm-12mm	Solid, Tap Extractor	74	246
≤3D									
5600	 NEW SIZES	EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	4mm-20mm	3D, Coolant-Through, 3 Flutes	48-51	242
5950Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm-12.7mm	3D, Coolant-Through	56-57	243
5200	 NEW!	EXOCARB® WDO-SUS	Inch & Metric	Carbide	WXL®	2.8mm-20mm	3D, Coolant-Through	76-82	248
5500	 NEW SIZES	EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-20mm	3D, Coolant-Through	90-94	249
5330	 NEW SIZES	EXOCARB® MAX-MINI	Metric	Carbide	TiAlN	0.2mm-5mm	3D, Solid, Miniature	117-125	254
HP243		HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	1mm-20mm	3D, Solid	128-131	256
HP253		HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	3mm-20mm	3D, Coolant-Through	136-139	257
1900		VPH GDS	Inch & Metric	XPM	V	0.5mm-20mm	Stub, Solid	173-179	262-263
1150		NEXUS	Inch & Metric	HSSE	WD1	1mm-12.7mm	Stub, Solid	197-199	268-269
1000		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm-12.7mm	Stub, Solid	202-204	270
1100		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	0.5mm-32mm	Stub, Solid	208-225	271
≤4D									
5410		EXOCARB® WD	Inch & Metric	Carbide	WD1	2mm-20mm	4D, Solid	67-70	245
≤5D									
5610	 NEW SIZES	EXOPRO® Mega Muscle	Inch & Metric	Carbide	WD1	4mm-20mm	5D, Coolant-Through, 3 Flutes	52-55	242
5955Ni		EXOPRO® WHO-Ni	Inch & Metric	Carbide	WXS®	3mm-12.7mm	5D, Coolant-Through	58-59	243
5171		EXOCARB® WH70	Metric	Carbide	WXS®	2mm-18.6mm	5D	71-73	246
5210	 NEW!	EXOCARB® WDO-SUS	Inch & Metric	Carbide	WXL®	2.76mm-20mm	5D, Coolant-Through	83-89	248
5510	 NEW SIZES	EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-20mm	5D, Coolant-Through	95-99	249

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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														
	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
≤2D																	
5700	◎	◎	◎	◎	◎	◎	◎	○	◎	○	○			◎	◎	○	
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5172																	◎
≤3D																	
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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
≤5D									
5320		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm-0.08mm	5D, Solid, Miniature	115	253
HP245		HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	1mm-20mm	5D, Solid	132-135	256
HP255		HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	3mm-20mm	5D, Coolant-Through	140-143	257
215		CARBIDE	Inch & Metric	Carbide	Bright	1mm-12.7mm	Jobbers, Solid, Slow Spiral	150-154	259-260
220D		CARBIDE	Inch & Metric	Carbide	Bright	1.18mm-12.7mm	Jobbers, Solid	155-157	259-260
233		CARBIDE	Inch & Metric	Carbide	Bright	3mm-19.05mm	Jobbers, Solid, 3 Flutes	158	-
200		CARBIDE	Inch & Metric	Carbide	Bright	1.18mm-12.7mm	Jobbers, Solid, Straight Flute	159-161	259-260
1950		VPH GDR	Inch & Metric	XPM	V	1.99mm-17.46mm	Jobbers, Solid	180-181	262-263
2000		VP® GDR	Inch & Metric	XPM	V	2mm-32mm	Jobbers, Solid, Parabolic	182-184	264
1700		V-HO GDR	Inch & Metric	HSS-CO	V	5.95mm-31.75mm	Jobbers, Coolant-Through	185-186	265
1800		V-Select	Inch & Metric	HSSE	V	2mm-13mm	Jobbers, Solid	194-196	267
1650		NEXUS	Inch & Metric	HSSE	WD1	2mm-12.7mm	Jobbers, Solid	200-201	268-269
1500		EX-GOLD®	Inch & Metric	HSS-CO	TiN	1.99mm-19.05mm	Jobbers, Solid	205-207	270
1600		EX-SUS-GOLD	Inch & Metric	HSSE	TiN, TiAlN	2mm-32mm	Jobbers, Solid	226-238	271
≤8D									
5520	 NEW SIZES	EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-15.88mm	8D, Coolant-Through	100-102	249
HP258		HY-PRO® CARB	Inch & Metric	Carbide	TiAlN	3mm-20mm	8D, Coolant-Through	144-147	257
>10D									
5530		EXOCARB® WDO	Inch & Metric	Carbide	WD1	2mm-14.29mm	10D, Coolant-Through	103-105	250
5535	 NEW!	EXOCARB® WDO	Inch & Metric	Carbide	WD1	3mm-14.29mm	15D, Coolant-Through	106-107	250
5540	 NEW SIZES	EXOCARB® WDO	Inch & Metric	Carbide	WD1	3mm-14.29mm	20D, Coolant-Through	108-109	250
5550	 NEW SIZES	EXOCARB® WDO	Inch & Metric	Carbide	WD1	3mm-14.29mm	30D, Coolant-Through	110-111	250
5275		EXOCARB® MAX-OIL AL	Metric	Carbide	Bright	3mm-10mm	15-30D, Coolant-Through	112	251

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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														
	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
≤5D																	
5320						◎	◎	◎		○	○	◎	○	○	○	◎	
HP245	◎	◎	◎	◎	◎				◎		○			◎	○		
HP255	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		
215	○	○	○	○	○		○	○	○		○	○	○	○	○		
220D	○	○	○	○			○	○	○	○	○			○			
233	○								○								
200	○								○								
1950	○	◎	◎	◎	◎		○	○	◎	○	○	◎	○	◎	◎	○	
2000	○	○	◎	◎	◎				◎	○	○	○		◎	○		
1700	◎	◎	◎	◎	○	◎	◎	○	○	○	○		○	○	○		
1800	○	○	○	○	○			○	○	○	○						
1650	◎	◎	○	◎	◎	○	○	○	○	◎	◎	○	○	○			
1500	◎	◎	○	◎	◎			○	○		○			○			
1600	◎	○				◎	◎	○		◎	◎						
≤8D																	
5520	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎	◎	
HP258	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		
>10D																	
5530	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○	○	
5535	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○		
5540	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○		
5550	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○		
5275										◎	◎						

○ good ◎ best

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page	Tech Page
>10D									
5310		EXOCARB® MAX-MINI	Metric	Carbide	EXO®	1mm-3mm	10-20D, Solid, Miniature, 3 Flutes	113	252
5325		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.02mm-0.08mm	10D, Solid, Miniature	116	253
5340		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.5mm-3mm	10D, Solid, Miniature	126-127	255
1750		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-17.86mm	10D, Solid, Parabolic	187-189	266
1760		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-17.86mm	15D, Solid, Parabolic	190-191	266
1770		HELIOS®	Inch & Metric	HSS-CO	WXL®	1.6mm-14.29mm	20D, Solid, Parabolic	192-193	266
Centering/Countersinking									
5180		EXOCARB® LDS	Metric	Carbide	EXO®	0.5mm-25mm	Solid, 90° Spot Drill	75	247
5315		EXOCARB® MAX-MINI	Metric	Carbide	SS	0.05mm	Solid, Miniature, Pilot Drill	114	253
738		HY-PRO® CARB	Inch		Bright		Indexable, Spot Drill/ Countersink/Chamfer	148-149	258
235		CARBIDE	Inch	Carbide	Bright	3/64"-7/32"	Solid, Drill/Countersink	162	-
700		CARBIDE	Inch	Carbide	Bright	1/4"-1"	Solid, Countersink, Single Flute	170	-
701		CARBIDE	Inch	Carbide	Bright	1/4"-1"	Solid, Countersink, Multiple Flutes	171	-
706		CARBIDE	Inch	Carbide	Bright	1/8"-1"	Solid, Countersink, Multiple Flutes	172	-
1200		EX-SPOT	Metric	HSS	Bright, TiN	3mm-25mm	Solid, 60°/90°/120° Spot Drill	239	272
1250		EX-SPOT	Metric	HSS	Bright	3mm-25mm	Solid, 90° Spot Drill, Long Shank	240	272
Chucking Reamer									
300D		CARBIDE	Inch & Metric	Carbide	Bright	0.80mm-13mm	Solid, Multiple Flutes, RH Cutting	163-167	261
Boring Tools									
750		CARBIDE	Inch	Carbide	Bright	1/16"-3/8"	Solid, Grinding/ Deburring	168	-
101E		CARBIDE	Inch	Carbide	Bright	0.090"-0.300"	Solid, Single Flute, Steel Shank	169	-

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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														
	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
>10D																	
5310														▢	▢	◎	◎
5325						◎	◎	◎		▢	▢	◎	▢	▢	▢	◎	
5340	▢	▢	▢	▢	▢	◎	◎	◎		◎	◎		▢				
1750	◎	◎	◎	◎	◎	▢	▢	▢	◎	▢	▢		▢	◎	▢		
1760	◎	◎	◎	◎	◎	▢	▢	▢	◎	▢	▢		▢	◎	▢		
1770	◎	◎	◎	◎	◎	▢	▢	▢	◎	▢	▢		▢	◎	▢		
Centering/Countersinking																	
5180	◎	◎	◎	◎	◎				◎		▢	▢	▢	◎	◎	◎	
5315						◎	◎	◎		▢	▢	◎	▢	▢	▢	◎	
738	◎	◎	▢	▢	▢		▢	▢	◎	◎	◎			▢	▢		
235	▢	▢	▢	▢		▢	▢	▢	▢	▢	▢	▢	▢	▢			
700	▢	▢		▢					▢	▢	▢						
701			▢	▢					▢					▢	▢	▢	
706	▢	▢		▢						▢	▢						
1200	◎	◎	◎	▢	▢	▢	▢	▢		▢	▢			▢			
1250	◎	◎	◎	▢	▢				▢	▢	▢						
Chucking Reamer																	
300D	▢	▢		▢		▢	▢	▢	▢	▢	▢						
Boring Tools																	
750			▢	▢											▢	▢	
101E			▢	▢										▢	▢	▢	

▢ good ◎ best

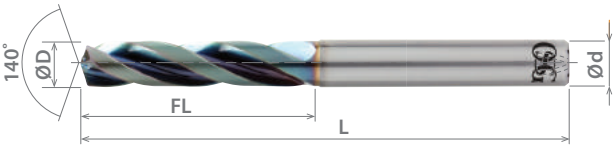
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List 5600 NEW SIZES

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

TRS-HO-3D, 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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
560015711	–	–	–	4.00	0.1575	24	74	4
560015911	–	–	–	4.05	0.1594	25	80	5
560016011	–	20	–	4.09	0.1610	25	80	5
560016111	–	–	–	4.10	0.1614	25	80	5
560016311	–	–	–	4.16	0.1638	25	80	5
560016511	–	–	–	4.20	0.1654	26	80	5
560016811	–	–	–	4.27	0.1681	26	80	5
560016911	–	–	–	4.30	0.1693	26	80	5
560017211	11/64	–	–	4.37	0.1720	27	80	3/16
560017311	–	–	–	4.40	0.1732	27	80	5
560017511	–	–	–	4.46	0.1756	27	80	5
560017711	–	–	–	4.50	0.1772	27	80	5
560018111	–	–	–	4.60	0.1811	28	80	5
560018311	–	–	–	4.66	0.1835	28	80	5
560018511	–	13	–	4.70	0.1850	29	80	5
560018711	3/16	–	–	4.76	0.1874	29	80	3/16
560018911	–	12	–	4.80	0.1890	29	80	5
560019211	–	–	–	4.90	0.1929	30	80	5
8660500	–	–	–	5.00	0.1969	25	80	5
8660510	–	–	–	5.10	0.2008	26	82	6
560020311	13/64	–	–	5.16	0.2031	26	82	15/64
8660520	–	–	–	5.20	0.2047	26	82	6
8660530	–	–	–	5.30	0.2087	27	82	6
8660540	–	–	–	5.40	0.2126	27	82	6
560021311	–	3	–	5.41	0.2130	28	82	1/4
8660550	–	–	–	5.50	0.2165	28	82	6
560021911	7/32	–	–	5.56	0.2189	28	82	15/64
8660560	–	–	–	5.60	0.2205	28	82	6
8660570	–	–	–	5.70	0.2244	29	82	6
8660580	–	–	–	5.80	0.2283	29	82	6
8660590	–	–	–	5.90	0.2323	30	80	6
560023411	15/64	–	–	5.95	0.2343	30	82	15/64
8660600	–	–	–	6.00	0.2362	30	82	6
8660610	–	–	–	6.10	0.2402	31	88	7
8660620	–	–	–	6.20	0.2441	31	88	7
8660630	–	–	–	6.30	0.2480	32	88	7
560025011	1/4	–	E	6.35	0.2500	32	88	1/4
8660640	–	–	–	6.40	0.2520	32	88	7
8660650	–	–	–	6.50	0.2559	33	88	7
560025711	–	–	F	6.53	0.2571	33	88	17/64
8660660	–	–	–	6.60	0.2598	33	88	7
8660670	–	–	–	6.70	0.2638	34	88	7
560026611	17/64	–	–	6.75	0.2657	34	88	17/64
8660680	–	–	–	6.80	0.2677	34	88	7
8660690	–	–	I	6.90	0.2717	35	88	7
8660700	–	–	–	7.00	0.2756	35	88	7
8660710	–	–	–	7.10	0.2795	36	94	8
560028111	9/32	–	–	7.14	0.2811	36	94	9/32
8660720	–	–	–	7.20	0.2835	36	94	8
8660730	–	–	–	7.30	0.2874	37	94	8
8660740	–	–	–	7.40	0.2913	37	94	8
8660750	–	–	–	7.50	0.2953	38	94	8

Packed: 1 pc.
Available WD1 Coating Only.

EP

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List 5600 (Continued) NEW SIZES

TRS-HO-3D, Coolant-Through

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
560029711	19/64	–	–	7.54	0.2969	38	94	5/16
8660760	–	–	–	7.60	0.2992	38	94	8
8660770	–	–	–	7.70	0.3031	39	94	8
8660780	–	–	–	7.80	0.3071	39	94	8
8660790	–	–	–	7.90	0.3110	40	94	8
560031311	5/16	–	–	7.94	0.3126	40	94	5/16
8660800	–	–	–	8.00	0.3150	40	94	8
8660810	–	–	–	8.10	0.3189	41	101	9
8660820	–	–	P	8.20	0.3228	41	101	9
8660830	–	–	–	8.30	0.3268	42	101	9
560032811	21/64	–	–	8.33	0.3280	42	101	11/32
8660840	–	–	–	8.40	0.3307	42	101	9
560033211	–	–	Q	8.43	0.3319	43	101	11/32
8660850	–	–	–	8.50	0.3346	43	101	9
8660860	–	–	–	8.60	0.3386	43	101	9
8660870	–	–	–	8.70	0.3425	44	101	9
560034411	11/32	–	–	8.73	0.3437	44	101	11/32
8660880	–	–	–	8.80	0.3465	44	101	9
8660890	–	–	–	8.90	0.3504	45	101	9
8660900	–	–	–	9.00	0.3543	45	101	9
8660910	–	–	–	9.10	0.3583	46	106	10
560035911	23/64	–	–	9.13	0.3594	46	106	25/64
8660920	–	–	–	9.20	0.3622	46	106	10
8660930	–	–	–	9.30	0.3661	47	106	10
8660940	–	–	–	9.40	0.3701	47	106	10
8660950	–	–	–	9.50	0.3740	48	106	10
560037511	3/8	–	–	9.53	0.3752	48	106	3/8
8660960	–	–	–	9.60	0.3780	48	106	10
8660970	–	–	–	9.70	0.3819	49	106	10
8660980	–	–	W	9.80	0.3858	49	106	10
8660990	–	–	–	9.90	0.3898	50	106	10
560039111	25/64	–	–	9.92	0.3906	50	106	25/64
8661000	–	–	–	10.00	0.3937	50	106	10
8661010	–	–	–	10.10	0.3976	51	113	11
8661020	–	–	–	10.20	0.4016	51	113	11
8661030	–	–	–	10.30	0.4055	52	113	11
560040611	13/32	–	–	10.32	0.4063	52	113	27/64
8661040	–	–	–	10.40	0.4094	52	113	11
8661050	–	–	–	10.50	0.4134	53	113	11
8661060	–	–	–	10.60	0.4173	53	113	11
8661070	–	–	–	10.70	0.4213	54	113	11
560042211	27/64	–	–	10.72	0.4220	54	113	27/64
8661080	–	–	–	10.80	0.4252	54	113	11
8661090	–	–	–	10.90	0.4291	55	113	11
8661100	–	–	–	11.00	0.4331	55	113	11
8661110	–	–	–	11.10	0.4370	56	120	12
560043711	7/16	–	–	11.11	0.4374	56	120	7/16

Packed: 1 pc.
Available WD1 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														
	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
5600	▢	▢	▢	▢	▢		▢	▢	▢		▢		▢	▢	▢		

▢ good ▢ best

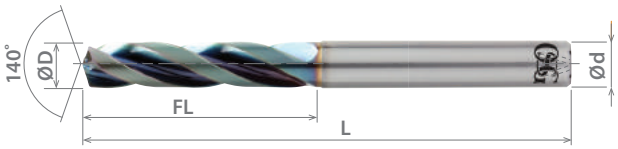
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List 5600 (Continued) NEW SIZES

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

TRS-HO-3D, 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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8661120	–	–	–	11.20	0.4409	56	120	12
8661130	–	–	–	11.30	0.4449	57	120	12
8661140	–	–	–	11.40	0.4488	57	120	12
8661150	–	–	–	11.50	0.4528	58	120	12
560045311	29/64	–	–	11.51	0.4531	58	120	15/32
8661160	–	–	–	11.60	0.4567	58	120	12
8661170	–	–	–	11.70	0.4606	59	120	12
8661180	–	–	–	11.80	0.4646	59	120	12
8661190	–	–	–	11.90	0.4685	60	120	12
560046911	15/32	–	–	11.91	0.4689	60	120	15/32
8661200	–	–	–	12.00	0.4724	60	120	12
8661210	–	–	–	12.10	0.4764	61	128	13
8661220	–	–	–	12.20	0.4803	61	128	13
8661230	–	–	–	12.30	0.4843	62	128	13
560048411	31/64	–	–	12.30	0.4843	62	128	1/2
8661240	–	–	–	12.40	0.4882	62	128	13
8661250	–	–	–	12.50	0.4921	63	128	13
8661260	–	–	–	12.60	0.4961	63	128	13
560050011	1/2	–	–	12.70	0.5000	64	128	1/2
8661270	–	–	–	12.70	0.5000	64	128	13
8661280	–	–	–	12.80	0.5039	64	128	13
8661290	–	–	–	12.90	0.5079	65	128	13
8661300	–	–	–	13.00	0.5118	65	128	13
8661310	33/64	–	–	13.10	0.5157	66	134	14
8661320	–	–	–	13.20	0.5197	66	134	14
8661330	–	–	–	13.30	0.5236	67	134	14
8661340	–	–	–	13.40	0.5276	67	134	14
560053111	17/32	–	–	13.49	0.5311	68	134	35/64
8661350	–	–	–	13.50	0.5315	68	134	14
8661360	–	–	–	13.60	0.5354	68	134	14
8661370	–	–	–	13.70	0.5394	69	134	14
8661380	–	–	–	13.80	0.5433	69	134	14
8661390	–	–	–	13.90	0.5472	70	134	14
8661400	–	–	–	14.00	0.5512	70	134	14
8661410	–	–	–	14.10	0.5551	71	140	15
8661420	–	–	–	14.20	0.5591	71	140	15
560056311	9/16	–	–	14.29	0.5626	72	140	9/16
8661430	–	–	–	14.30	0.5630	72	140	15
8661440	–	–	–	14.40	0.5669	72	140	15
8661450	–	–	–	14.50	0.5709	73	140	15
8661460	–	–	–	14.60	0.5748	73	140	15
8661470	–	–	–	14.70	0.5787	74	140	15
8661480	–	–	–	14.80	0.5827	74	140	15
8661490	–	–	–	14.90	0.5866	75	140	15
8661500	–	–	–	15.00	0.5906	75	140	15
560059311	19/32	–	–	15.08	0.5937	76	145	5/8
8661510	–	–	–	15.10	0.5945	76	145	16
8661520	–	–	–	15.20	0.5984	76	145	16
8661530	–	–	–	15.30	0.6024	77	145	16
8661540	–	–	–	15.40	0.6063	77	145	16
8661550	–	–	–	15.50	0.6102	78	145	16
8661560	–	–	–	15.60	0.6142	78	145	16

Packed: 1 pc.
Available WD1 Coating Only.

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List 5600 (Continued) NEW SIZES

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

TRS-HO-3D, Coolant-Through

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8661570	–	–	–	15.70	0.6181	79	145	16
8661580	–	–	–	15.80	0.6220	79	145	16
560062511	5/8	–	–	15.88	0.6252	80	145	5/8
8661590	–	–	–	15.90	0.6260	80	145	16
8661600	–	–	–	16.00	0.6299	80	145	16
560063311	–	–	–	16.10	0.6339	81	150	18
8661650	–	–	–	16.50	0.6496	83	150	17
560065611	21/32	–	–	16.67	0.6563	85	150	21/32
560066311	–	–	–	16.84	0.6630	85	150	18
8661700	–	–	–	17.00	0.6693	85	150	17
560068711	11/16	–	–	17.46	0.6874	88	155	3/4
8661750	–	–	–	17.50	0.6890	88	155	18
560070311	45/64	–	–	17.86	0.7031	90	155	3/4
8661800	–	–	–	18.00	0.7087	90	155	18
560071811	23/32	–	–	18.26	0.7189	92	160	3/4
8661850	–	–	–	18.50	0.7283	93	160	19
8661900	–	–	–	19.00	0.7480	95	160	19
560075011	3/4	–	–	19.05	0.7500	95	160	3/4
560075711	–	–	–	19.25	0.7579	97	165	20
8661950	–	–	–	19.50	0.7677	98	165	20
8662000	–	–	–	20.00	0.7874	100	165	20

Packed: 1 pc.
Available WD1 Coating Only.

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														
	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
5600	▣	▣	▣	▣	▣		▣	▢	▣		▢			▢			

▢ good ▣ best

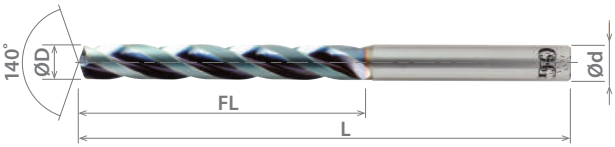
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List 5610 NEW SIZES

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

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

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List 5610 (Continued) NEW SIZES

TRS-HO-5D, Coolant-Through

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
561031311	5/16	–	–	7.94	0.3126	64	118	5/16
8662800	–	–	–	8.00	0.3150	64	118	8
8662810	–	–	–	8.10	0.3189	65	128	9
8662820	–	–	P	8.20	0.3228	66	128	9
8662830	–	–	–	8.30	0.3268	67	128	9
561032811	21/64	–	–	8.33	0.3280	67	128	11/32
8662840	–	–	–	8.40	0.3307	68	128	9
561033211	–	–	Q	8.43	0.3319	68	128	11/32
8662850	–	–	–	8.50	0.3346	68	128	9
8662860	–	–	–	8.60	0.3386	69	128	9
8662870	–	–	–	8.70	0.3425	70	128	9
561034411	11/32	–	–	8.73	0.3437	70	128	11/32
8662880	–	–	–	8.80	0.3465	71	128	9
8662890	–	–	–	8.90	0.3504	72	128	9
8662900	–	–	–	9.00	0.3543	72	128	9
8662910	–	–	–	9.10	0.3583	73	136	10
561035911	23/64	–	–	9.13	0.3594	73	136	25/64
8662920	–	–	–	9.20	0.3622	74	136	10
8662930	–	–	–	9.30	0.3661	75	136	10
8662940	–	–	–	9.40	0.3701	76	136	10
8662950	–	–	–	9.50	0.3740	76	136	10
561037511	3/8	–	–	9.53	0.3752	76	136	3/8
8662960	–	–	–	9.60	0.3780	77	136	10
8662970	–	–	–	9.70	0.3819	78	136	10
8662980	–	–	W	9.80	0.3858	79	136	10
8662990	–	–	–	9.90	0.3898	80	136	10
561039111	25/64	–	–	9.92	0.3906	80	136	25/64
8663000	–	–	–	10.00	0.3937	80	136	10
8663010	–	–	–	10.10	0.3976	81	146	11
8663020	–	–	–	10.20	0.4016	82	146	11
8663030	–	–	–	10.30	0.4055	83	146	11
561040611	13/32	–	–	10.32	0.4063	83	146	27/64
8663040	–	–	–	10.40	0.4094	84	146	11
8663050	–	–	–	10.50	0.4134	84	146	11
8663060	–	–	–	10.60	0.4173	85	146	11
8663070	–	–	–	10.70	0.4213	86	146	11
561042211	27/64	–	–	10.72	0.4220	86	146	27/64
8663080	–	–	–	10.80	0.4252	87	146	11
8663090	–	–	–	10.90	0.4291	88	146	11
8663100	–	–	–	11.00	0.4331	88	146	11
8663110	–	–	–	11.10	0.4370	89	156	12
561043711	7/16	–	–	11.11	0.4374	89	156	7/16
8663120	–	–	–	11.20	0.4409	90	156	12
8663130	–	–	–	11.30	0.4449	91	156	12
8663140	–	–	–	11.40	0.4488	92	156	12
8663150	–	–	–	11.50	0.4528	92	156	12
561045311	29/64	–	–	11.51	0.4531	92	156	15/32
8663160	–	–	–	11.60	0.4567	93	156	12

Packed: 1 pc.
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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														
	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
5610	▢	▢	▢	▢	▢		▢	▢	▢		▢			▢			

▢ good ▢ best

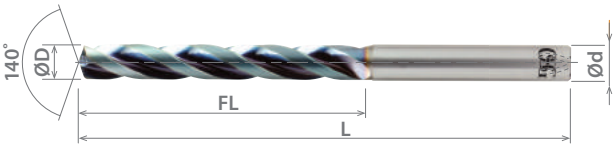
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List 5610 (Continued) NEW SIZES

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

TRS-HO-5D, 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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8663170	–	–	–	11.70	0.4606	94	156	12
8663180	–	–	–	11.80	0.4646	95	156	12
8663190	–	–	–	11.90	0.4685	96	156	12
561046911	15/32	–	–	11.91	0.4689	96	156	15/32
8663200	–	–	–	12.00	0.4724	96	156	12
8663210	–	–	–	12.10	0.4764	97	167	13
8663220	–	–	–	12.20	0.4803	98	167	13
8663230	–	–	–	12.30	0.4843	99	167	13
561048411	31/64	–	–	12.30	0.4843	99	167	1/2
8663240	–	–	–	12.40	0.4882	100	167	13
8663250	–	–	–	12.50	0.4921	100	167	13
8663260	–	–	–	12.60	0.4961	101	167	13
561050011	1/2	–	–	12.70	0.5000	102	167	1/2
8663270	–	–	–	12.70	0.5000	102	167	13
8663280	–	–	–	12.80	0.5039	103	167	13
8663290	–	–	–	12.90	0.5079	104	167	13
8663300	–	–	–	13.00	0.5118	104	167	13
8663310	33/64	–	–	13.10	0.5157	105	176	14
8663320	–	–	–	13.20	0.5197	106	176	14
8663330	–	–	–	13.30	0.5236	107	176	14
8663340	–	–	–	13.40	0.5276	108	176	14
561053111	17/32	–	–	13.49	0.5311	108	176	35/64
8663350	–	–	–	13.50	0.5315	108	176	14
8663360	–	–	–	13.60	0.5354	109	176	14
8663370	–	–	–	13.70	0.5394	110	176	14
8663380	–	–	–	13.80	0.5433	111	176	14
8663390	–	–	–	13.90	0.5472	112	176	14
8663400	–	–	–	14.00	0.5512	112	176	14
8663410	–	–	–	14.10	0.5551	113	185	15
8663420	–	–	–	14.20	0.5591	114	185	15
561056311	9/16	–	–	14.29	0.5626	115	185	9/16
8663430	–	–	–	14.30	0.5630	115	185	15
8663440	–	–	–	14.40	0.5669	116	185	15
8663450	–	–	–	14.50	0.5709	116	185	15
8663460	–	–	–	14.60	0.5748	117	185	15
8663470	–	–	–	14.70	0.5787	118	185	15
8663480	–	–	–	14.80	0.5827	119	185	15
8663490	–	–	–	14.90	0.5866	120	185	15
8663500	–	–	–	15.00	0.5906	120	185	15
561059311	19/32	–	–	15.08	0.5937	121	193	5/8
8663510	–	–	–	15.10	0.5945	121	193	16
8663520	–	–	–	15.20	0.5984	122	193	16
8663530	–	–	–	15.30	0.6024	123	193	16
8663540	–	–	–	15.40	0.6063	124	193	16
8663550	–	–	–	15.50	0.6102	124	193	16
8663560	–	–	–	15.60	0.6142	125	193	16
8663570	–	–	–	15.70	0.6181	126	193	16
8663580	–	–	–	15.80	0.6220	127	193	16
561062511	5/8	–	–	15.88	0.6252	128	193	5/8
8663590	–	–	–	15.90	0.6260	128	193	16
8663600	–	–	–	16.00	0.6299	128	193	16
561063311	–	–	–	16.10	0.6339	129	201	18

Packed: 1 pc.
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List 5610 (Continued) NEW SIZES

SPEED FEED P242 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

TRS-HO-5D, 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	201	21/32
561066311	–	–	–	16.84	0.6630	135	201	18
8663700	–	–	–	17.00	0.6693	136	201	17
561068711	11/16	–	–	17.46	0.6874	140	209	3/4
8663750	–	–	–	17.50	0.6890	140	209	18
561070311	45/64	–	–	17.86	0.7031	143	209	3/4
8663800	–	–	–	18.00	0.7087	144	209	18
561071811	23/32	–	–	18.26	0.7189	147	217	3/4
8663850	–	–	–	18.50	0.7283	148	217	19
8663900	–	–	–	19.00	0.7480	152	217	19
561075011	3/4	–	–	19.05	0.7500	154	217	3/4
561075711	–	–	–	19.25	0.7579	154	217	20
8663950	–	–	–	19.50	0.7677	156	225	20
8664000	–	–	–	20.00	0.7874	160	225	20

Packed: 1 pc.
Available WD1 Coating Only.

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														
	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
5610	◎	◎	◎	◎	◎		◎	○	◎		○		○	○	○		

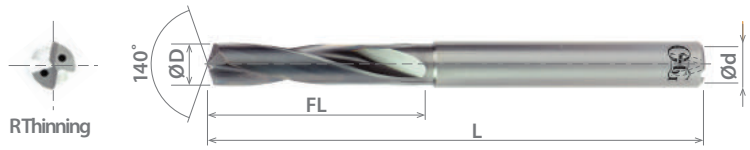
○ good ◎ best

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List 5950Ni

SPEED FEED P243 | CARBIDE | WXS® | COOLANT THROUGH | 12-20° | SHRINK h6

WHO55-3D, Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
595012511	1/8	–	–	3.18	0.1250	20	62	6
595013011	–	–	–	3.30	0.1299	21	62	6
595013411	–	–	–	3.40	0.1339	21	62	6
595013711	–	–	–	3.49	0.1374	21	62	6
595013811	–	–	–	3.50	0.1378	21	62	6
595013911	–	–	–	3.51	0.1382	23	62	6
595014211	–	–	–	3.60	0.1417	23	62	6
595014611	–	–	–	3.70	0.1457	23	62	6
595015011	–	25	–	3.80	0.1496	24	62	6
595015411	–	–	–	3.90	0.1535	24	62	6
595015611	5/32	–	–	3.97	0.1563	24	62	6
595015711	–	–	–	4.00	0.1575	24	62	6
595016111	–	–	–	4.10	0.1614	26	68	6
595016311	–	–	–	4.15	0.1634	26	68	6
595016511	–	–	–	4.20	0.1654	26	68	6
595016911	–	–	–	4.30	0.1693	27	68	6
595017111	11/64	–	–	4.37	0.1719	27	68	6
595017311	–	–	–	4.40	0.1732	27	68	6
595017711	–	16	–	4.50	0.1772	27	68	6
595018111	–	–	–	4.60	0.1811	29	68	6
595018511	–	13	–	4.70	0.1850	29	68	6
595018711	3/16	–	–	4.76	0.1875	29	68	6
595018911	–	12	–	4.80	0.1890	30	68	6
595019311	–	–	–	4.90	0.1929	30	68	6
595019711	–	–	–	5.00	0.1969	30	68	6
595020111	–	–	–	5.10	0.2008	26	74	6
595020311	13/64	–	–	5.16	0.2031	26	74	6
595020511	–	–	–	5.20	0.2047	26	74	6
595020611	–	–	–	5.22	0.2055	28	74	6
595020911	–	–	–	5.30	0.2087	28	74	6
595021311	–	–	–	5.40	0.2126	28	74	6
595021711	–	–	–	5.50	0.2165	28	74	6
595021611	–	–	–	5.53	0.2177	29	74	6
595021911	–	–	–	5.56	0.2189	29	74	6
595021811	7/32	–	–	5.56	0.2188	29	74	6
595022011	–	–	–	5.60	0.2205	29	74	6
595022411	–	–	–	5.70	0.2244	29	74	6
595022811	–	–	–	5.80	0.2283	30	74	6
595023211	–	–	–	5.90	0.2323	30	74	6
595023411	15/64	–	–	5.95	0.2344	30	74	6
595023611	–	–	–	6.00	0.2362	30	74	6
595025011	1/4	–	–	6.35	0.2500	33	83	8
595025611	–	–	–	6.50	0.2559	33	83	8
595026211	–	–	–	6.65	0.2618	34	83	8
595026511	17/64	–	–	6.75	0.2656	35	83	8
595026811	–	–	–	6.80	0.2677	35	83	8
595027411	–	–	–	6.96	0.2740	35	83	8
595027611	–	–	–	7.00	0.2756	35	83	8
595028111	9/32	–	–	7.15	0.2813	36	94	8
595029511	–	–	–	7.50	0.2953	38	94	8
595029611	19/64	–	–	7.54	0.2969	39	94	8
595030711	–	–	–	7.80	0.3071	40	94	8

Packed: 1 pc.
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List 5950Ni (Continued)

SPEED FEED P243 | CARBIDE | WXS® | COOLANT THROUGH | 12°-20° | SHRINK h6

WHO55-3D, Coolant-Through

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
595031211	5/16	–	–	7.94	0.3125	40	94	8
595031511	–	–	–	8.00	0.3150	40	94	8
595031711	–	–	–	8.04	0.3165	41	101	10
595032811	21/64	–	–	8.33	0.3281	43	101	10
595033411	–	–	–	8.50	0.3346	43	101	10
595033511	–	–	–	8.52	0.3354	44	101	10
595033811	–	–	–	8.58	0.3378	44	101	10
595034211	–	–	–	8.70	0.3425	44	101	10
595034311	11/32	–	–	8.73	0.3438	45	101	10
595034611	–	–	–	8.80	0.3465	45	101	10
595035411	–	–	–	9.00	0.3543	45	101	10
595035911	23/64	–	–	9.13	0.3594	46	106	10
595037011	–	–	–	9.39	0.3697	48	106	10
595037411	–	–	–	9.50	0.3740	48	106	10
595037511	3/8	–	–	9.53	0.3750	49	106	10
595038611	–	–	W	9.80	0.3858	50	106	10
595038911	–	–	–	9.90	0.3898	50	106	10
595039011	25/64	–	–	9.92	0.3906	50	106	10
595039311	–	–	–	9.97	0.3925	50	106	10
595039411	–	–	–	10.00	0.3937	50	106	10
595040511	–	–	–	10.30	0.4055	53	113	12
595040611	13/32	–	–	10.32	0.4063	53	113	12
595041311	–	–	–	10.50	0.4134	53	113	12
595042211	27/64	–	–	10.72	0.4219	55	113	12
595042511	–	–	–	10.80	0.4252	55	113	12
595042611	–	–	–	10.83	0.4264	55	113	12
595043311	–	–	–	11.00	0.4331	55	113	12
595043711	7/16	–	–	11.11	0.4375	56	120	12
595045211	–	–	–	11.47	0.4516	58	120	12
595045411	–	–	–	11.50	0.4528	58	120	12
595045311	29/64	–	–	11.51	0.4531	59	120	12
595045511	–	–	–	11.56	0.4551	59	120	12
595046511	–	–	–	11.80	0.4646	60	120	12
595046811	15/32	–	–	11.91	0.4688	60	120	12
595047211	–	–	–	12.00	0.4724	60	120	12
595048411	31/64	–	–	12.30	0.4844	63	128	14
595050011	1/2	–	–	12.70	0.5000	65	128	14

Packed: 1 pc.
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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														
	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
5950Ni	○	○	○	◎	○				○			◎		○	○	◎	○

○ good ◎ best

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List 5955Ni

SPEED FEED P243 | CARBIDE | WXS® | COOLANT THROUGH | 12-20° | SHRINK h6

WHO55-5D, Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
595512511	1/8	–	–	3.18	0.1250	29	78	6
3316330	–	–	–	3.30	0.1299	32	78	6
3316340	–	–	–	3.40	0.1339	32	78	6
3316349	–	–	–	3.49	0.1374	32	78	6
3316350	–	–	–	3.50	0.1378	32	78	6
595513911	–	–	–	3.51	0.1382	34	78	6
3316360	–	–	–	3.60	0.1417	34	78	6
3316370	–	–	–	3.70	0.1457	34	78	6
3316380	–	25	–	3.80	0.1496	36	78	6
3316390	–	–	–	3.90	0.1535	36	78	6
595515611	5/32	–	–	3.97	0.1563	36	78	6
3316400	–	–	–	4.00	0.1575	36	78	6
3316410	–	–	–	4.10	0.1614	38	88	6
3316415	–	–	–	4.15	0.1634	38	88	6
3316420	–	–	–	4.20	0.1654	38	88	6
3316430	–	–	–	4.30	0.1693	41	88	6
595517111	11/64	–	–	4.37	0.1719	41	88	6
3316440	–	–	–	4.40	0.1732	41	88	6
3316450	–	16	–	4.50	0.1772	41	88	6
3316460	–	–	–	4.60	0.1811	43	88	6
3316470	–	13	–	4.70	0.1850	43	88	6
595518711	3/16	–	–	4.76	0.1875	45	88	6
3316480	–	12	–	4.80	0.1890	45	88	6
3316490	–	–	–	4.90	0.1929	45	88	6
3316500	–	–	–	5.00	0.1969	45	88	6
3316510	–	–	–	5.10	0.2008	42	92	6
595520311	13/64	–	–	5.16	0.2031	42	92	6
3316520	–	–	–	5.20	0.2047	42	92	6
595520611	–	–	–	5.22	0.2055	44	92	6
3316530	–	–	–	5.30	0.2087	44	92	6
3316540	–	–	–	5.40	0.2126	44	92	6
3316550	–	–	–	5.50	0.2165	44	92	6
595521611	–	–	–	5.53	0.2177	46	92	6
3316556	–	–	–	5.56	0.2189	46	92	6
595521811	7/32	–	–	5.56	0.2188	46	92	6
3316560	–	–	–	5.60	0.2205	46	92	6
3316570	–	–	–	5.70	0.2244	46	92	6
3316580	–	–	–	5.80	0.2283	48	92	6
3316590	–	–	–	5.90	0.2323	48	92	6
595523411	15/64	–	–	5.95	0.2344	48	92	6
3316600	–	–	–	6.00	0.2362	48	92	6
595525011	1/4	–	–	6.35	0.2500	52	102	8
3316650	–	–	–	6.50	0.2559	52	102	8
595526211	–	–	–	6.65	0.2618	54	102	8
595526511	17/64	–	–	6.75	0.2656	55	102	8
3316680	–	–	–	6.80	0.2677	56	102	8
595527411	–	–	–	6.96	0.2740	56	102	8
3316700	–	–	–	7.00	0.2756	56	102	8
595528111	9/32	–	–	7.14	0.2813	58	118	8
3316750	–	–	–	7.50	0.2953	60	118	8
595529611	19/64	–	–	7.54	0.2969	62	118	8
3316780	–	–	–	7.80	0.3071	64	118	8

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List 5955Ni (Continued)

SPEED FEED P243 | CARBIDE | WXS® | COOLANT THROUGH | 12-20° | SHRINK h6

WHO55-5D, Coolant-Through

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
595531211	5/16	–	–	7.94	0.3125	64	118	8
3316800	–	–	–	8.00	0.3150	64	118	8
595531711	–	–	–	8.04	0.3165	66	128	10
595532811	21/64	–	–	8.33	0.3281	68	128	10
3316850	–	–	–	8.50	0.3346	68	128	10
595533511	–	–	–	8.52	0.3354	70	128	10
3316858	–	–	–	8.58	0.3378	70	128	10
3316870	–	–	–	8.70	0.3425	70	128	10
595534311	11/32	–	–	8.73	0.3438	70	128	10
3316880	–	–	–	8.80	0.3465	72	128	10
3316900	–	–	–	9.00	0.3543	72	128	10
595535911	23/64	–	–	9.13	0.3594	74	136	10
595537011	–	–	–	9.39	0.3697	76	136	10
3316950	–	–	–	9.50	0.3740	76	136	10
595537511	3/8	–	–	9.53	0.3750	78	136	10
3316980	–	–	W	9.80	0.3858	80	136	10
595538911	–	–	–	9.90	0.3898	80	136	10
595539011	25/64	–	–	9.92	0.3906	80	136	10
3316997	–	–	–	9.97	0.3925	80	136	10
3317000	–	–	–	10.00	0.3937	80	136	10
3317030	–	–	–	10.30	0.4055	84	146	12
595540611	13/32	–	–	10.32	0.4063	84	146	12
3317050	–	–	–	10.50	0.4134	84	146	12
595542211	27/64	–	–	10.72	0.4219	88	146	12
3317080	–	–	–	10.80	0.4252	88	146	12
595542611	–	–	–	10.83	0.4264	88	146	12
3317100	–	–	–	11.00	0.4331	88	146	12
595543711	7/16	–	–	11.11	0.4375	90	156	12
595545211	–	–	–	11.47	0.4516	92	156	12
3317150	–	–	–	11.50	0.4528	92	156	12
595545311	29/64	–	–	11.51	0.4531	94	156	12
3317156	–	–	–	11.56	0.4551	94	156	12
3317180	–	–	–	11.80	0.4646	96	156	12
595546811	15/32	–	–	11.91	0.4688	96	156	12
3317200	–	–	–	12.00	0.4724	96	156	12
595548411	31/64	–	–	12.30	0.4844	100	167	14
595550011	1/2	–	–	12.70	0.5000	104	167	14

Packed: 1 pc.
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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														
	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
5955Ni	○	○	○	◎	○				○			◎		○	○	◎	○

○ good ◎ best

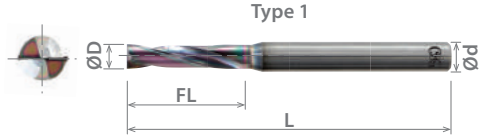
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List 5700 NEW!

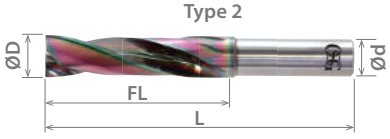
SPEED FEED P244 | CARBIDE | EgiAs | 20° | SHRINK h6

2D, Flat Drill

Type 1



Type 2



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	Overall Length	Shank Diameter	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	
3330200	-	-	-	2.00	0.0787	10	50	4	1
3330210	-	-	-	2.10	0.0827	10	50	4	1
3330220	-	-	-	2.20	0.0866	11	50	4	1
3330230	-	-	-	2.30	0.0906	11	50	4	1
570009311	3/32	-	-	2.38	0.0937	11	50	4	1
3330240	-	-	-	2.40	0.0945	12	50	4	1
3330250	-	-	-	2.50	0.0984	12	50	4	1
3330260	-	-	-	2.60	0.1024	13	50	4	1
3330270	-	-	-	2.70	0.1063	13	50	4	1
3330280	-	-	-	2.80	0.1102	14	50	4	1
3330290	-	-	-	2.90	0.1142	14	50	4	1
3330300	-	-	-	3.00	0.1181	15	55	6	1
3330310	-	-	-	3.10	0.1220	15	55	6	1
570012511	1/8	-	-	3.18	0.1250	15	55	1/8	2
3330320	-	-	-	3.20	0.1260	15	55	6	1
3330330	-	-	-	3.30	0.1299	15	55	6	1
3330340	-	-	-	3.40	0.1339	16	55	6	1
3330350	-	-	-	3.50	0.1378	16	55	6	1
3330360	-	-	-	3.60	0.1417	16	55	6	1
3330370	-	-	-	3.70	0.1457	16	55	6	1
3330380	-	-	-	3.80	0.1496	19	60	6	1
3330390	-	-	-	3.90	0.1535	19	60	6	1
570015611	5/32	-	-	3.97	0.1563	19	60	3/16	1
3330400	-	-	-	4.00	0.1575	19	60	6	1
3330410	-	-	-	4.10	0.1614	19	60	6	1
3330420	-	-	-	4.20	0.1654	21	60	6	1
3330430	-	-	-	4.30	0.1693	21	60	6	1
3330440	-	-	-	4.40	0.1732	21	60	6	1
3330450	-	-	-	4.50	0.1772	21	60	6	1
3330460	-	-	-	4.60	0.1811	21	60	6	1
3330470	-	-	-	4.70	0.1850	21	60	6	1
570018711	3/16	-	-	4.76	0.1875	24	65	3/16	2
3330480	-	-	-	4.80	0.1890	24	65	6	1
3330490	-	-	-	4.90	0.1929	24	65	6	1
3330500	-	-	-	5.00	0.1969	24	65	6	1
3330510	-	-	-	5.10	0.2008	24	65	6	1
3330520	-	-	-	5.20	0.2047	24	65	6	1
3330530	-	-	-	5.30	0.2087	24	65	6	1
3330540	-	-	-	5.40	0.2126	27	65	6	1
3330550	-	-	-	5.50	0.2165	27	65	6	1
570021811	7/32	-	-	5.56	0.2188	27	65	1/4	1
3330560	-	-	-	5.60	0.2205	27	65	6	1
3330570	-	-	-	5.70	0.2244	27	65	6	1
3330580	-	-	-	5.80	0.2283	27	65	6	1
3330590	-	-	-	5.90	0.2323	27	65	6	1
3330600	-	-	-	6.00	0.2362	27	65	6	2
3330610	-	-	-	6.10	0.2402	30	70	6	2
3330620	-	-	-	6.20	0.2441	30	70	6	2
3330630	-	-	-	6.30	0.2480	30	70	6	2
570025011	1/4	-	E	6.35	0.2500	30	70	1/4	2
3330640	-	-	-	6.40	0.2520	30	70	6	2
3330650	-	-	-	6.50	0.2559	30	70	6	2

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List 5700 (Continued) NEW!

SPEED FEED P244 | CARBIDE | EgiAs | 20° | SHRINK h6

2D, Flat Drill

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	
3330660	-	-	-	6.60	0.2598	30	70	6	2
3330670	-	-	-	6.70	0.2638	30	70	6	2
3330680	-	-	-	6.80	0.2677	30	70	6	2
3330690	-	-	-	6.90	0.2717	30	70	6	2
3330700	-	-	-	7.00	0.2756	30	70	6	2
3330710	-	-	-	7.10	0.2795	34	75	6	2
570028111	9/32	-	-	7.14	0.2813	34	75	5/16	1
3330720	-	-	-	7.20	0.2835	34	75	6	2
3330730	-	-	-	7.30	0.2874	34	75	6	2
3330740	-	-	-	7.40	0.2913	34	75	6	2
3330750	-	-	-	7.50	0.2953	34	75	6	2
3330760	-	-	-	7.60	0.2992	34	75	6	2
3330770	-	-	-	7.70	0.3031	34	75	6	2
3330780	-	-	-	7.80	0.3071	34	75	6	2
3330790	-	-	-	7.90	0.3110	34	75	6	2
570031211	5/16	-	-	7.94	0.3125	34	75	5/16	2
3330800	-	-	-	8.00	0.3150	34	75	8	2
3330810	-	-	-	8.10	0.3189	38	80	8	2
3330820	-	-	-	8.20	0.3228	38	80	8	2
3330830	-	-	-	8.30	0.3268	38	80	8	2
570032811	21/64	-	-	8.33	0.3281	38	80	3/8	1
3330840	-	-	-	8.40	0.3307	38	80	8	2
3330850	-	-	-	8.50	0.3346	38	80	8	2
3330860	-	-	-	8.60	0.3386	38	80	8	2
3330870	-	-	-	8.70	0.3425	38	80	8	2
3330880	-	-	-	8.80	0.3465	38	80	8	2
3330890	-	-	-	8.90	0.3504	38	80	8	2
3330900	-	-	-	9.00	0.3543	38	80	8	2
3330910	-	-	-	9.10	0.3583	42	85	8	2
570035911	23/64	-	-	9.13	0.3594	42	85	3/8	1
3330920	-	-	-	9.20	0.3622	42	85	8	2
3330930	-	-	-	9.30	0.3661	42	85	8	2
3330940	-	-	-	9.40	0.3701	42	85	8	2
3330950	-	-	-	9.50	0.3740	42	85	8	2
570037511	3/8	-	-	9.53	0.3750	42	85	3/8	2
3330960	-	-	-	9.60	0.3780	42	85	8	2
3330970	-	-	-	9.70	0.3819	42	85	8	2
3330980	-	-	-	9.80	0.3858	42	85	8	2
3330990	-	-	-	9.90	0.3898	42	85	8	2
3331000	-	-	-	10.00	0.3937	42	85	10	2
3331010	-	-	-	10.10	0.3976	46	90	10	2
3331020	-	-	-	10.20	0.4016	46	90	10	2
3331030	-	-	-	10.30	0.4055	46	90	10	2
570040611	13/32	-	-	10.32	0.4063	46	90	7/16	1
3331040	-	-	-	10.40	0.4094	46	90	10	2
3331050	-	-	-	10.50	0.4134	46	90	10	2
3331060	-	-	-	10.60	0.4173	46	90	10	2
3331070	-	-	-	10.70	0.4213	46	90	10	2

Packed: 1 pc.
Available EgiAs Coating Only.

continued on next page

HTE

Work Material

List No.	P					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 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
5700	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	

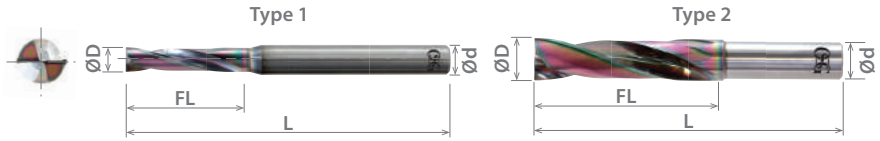
▢ good ▢ best

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List 5700 (Continued) NEW!

SPEED FEED P244 | CARBIDE | EgiAs | 20° | SHRINK h6

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	Overall Length	Shank Diameter	Type
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	
3331080	-	-	-	10.80	0.4252	46	90	10	2
3331090	-	-	-	10.90	0.4291	46	90	10	2
3331100	-	-	-	11.00	0.4331	46	90	10	2
3331110	-	-	-	11.10	0.4370	50	95	10	2
570043711	7/16	-	-	11.11	0.4374	50	95	7/16	1
3331120	-	-	-	11.20	0.4409	50	95	10	2
3331130	-	-	-	11.30	0.4449	50	95	10	2
3331140	-	-	-	11.40	0.4488	50	95	10	2
3331150	-	-	-	11.50	0.4528	50	95	10	2
570045311	29/64	-	-	11.51	0.4531	50	95	1/2	1
3331160	-	-	-	11.60	0.4567	50	95	10	2
3331170	-	-	-	11.70	0.4606	50	95	10	2
3331180	-	-	-	11.80	0.4646	50	95	10	2
3331190	-	-	-	11.90	0.4685	50	95	10	2
570046811	15/32	-	-	11.91	0.4688	50	95	1/2	1
3331200	-	-	-	12.00	0.4724	50	95	12	2
3331250	-	-	-	12.50	0.4921	56	100	12	2
3331270	1/2	-	-	12.70	0.5000	56	100	12	2
3331300	-	-	-	13.00	0.5118	56	100	12	2
3331350	-	-	-	13.50	0.5315	60	105	12	2
3331400	-	-	-	14.00	0.5512	60	105	12	2
570056211	9/16	-	-	14.29	0.5625	64	110	5/8	1
3331450	-	-	-	14.50	0.5709	64	110	12	2
3331500	-	-	-	15.00	0.5906	64	110	12	2
3331550	-	-	-	15.50	0.6102	68	115	12	2
570062511	5/8	-	-	15.88	0.6250	68	115	5/8	2
3331600	-	-	-	16.00	0.6299	68	115	16	2
3331650	-	-	-	16.50	0.6496	74	125	16	2
3331700	-	-	-	17.00	0.6693	74	125	16	2
570068711	11/16	-	-	17.46	0.6875	78	130	3/4	1
3331750	-	-	-	17.50	0.6890	78	130	16	2
3331800	-	-	-	18.00	0.7087	78	130	16	2
3331850	-	-	-	18.50	0.7283	84	135	16	2
3331900	-	-	-	19.00	0.7480	84	135	16	2
570075011	3/4	-	-	19.05	0.7500	88	140	3/4	2
3331950	-	-	-	19.50	0.7677	88	140	16	2
3332000	-	-	-	20.00	0.7874	88	140	20	2

Packed: 1 pc.
Available EgiAs Coating Only.

HTE

Work Material

List No.	P					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 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
5700	◎	◎	◎	◎	◎	◎	◎	○	◎	○	○			◎	◎	○	

○ good ◎ best

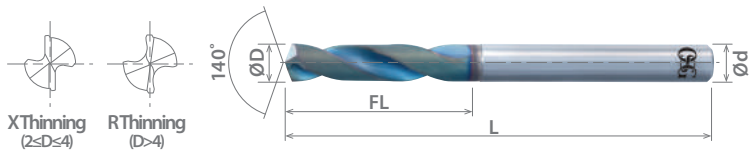
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List 5400

WD-2D

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK 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≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3320200	-	-	-	2.00	0.0787	14	62	4
3320210	-	-	-	2.10	0.0827	14	62	4
3320220	-	-	-	2.20	0.0866	14	62	4
3320230	-	-	-	2.30	0.0906	14	62	4
3320240	-	-	-	2.40	0.0945	14	62	4
3320250	-	-	-	2.50	0.0984	14	62	4
3320260	-	-	-	2.60	0.1024	14	62	4
3320270	-	-	-	2.70	0.1063	14	62	4
3320280	-	-	-	2.80	0.1102	14	62	4
3320290	-	-	-	2.90	0.1142	14	62	4
3320300	-	-	-	3.00	0.1181	20	66	4
3320310	-	-	-	3.10	0.1220	20	66	4
540012411	1/8	-	-	3.17	0.1248	20	66	4
3320320	-	-	-	3.20	0.1260	20	66	4
3320330	-	-	-	3.30	0.1299	20	66	4
3320340	-	-	-	3.40	0.1339	20	66	4
3320350	-	-	-	3.50	0.1378	20	66	4
3320360	-	-	-	3.60	0.1417	20	66	4
3320370	-	-	-	3.70	0.1457	20	66	4
3320380	-	25	-	3.80	0.1496	24	66	4
3320390	-	-	-	3.90	0.1535	24	66	4
540015611	5/32	-	-	3.97	0.1563	24	66	4
3320400	-	-	-	4.00	0.1575	24	66	4
540016111	-	20	-	4.09	0.1610	24	66	6
3320410	-	-	-	4.10	0.1614	24	66	6
3320420	-	-	-	4.20	0.1654	24	66	6
3320430	-	-	-	4.30	0.1693	24	66	6
540017211	11/64	-	-	4.37	0.1720	24	66	6
3320440	-	-	-	4.40	0.1732	24	66	6
3320450	-	16	-	4.50	0.1772	24	66	6
3320460	-	-	-	4.60	0.1811	24	66	6
3320470	-	13	-	4.70	0.1850	24	66	6
540018711	3/16	-	-	4.76	0.1874	28	66	6
3320480	-	12	-	4.80	0.1890	28	66	6
3320490	-	-	-	4.90	0.1929	28	66	6
3320500	-	-	-	5.00	0.1969	28	66	6
3320510	-	-	-	5.10	0.2008	28	66	6
540020311	13/64	-	-	5.16	0.2031	28	66	6
3320520	-	-	-	5.20	0.2047	28	66	6
3320530	-	-	-	5.30	0.2087	28	66	6
3320540	-	-	-	5.40	0.2126	28	66	6
540021311	-	3	-	5.41	0.2130	28	66	6

Packed: 1 pc.
Available WD1 Coating Only.

continued on next page

HTE

Work Material

List No.	P					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 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
5400	▣	▣	▣	▣	▣				▣		▢			▢	▣	▣	▢

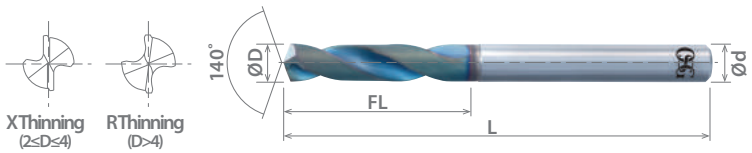
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List 5400 (Continued)

WD-2D

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK 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≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3320550	-	-	-	5.50	0.2165	28	66	6
540021811	7/32	-	-	5.56	0.2189	28	66	6
3320560	-	-	-	5.60	0.2205	28	66	6
3320570	-	-	-	5.70	0.2244	28	66	6
3320580	-	-	-	5.80	0.2283	28	66	6
3320590	-	-	-	5.90	0.2323	28	66	6
540023411	15/64	-	-	5.95	0.2343	28	66	6
3320600	-	-	-	6.00	0.2362	28	66	6
3320610	-	-	-	6.10	0.2402	34	79	8
3320620	-	-	-	6.20	0.2441	34	79	8
3320630	-	-	-	6.30	0.2480	34	79	8
540025011	1/4	-	E	6.35	0.2500	34	79	8
3320640	-	-	-	6.40	0.2520	34	79	8
3320650	-	-	-	6.50	0.2559	34	79	8
540025711	-	-	F	6.53	0.2571	34	79	8
3320660	-	-	-	6.60	0.2598	34	79	8
3320670	-	-	-	6.70	0.2638	34	79	8
540026511	17/64	-	-	6.75	0.2657	34	79	8
3320680	-	-	-	6.80	0.2677	34	79	8
3320690	-	-	I	6.90	0.2717	34	79	8
3320700	-	-	-	7.00	0.2756	34	79	8
3320710	-	-	-	7.10	0.2795	41	79	8
540028111	9/32	-	-	7.14	0.2811	41	79	8
3320720	-	-	-	7.20	0.2835	41	79	8
3320730	-	-	-	7.30	0.2874	41	79	8
3320740	-	-	-	7.40	0.2913	41	79	8
3320750	-	-	-	7.50	0.2953	41	79	8
540029611	19/64	-	-	7.54	0.2969	41	79	8
3320760	-	-	-	7.60	0.2992	41	79	8
3320770	-	-	-	7.70	0.3031	41	79	8
3320780	-	-	-	7.80	0.3071	41	79	8
3320790	-	-	-	7.90	0.3110	41	79	8
540031211	5/16	-	-	7.94	0.3126	41	79	8
3320800	-	-	-	8.00	0.3150	41	79	8
3320810	-	-	-	8.10	0.3189	47	89	10
3320820	-	-	P	8.20	0.3228	47	89	10
3320830	-	-	-	8.30	0.3268	47	89	10
540032811	21/64	-	-	8.33	0.3280	47	89	10
3320840	-	-	-	8.40	0.3307	47	89	10
540033111	-	-	Q	8.43	0.3319	47	89	10
3320850	-	-	-	8.50	0.3346	47	89	10
3320860	-	-	-	8.60	0.3386	47	89	10
3320870	-	-	-	8.70	0.3425	47	89	10
540034311	11/32	-	-	8.73	0.3437	47	89	10
3320880	-	-	-	8.80	0.3465	47	89	10
3320890	-	-	-	8.90	0.3504	47	89	10
3320900	-	-	-	9.00	0.3543	47	89	10
3320910	-	-	-	9.10	0.3583	47	89	10
540035911	23/64	-	-	9.13	0.3594	47	89	10
3320920	-	-	-	9.20	0.3622	47	89	10
3320930	-	-	-	9.30	0.3661	47	89	10
3320940	-	-	-	9.40	0.3701	47	89	10

Packed: 1 pc.
Available WD1 Coating Only.

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List 5400 (Continued)

WD-2D

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3320950	-	-	-	9.50	0.3740	47	89	10
540037511	3/8	-	-	9.52	0.3748	47	89	10
3320960	-	-	-	9.60	0.3780	47	89	10
3320970	-	-	-	9.70	0.3819	47	89	10
3320980	-	-	W	9.80	0.3858	47	89	10
3320990	-	-	-	9.90	0.3898	47	89	10
540039011	25/64	-	-	9.92	0.3906	47	89	10
3321000	-	-	-	10.00	0.3937	47	89	10
3321010	-	-	-	10.10	0.3976	55	102	12
3321020	-	-	-	10.20	0.4016	55	102	12
3321030	-	-	-	10.30	0.4055	55	102	12
540040611	13/32	-	-	10.32	0.4063	55	102	12
3321040	-	-	-	10.40	0.4094	55	102	12
3321050	-	-	-	10.50	0.4134	55	102	12
3321060	-	-	-	10.60	0.4173	55	102	12
3321070	-	-	-	10.70	0.4213	55	102	12
540042211	27/64	-	-	10.72	0.4220	55	102	12
3321080	-	-	-	10.80	0.4252	55	102	12
3321090	-	-	-	10.90	0.4291	55	102	12
3321100	-	-	-	11.00	0.4331	55	102	12
3321110	-	-	-	11.10	0.4370	55	102	12
540043811	7/16	-	-	11.11	0.4374	55	102	12
3321120	-	-	-	11.20	0.4409	55	102	12
3321130	-	-	-	11.30	0.4449	55	102	12
3321140	-	-	-	11.40	0.4488	55	102	12
3321150	-	-	-	11.50	0.4528	55	102	12
540045311	29/64	-	-	11.51	0.4531	55	102	12
3321160	-	-	-	11.60	0.4567	55	102	12
3321170	-	-	-	11.70	0.4606	55	102	12
3321180	-	-	-	11.80	0.4646	55	102	12
3321190	-	-	-	11.90	0.4685	55	102	12
540046911	15/32	-	-	11.91	0.4689	55	102	12
3321200	-	-	-	12.00	0.4724	55	102	12
540047611	-	-	-	12.10	0.4764	60	107	14
540048011	-	-	-	12.20	0.4803	60	107	14
540048411	31/64	-	-	12.30	0.4843	60	107	14
540048811	-	-	-	12.40	0.4882	60	107	14
540049211	-	-	-	12.50	0.4921	60	107	14
540049611	-	-	-	12.60	0.4961	60	107	14
540050011	1/2	-	-	12.70	0.5000	60	107	14
540050311	-	-	-	12.80	0.5039	60	107	14
540050711	-	-	-	12.90	0.5079	60	107	14
540051111	-	-	-	13.00	0.5118	60	107	14
540051511	33/64	-	-	13.10	0.5157	60	107	14
540051911	-	-	-	13.20	0.5197	60	107	14
540052311	-	-	-	13.30	0.5236	60	107	14
540052711	-	-	-	13.40	0.5276	60	107	14
540053211	-	-	-	13.50	0.5315	60	107	14

Packed: 1 pc.
Available WD1 Coating Only.

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HTE

Work Material

List No.	P					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 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
5400	▢	▢	▢	▢	▢				▢		▢			▢	▢	▢	▢

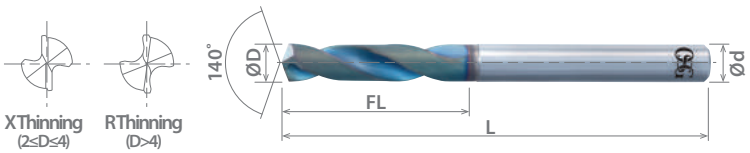
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List 5400 (Continued)

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK h6

WD-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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
540055111	-	-	-	14.00	0.5512	60	107	14
540056211	9/16	-	-	14.29	0.5626	65	115	16
540057011	-	-	-	14.50	0.5709	65	115	16
540059011	-	-	-	15.00	0.5906	65	115	16
540061011	-	-	-	15.50	0.6102	65	115	16
540062411	5/8	-	-	15.87	0.6248	65	115	16
540062911	-	-	-	16.00	0.6299	65	115	16
540064911	-	-	-	16.50	0.6496	73	123	18
540066911	-	-	-	17.00	0.6693	73	123	18
540068911	-	-	-	17.50	0.6890	73	123	18
540070811	-	-	-	18.00	0.7087	73	123	18
540072811	-	-	-	18.50	0.7283	79	131	20
540074811	-	-	-	19.00	0.7480	79	131	20
540075011	3/4	-	-	19.05	0.7500	79	131	20
540076711	-	-	-	19.50	0.7677	79	131	20
540078711	-	-	-	20.00	0.7874	79	131	20

Packed: 1 pc.
Available WD1 Coating Only.

HTE

Work Material

List No.	P					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 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
5400	▢	▢	▢	▢	▢				▢		▢			▢	▢	▢	▢

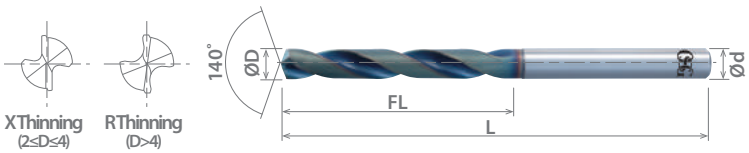
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List 5410

WD-4D

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK 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≤18	+0 / -0.027	+0 / -0.0011
18<D≤20	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3322200	-	-	-	2.00	0.0787	20	66	4
3322210	-	-	-	2.10	0.0827	20	66	4
3322220	-	-	-	2.20	0.0866	20	66	4
3322230	-	-	-	2.30	0.0906	20	66	4
3322240	-	-	-	2.40	0.0945	20	66	4
3322250	-	-	-	2.50	0.0984	20	66	4
3322260	-	-	-	2.60	0.1024	20	66	4
3322270	-	-	-	2.70	0.1063	20	66	4
3322280	-	-	-	2.80	0.1102	20	66	4
3322290	-	-	-	2.90	0.1142	20	66	4
3322300	-	-	-	3.00	0.1181	28	74	4
3322310	-	-	-	3.10	0.1220	28	74	4
541012411	1/8	-	-	3.17	0.1248	28	74	4
3322320	-	-	-	3.20	0.1260	28	74	4
3322330	-	-	-	3.30	0.1299	28	74	4
3322340	-	-	-	3.40	0.1339	28	74	4
3322350	-	-	-	3.50	0.1378	28	74	4
3322360	-	-	-	3.60	0.1417	28	74	4
3322370	-	-	-	3.70	0.1457	28	74	4
3322380	-	25	-	3.80	0.1496	36	74	4
3322390	-	-	-	3.90	0.1535	36	74	4
541015611	5/32	-	-	3.97	0.1563	36	74	4
3322400	-	-	-	4.00	0.1575	36	74	4
541016111	-	20	-	4.09	0.1610	36	74	6
3322410	-	-	-	4.10	0.1614	36	74	6
3322420	-	-	-	4.20	0.1654	36	74	6
3322430	-	-	-	4.30	0.1693	36	74	6
541017211	11/64	-	-	4.37	0.1720	36	74	6
3322440	-	-	-	4.40	0.1732	36	74	6
3322450	-	16	-	4.50	0.1772	36	74	6
3322460	-	-	-	4.60	0.1811	36	74	6
3322470	-	13	-	4.70	0.1850	36	74	6
541018711	3/16	-	-	4.76	0.1874	44	82	6
3322480	-	12	-	4.80	0.1890	44	82	6
3322490	-	-	-	4.90	0.1929	44	82	6
3322500	-	-	-	5.00	0.1969	44	82	6
3322510	-	-	-	5.10	0.2008	44	82	6
541020311	13/64	-	-	5.16	0.2031	44	82	6
3322520	-	-	-	5.20	0.2047	44	82	6
3322530	-	-	-	5.30	0.2087	44	82	6
3322540	-	-	-	5.40	0.2126	44	82	6
541021311	-	3	-	5.41	0.2130	44	82	6

Packed: 1 pc.
Available WD1 Coating Only.

continued on next page

HTE

Work Material

List No.	P					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 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
5410	▢	▢	▢	▢	▢				▢		▢			▢	▢	▢	

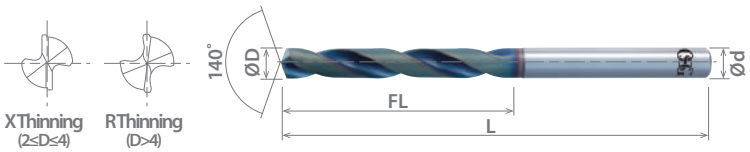
▢ good ▢ best

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List 5410 (Continued)

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK h6

WD-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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3322550	-	-	-	5.50	0.2165	44	82	6
541021811	7/32	-	-	5.56	0.2189	44	82	6
3322560	-	-	-	5.60	0.2205	44	82	6
3322570	-	-	-	5.70	0.2244	44	82	6
3322580	-	-	-	5.80	0.2283	44	82	6
3322590	-	-	-	5.90	0.2323	44	82	6
541023411	15/64	-	-	5.95	0.2343	44	82	6
3322600	-	-	-	6.00	0.2362	44	82	6
3322610	-	-	-	6.10	0.2402	53	91	8
3322620	-	-	-	6.20	0.2441	53	91	8
3322630	-	-	-	6.30	0.2480	53	91	8
541025011	1/4	-	E	6.35	0.2500	53	91	8
3322640	-	-	-	6.40	0.2520	53	91	8
3322650	-	-	-	6.50	0.2559	53	91	8
541025711	-	-	F	6.53	0.2571	53	91	8
3322660	-	-	-	6.60	0.2598	53	91	8
3322670	-	-	-	6.70	0.2638	53	91	8
541026511	17/64	-	-	6.75	0.2657	53	91	8
3322680	-	-	-	6.80	0.2677	53	91	8
3322690	-	-	I	6.90	0.2717	53	91	8
3322700	-	-	-	7.00	0.2756	53	91	8
3322710	-	-	-	7.10	0.2795	53	91	8
541028111	9/32	-	-	7.14	0.2811	53	91	8
3322720	-	-	-	7.20	0.2835	53	91	8
3322730	-	-	-	7.30	0.2874	53	91	8
3322740	-	-	-	7.40	0.2913	53	91	8
3322750	-	-	-	7.50	0.2953	53	91	8
541029611	19/64	-	-	7.54	0.2969	53	91	8
3322760	-	-	-	7.60	0.2992	53	91	8
3322770	-	-	-	7.70	0.3031	53	91	8
3322780	-	-	-	7.80	0.3071	53	91	8
3322790	-	-	-	7.90	0.3110	53	91	8
541031211	5/16	-	-	7.94	0.3126	53	91	8
3322800	-	-	-	8.00	0.3150	53	91	8
3322810	-	-	-	8.10	0.3189	61	103	10
3322820	-	-	P	8.20	0.3228	61	103	10
3322830	-	-	-	8.30	0.3268	61	103	10
541032811	21/64	-	-	8.33	0.3280	61	103	10
3322840	-	-	-	8.40	0.3307	61	103	10
541033111	-	-	Q	8.43	0.3319	61	103	10
3322850	-	-	-	8.50	0.3346	61	103	10
3322860	-	-	-	8.60	0.3386	61	103	10
3322870	-	-	-	8.70	0.3425	61	103	10
541034311	11/32	-	-	8.73	0.3437	61	103	10
3322880	-	-	-	8.80	0.3465	61	103	10
3322890	-	-	-	8.90	0.3504	61	103	10
3322900	-	-	-	9.00	0.3543	61	103	10
3322910	-	-	-	9.10	0.3583	61	103	10
541035911	23/64	-	-	9.13	0.3594	61	103	10
3322920	-	-	-	9.20	0.3622	61	103	10
3322930	-	-	-	9.30	0.3661	61	103	10
3322940	-	-	-	9.40	0.3701	61	103	10

Packed: 1 pc.
Available WD1 Coating Only.

HTE

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List 5410 (Continued)

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK h6

WD-4D

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3322950	-	-	-	9.50	0.3740	61	103	10
541037511	3/8	-	-	9.52	0.3748	61	103	10
3322960	-	-	-	9.60	0.3780	61	103	10
3322970	-	-	-	9.70	0.3819	61	103	10
3322980	-	-	W	9.80	0.3858	61	103	10
3322990	-	-	-	9.90	0.3898	61	103	10
541039011	25/64	-	-	9.92	0.3906	61	103	10
3323000	-	-	-	10.00	0.3937	61	103	10
3323010	-	-	-	10.10	0.3976	71	118	12
3323020	-	-	-	10.20	0.4016	71	118	12
3323030	-	-	-	10.30	0.4055	71	118	12
541040611	13/32	-	-	10.32	0.4063	71	118	12
3323040	-	-	-	10.40	0.4094	71	118	12
3323050	-	-	-	10.50	0.4134	71	118	12
3323060	-	-	-	10.60	0.4173	71	118	12
3323070	-	-	-	10.70	0.4213	71	118	12
541042211	27/64	-	-	10.72	0.4220	71	118	12
3323080	-	-	-	10.80	0.4252	71	118	12
3323090	-	-	-	10.90	0.4291	71	118	12
3323100	-	-	-	11.00	0.4331	71	118	12
3323110	-	-	-	11.10	0.4370	71	118	12
541043811	7/16	-	-	11.11	0.4374	71	118	12
3323120	-	-	-	11.20	0.4409	71	118	12
3323130	-	-	-	11.30	0.4449	71	118	12
3323140	-	-	-	11.40	0.4488	71	118	12
3323150	-	-	-	11.50	0.4528	71	118	12
541045311	29/64	-	-	11.51	0.4531	71	118	12
3323160	-	-	-	11.60	0.4567	71	118	12
3323170	-	-	-	11.70	0.4606	71	118	12
3323180	-	-	-	11.80	0.4646	71	118	12
3323190	-	-	-	11.90	0.4685	71	118	12
541046911	15/32	-	-	11.91	0.4689	71	118	12
3323200	-	-	-	12.00	0.4724	71	118	12
3323210	-	-	-	12.10	0.4764	77	124	14
3323220	-	-	-	12.20	0.4803	77	124	14
3323230	31/64	-	-	12.30	0.4843	77	124	14
3323240	-	-	-	12.40	0.4882	77	124	14
3323250	-	-	-	12.50	0.4921	77	124	14
3323260	-	-	-	12.60	0.4961	77	124	14
3323270	1/2	-	-	12.70	0.5000	77	124	14
3323280	-	-	-	12.80	0.5039	77	124	14
3323290	-	-	-	12.90	0.5079	77	124	14
3323300	-	-	-	13.00	0.5118	77	124	14
3323310	33/64	-	-	13.10	0.5157	77	124	14
3323320	-	-	-	13.20	0.5197	77	124	14
3323330	-	-	-	13.30	0.5236	77	124	14
3323340	-	-	-	13.40	0.5276	77	124	14
3323350	-	-	-	13.50	0.5315	77	124	14

Packed: 1 pc.
Available WD1 Coating Only.

continued on next page

HTE

Work Material

List No.	P					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 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
5410	▢	▢	▢	▢	▢				▢		▢			▢	▢	▢	

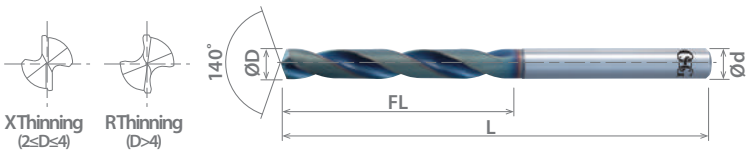
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List 5410 (Continued)

SPEED FEED P245 | CARBIDE | WD1 | 30° | SHRINK h6

WD-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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3323400	-	-	-	14.00	0.5512	77	124	14
541056211	9/16	-	-	14.29	0.5626	83	133	16
3323450	-	-	-	14.50	0.5709	83	133	16
3323500	-	-	-	15.00	0.5906	83	133	16
3323550	-	-	-	15.50	0.6102	83	133	16
541062411	5/8	-	-	15.87	0.6248	83	133	16
3323600	-	-	-	16.00	0.6299	83	133	16
3323650	-	-	-	16.50	0.6496	93	143	18
3323700	-	-	-	17.00	0.6693	93	143	18
3323750	-	-	-	17.50	0.6890	93	143	18
3323800	-	-	-	18.00	0.7087	93	143	18
3323850	-	-	-	18.50	0.7283	101	153	20
3323900	-	-	-	19.00	0.7480	101	153	20
541075011	3/4	-	-	19.05	0.7500	101	153	20
3323950	-	-	-	19.50	0.7677	101	153	20
3324000	-	-	-	20.00	0.7874	101	153	20

Packed: 1 pc.
Available WD1 Coating Only.

HTE

Work Material

List No.	P					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 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
5410	▢	▢	▢	▢	▢				▢		▢			▢	▢	▢	

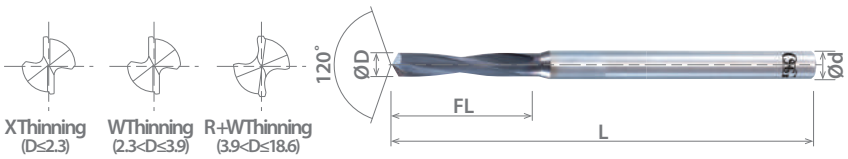
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List 5171

55-70 HRC, WH70-DRL

SPEED FEED P246 | CARBIDE | WXS® | REG | 12° | SHRINK 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≤18	+0 / -0.027	+0 / -0.0011
18<D≤18.6	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3318200	-	-	-	2.00	0.0787	12	42	3
3318210	-	-	-	2.10	0.0827	12	42	3
3318220	-	-	-	2.20	0.0866	13	43	3
3318230	-	-	-	2.30	0.0906	13	43	3
3318240	-	-	-	2.40	0.0945	14	44	3
3318250	-	-	-	2.50	0.0984	14	44	3
3318260	-	-	-	2.60	0.1024	14	44	3
3318270	-	-	-	2.70	0.1063	16	46	3
3318280	-	-	-	2.80	0.1102	16	46	3
3318290	-	-	-	2.90	0.1142	16	46	3
3318300	-	-	-	3.00	0.1181	16	46	3
3318310	-	-	-	3.10	0.1220	18	48	4
3318320	-	-	-	3.20	0.1260	18	48	4
3318330	-	-	-	3.30	0.1299	18	48	4
3318340	-	-	-	3.40	0.1339	20	50	4
3318350	-	-	-	3.50	0.1378	20	50	4
3318360	-	-	-	3.60	0.1417	20	50	4
3318370	-	-	-	3.70	0.1457	20	50	4
3318380	-	25	-	3.80	0.1496	22	52	4
3318390	-	-	-	3.90	0.1535	22	52	4
3318400	-	-	-	4.00	0.1575	22	52	4
3318410	-	-	-	4.10	0.1614	25	68	5
3318420	-	-	-	4.20	0.1654	25	68	5
3318430	-	-	-	4.30	0.1693	28	68	5
3318440	-	-	-	4.40	0.1732	28	68	5
3318450	-	16	-	4.50	0.1772	28	68	5
3318460	-	-	-	4.60	0.1811	28	68	5
3318470	-	13	-	4.70	0.1850	28	68	5
3318480	-	12	-	4.80	0.1890	32	68	5
3318490	-	-	-	4.90	0.1929	32	68	5
3318500	-	-	-	5.00	0.1969	32	68	5
3318510	-	-	-	5.10	0.2008	32	74	6
3318520	-	-	-	5.20	0.2047	32	74	6
3318530	-	-	-	5.30	0.2087	32	74	6
3318540	-	-	-	5.40	0.2126	35	74	6
3318550	-	-	-	5.50	0.2165	35	74	6
3318560	-	-	-	5.60	0.2205	35	74	6
3318570	-	-	-	5.70	0.2244	35	74	6
3318580	-	-	-	5.80	0.2283	35	74	6
3318590	-	-	-	5.90	0.2323	35	74	6
3318600	-	-	-	6.00	0.2362	35	74	6
3318610	-	-	-	6.10	0.2402	40	83	7

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

continued on next page

HTE

Work Material

List No.	P					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 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
5171																	◎

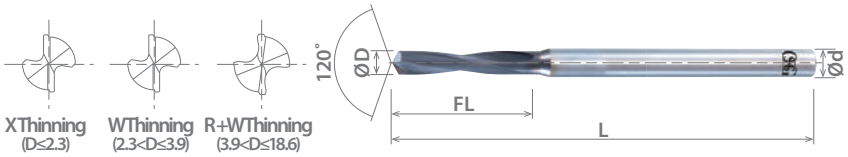
○ good ◎ best

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List 5171 (Continued)

55-70 HRC, WH70-DRL

SPEED FEED P246 | CARBIDE | WXS® | REG | 12° | SHRINK 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≤18	+0 / -0.027	+0 / -0.0011
18<D≤18.6	+0 / -0.033	+0 / -0.0013

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
3318620	-	-	-	6.20	0.2441	40	83	7
3318630	-	-	-	6.30	0.2480	40	83	7
3318640	-	-	-	6.40	0.2520	40	83	7
3318650	-	-	-	6.50	0.2559	40	83	7
3318660	-	-	-	6.60	0.2598	40	83	7
3318670	-	-	-	6.70	0.2638	40	83	7
3318680	-	-	-	6.80	0.2677	45	83	7
3318690	-	-	I	6.90	0.2717	45	83	7
3318700	-	-	-	7.00	0.2756	45	83	7
3318710	-	-	-	7.10	0.2795	45	94	8
3318720	-	-	-	7.20	0.2835	45	94	8
3318730	-	-	-	7.30	0.2874	45	94	8
3318740	-	-	-	7.40	0.2913	45	94	8
3318750	-	-	-	7.50	0.2953	45	94	8
3318760	-	-	-	7.60	0.2992	50	94	8
3318770	-	-	-	7.70	0.3031	50	94	8
3318780	-	-	-	7.80	0.3071	50	94	8
3318790	-	-	-	7.90	0.3110	50	94	8
3318800	-	-	-	8.00	0.3150	50	94	8
3318810	-	-	-	8.10	0.3189	50	101	9
3318820	-	-	P	8.20	0.3228	50	101	9
3318830	-	-	-	8.30	0.3268	50	101	9
3318840	-	-	-	8.40	0.3307	50	101	9
3318850	-	-	-	8.50	0.3346	50	101	9
3318860	-	-	-	8.60	0.3386	57	101	9
3318870	-	-	-	8.70	0.3425	57	101	9
3318880	-	-	-	8.80	0.3465	57	101	9
3318890	-	-	-	8.90	0.3504	57	101	9
3318900	-	-	-	9.00	0.3543	57	101	9
3318910	-	-	-	9.10	0.3583	57	106	10
3318920	-	-	-	9.20	0.3622	57	106	10
3318930	-	-	-	9.30	0.3661	57	106	10
3318940	-	-	-	9.40	0.3701	57	106	10
3318950	-	-	-	9.50	0.3740	57	106	10
3318960	-	-	-	9.60	0.3780	63	106	10
3318970	-	-	-	9.70	0.3819	63	106	10
3318980	-	-	W	9.80	0.3858	63	106	10
3318990	-	-	-	9.90	0.3898	63	106	10
3319000	-	-	-	10.00	0.3937	63	106	10
3319010	-	-	-	10.10	0.3976	63	113	11
3319020	-	-	-	10.20	0.4016	63	113	11
3319030	-	-	-	10.30	0.4055	63	113	11
3319040	-	-	-	10.40	0.4094	63	113	11
3319050	-	-	-	10.50	0.4134	63	113	11
3319060	-	-	-	10.60	0.4173	63	113	11
3319070	-	-	-	10.70	0.4213	71	113	11
3319080	-	-	-	10.80	0.4252	71	113	11
3319090	-	-	-	10.90	0.4291	71	113	11
3319100	-	-	-	11.00	0.4331	71	113	11
3319110	-	-	-	11.10	0.4370	71	120	12
3319120	-	-	-	11.20	0.4409	71	120	12
3319130	-	-	-	11.30	0.4449	71	120	12

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

HTE

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List 5171 (Continued)

55-70 HRC, WH70-DRL

SPEED FEED P246 | CARBIDE | WXS® | REG | 12° | SHRINK h6

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

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

HTE

Work Material

List No.	P					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 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
5171																	◎

○ good ◎ best

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List 5172

SPEED FEED P246 | CARBIDE | BR | SHRINK h7

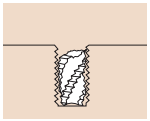
Tap Extractor



EDP Number	Diameter	Flute Length	Overall Length	Shank Diameter	Tap Types					
					Straight Fluted		Spiral Pointed		Spiral Fluted	
	mm	FL	L	d	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	–	–	–	–	–	–	–	–	–

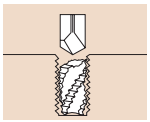
Packed: 1 pc.
Drills are available in 5pc sets (EDP 87700) for Ø2 through Ø6.
For drill diameter selection, use the method outlined below.
Straight Fluted & Spiral Fluted Taps: 0.46(Tap Ø)<(Drill Ø)<0.75(Tap Ø)
Spiral Pointed Taps: 0.6(Tap Ø)<(Drill Ø)<0.75(Tap Ø)

HTE



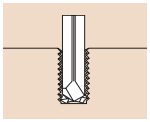
1. Broken Tap

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.



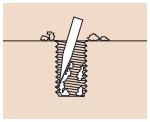
2. Centering of Drill

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. Resharpening 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														
	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
5172																	▢

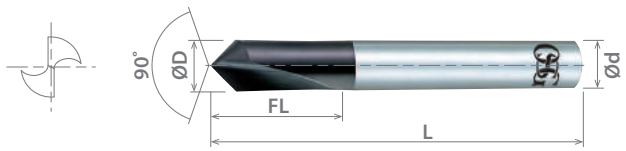
▢ good ▢ best

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List 5180

SPEED FEED P247 | CARBIDE | EXO® | STUB | 12° | SHRINK h7

FX-LDS, 90° Spot Drill



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Minimum Drill Hole Size (mm)
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	
8561500	-	-	-	0.50	0.0197	1	38	3	0.25
8561501	-	-	-	1.00	0.0394	1.8	38	3	0.40
8561502	-	-	-	2.00	0.0787	2.5	38	3	1.00
8561503	-	-	-	3.00	0.1181	9	48	3	1.20
8561504	-	-	-	4.00	0.1575	12	54	4	1.50
8561506	-	-	-	6.00	0.2362	15	72	6	1.90
8561508	-	-	-	8.00	0.3150	20	81	8	2.10
8561510	-	-	-	10.00	0.3937	24	93	10	2.50
8561512	-	-	-	12.00	0.4724	28	108	12	2.50
8561516	-	-	-	16.00	0.6299	41	118	16	5.00
8561520	-	-	-	20.00	0.7874	46	132	20	5.00
8561525	-	-	-	25.00	0.9843	53	151	25	5.00

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

HTE

Work Material

List No.	P					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 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
5180	▣	▣	▣	▣	▣				▣		▢	▢	▢	▣	▣	▣	

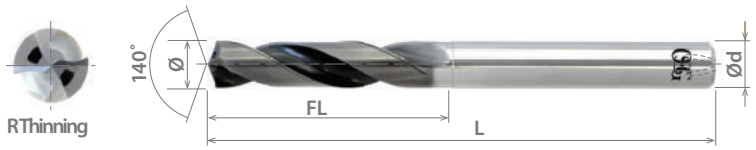
▢ good ▣ best

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List 5200 NEW!

3D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.8≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8665280	-	-	-	2.80	0.1102	17	66	3
8665290	-	-	-	2.90	0.1142	18	66	3
520011612	-	-	-	2.95	0.1161	18	66	3
8665300	-	-	-	3.00	0.1181	18	66	3
8665310	-	-	-	3.10	0.1220	19	74	4
8665315	-	-	-	3.15	0.1240	19	74	4
520012512	1/8	-	-	3.18	0.1250	20	74	1/8
8665320	-	-	-	3.20	0.1260	20	74	4
8665326	-	-	-	3.26	0.1283	20	74	4
8665330	-	-	-	3.30	0.1299	20	74	4
520013212	-	-	-	3.36	0.1323	21	74	4
8665340	-	-	-	3.40	0.1339	21	74	4
520013512	-	-	-	3.44	0.1354	21	74	4
8665350	-	-	-	3.50	0.1378	21	74	4
520013812	-	-	-	3.52	0.1386	22	74	4
520014012	9/64	-	-	3.57	0.1406	22	74	4
8665360	-	-	-	3.60	0.1417	22	74	4
8665370	-	-	-	3.70	0.1457	23	74	4
8665375	-	-	-	3.75	0.0148	23	74	4
520014812	-	-	-	3.77	0.1484	23	74	4
8665380	-	-	-	3.80	0.1496	23	74	4
520015212	-	-	-	3.86	0.1520	24	74	4
8665390	-	-	-	3.90	0.1535	24	74	4
520015612	5/32	-	-	3.97	0.1563	24	74	4
8665400	-	-	-	4.00	0.1575	24	74	4
520015912	-	-	-	4.05	0.1594	25	80	6
520016112	-	20	-	4.09	0.1610	25	80	6
8665410	-	-	-	4.10	0.1614	25	80	5
48169041	-	-	-	4.10	0.1614	25	80	6
520016312	-	-	-	4.16	0.1638	26	80	6
8665420	-	-	-	4.20	0.1654	26	80	5
48169042	-	-	-	4.20	0.1654	26	80	6
520016812	-	-	-	4.27	0.1681	26	80	6
8665430	-	-	-	4.30	0.1693	26	80	5
48169043	-	-	-	4.30	0.1693	26	80	6
520017112	11/64	-	-	4.37	0.1719	27	80	3/16
8665440	-	-	-	4.40	0.1732	27	80	5
48169044	-	-	-	4.40	0.1732	27	80	6
520017512	-	-	-	4.46	0.1756	27	80	6
8665450	-	-	-	4.50	0.1772	27	80	5
48169045	-	-	-	4.50	0.1772	27	80	6
8665460	-	-	-	4.60	0.1811	28	80	5
48169046	-	-	-	4.60	0.1811	28	80	6
520018312	-	-	-	4.66	0.1835	29	80	6
8665470	-	-	-	4.70	0.1850	29	80	5
48169047	-	-	-	4.70	0.1850	29	80	6
520018712	3/16	-	-	4.76	0.1875	29	80	3/16

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

HTE

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List 5200 (Continued) NEW!

3D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8665480	-	-	-	4.80	0.1890	29	80	5
48169048	-	-	-	4.80	0.1890	29	80	6
8665485	-	-	-	4.85	0.1909	29	80	6
8665490	-	-	-	4.90	0.1929	30	80	5
48169049	-	-	-	4.90	0.1929	30	80	6
8665500	-	-	-	5.00	0.1969	25	80	5
48169050	-	-	-	5.00	0.1969	25	80	6
8665510	-	-	-	5.10	0.2008	26	82	6
520020212	-	-	-	5.15	0.2028	26	82	6
520020312	13/64	-	-	5.16	0.2031	26	82	1/4
8665520	-	-	-	5.20	0.2047	26	82	6
8665525	-	-	-	5.25	0.2067	27	82	6
520020712	-	-	-	5.26	0.2071	27	82	6
8665530	-	-	-	5.30	0.2087	27	82	6
8665540	-	-	-	5.40	0.2126	27	82	6
520021312	-	3	-	5.41	0.2130	28	82	6
520021512	-	-	-	5.47	0.2154	28	82	6
8665550	-	-	-	5.50	0.2165	28	82	6
520021812	7/32	-	-	5.56	0.2188	28	82	1/4
8665560	-	-	-	5.60	0.2205	28	82	6
8665570	-	-	-	5.70	0.2244	29	82	6
8665580	-	-	-	5.80	0.2283	29	82	6
8665590	-	-	-	5.90	0.2323	30	82	6
520023412	15/64	-	-	5.95	0.2344	30	82	1/4
8665600	-	-	-	6.00	0.2362	30	82	6
8665610	-	-	-	6.10	0.2402	31	88	7
48169061	-	-	-	6.10	0.2402	31	88	8
520024212	-	-	-	6.15	0.2421	31	88	8
8665620	-	-	-	6.20	0.2441	31	88	7
48169062	-	-	-	6.20	0.2441	31	88	8
8665625	-	-	-	6.25	0.2461	32	88	7
8665630	-	-	-	6.30	0.2480	32	88	7
48169063	-	-	-	6.30	0.2480	32	88	8
8665635	1/4	-	-	6.35	0.2500	32	88	1/4
8665640	-	-	-	6.40	0.2520	32	88	7
48169064	-	-	-	6.40	0.2520	32	88	8
8665650	-	-	-	6.50	0.2559	33	88	7
48169065	-	-	-	6.50	0.2559	33	88	8
520025712	-	-	F	6.53	0.2570	33	88	8
8665660	-	-	-	6.60	0.2598	33	88	7
48169066	-	-	-	6.60	0.2598	33	88	8
520026112	-	-	-	6.65	0.2618	34	88	8
8665670	-	-	-	6.70	0.2638	34	88	7

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

continued on next page HTE

Work Material

List No.	P					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 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
5200	◎	◎	○	○		◎	◎	◎	◎		○		◎	○			

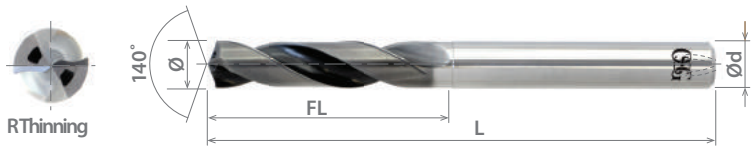
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List 5200 (Continued) NEW!

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

3D, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.8≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
48169067	-	-	-	6.70	0.2638	34	88	8
8665675	-	-	-	6.75	0.2656	34	88	7
520026512	17/64	-	-	6.75	0.2656	34	88	5/16
8665680	-	-	-	6.80	0.2677	34	88	7
48169068	-	-	-	6.80	0.2677	34	88	8
520027012	-	-	-	6.86	0.2701	35	88	8
8665690	-	-	-	6.90	0.2717	35	88	7
48169069	-	-	-	6.90	0.2717	35	88	8
8665700	-	-	-	7.00	0.2756	35	88	7
48169070	-	-	-	7.00	0.2756	35	88	8
520027712	-	-	-	7.04	0.2772	36	94	8
8665710	-	-	-	7.10	0.2795	36	94	8
520028112	9/32	-	-	7.14	0.2813	36	94	5/16
8665720	-	-	-	7.20	0.2835	36	94	8
8665725	-	-	-	7.25	0.2854	37	94	8
8665730	-	-	-	7.30	0.2874	37	94	8
8665740	-	-	-	7.40	0.2913	37	94	8
8665750	-	-	-	7.50	0.2953	38	94	8
520029612	19/64	-	-	7.54	0.2969	38	94	5/16
8665760	-	-	-	7.60	0.2992	38	94	8
8665770	-	-	-	7.70	0.3031	39	94	8
8665775	-	-	-	7.75	0.3051	39	94	8
8665780	-	-	-	7.80	0.3071	39	94	8
8665790	-	-	-	7.90	0.3110	40	94	8
520031212	5/16	-	-	7.94	0.3125	40	94	5/16
8665800	-	-	-	8.00	0.3150	40	94	8
8665810	-	-	-	8.10	0.3189	41	101	9
48169081	-	-	-	8.10	0.3189	41	101	10
520032012	-	-	-	8.15	0.3209	41	101	10
8665820	-	-	-	8.20	0.3228	41	101	9
48169082	-	-	-	8.20	0.3228	41	101	10
8665825	-	-	-	8.25	0.3248	42	101	9
8665830	-	-	-	8.30	0.3268	42	101	9
48169083	-	-	-	8.30	0.3268	42	101	10
520032812	21/64	-	-	8.33	0.3281	42	101	3/8
8665840	-	-	-	8.40	0.3307	42	101	9
48169084	-	-	-	8.40	0.3307	42	101	10
520033212	-	-	Q	8.43	0.3320	43	101	10
8665850	-	-	-	8.50	0.3346	43	101	9
48169085	-	-	-	8.50	0.3346	43	101	10
520033712	-	-	-	8.56	0.3370	43	101	10
8665860	-	-	-	8.60	0.3386	43	101	9
48169086	-	-	-	8.60	0.3386	43	101	10
520034012	-	-	-	8.64	0.3402	44	101	10
520034112	-	-	-	8.68	0.3417	44	101	10
8665870	-	-	-	8.70	0.3425	44	101	9
48169087	-	-	-	8.70	0.3425	44	101	10

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

HTE

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List 5200 (Continued) NEW!

3D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
520034312	11/32	-	-	8.73	0.3438	44	101	3/8
8665875	-	-	-	8.75	0.3445	44	101	9
8665880	-	-	-	8.80	0.3465	44	101	9
48169088	-	-	-	8.80	0.3465	44	101	10
520034812	-	-	-	8.86	0.3488	45	101	10
8665890	-	-	-	8.90	0.3504	45	101	9
48169089	-	-	-	8.90	0.3504	45	101	10
8665900	-	-	-	9.00	0.3543	45	101	9
48169090	-	-	-	9.00	0.3543	45	101	10
8665910	-	-	-	9.10	0.3583	46	106	10
520035912	23/64	-	-	9.13	0.3594	46	106	3/8
8665920	-	-	-	9.20	0.3622	46	106	10
8665925	-	-	-	9.25	0.3642	47	106	10
8665930	-	-	-	9.30	0.3661	47	106	10
8665940	-	-	-	9.40	0.3701	47	106	10
8665950	-	-	-	9.50	0.3740	48	106	10
520037512	3/8	-	-	9.53	0.3750	48	106	3/8
520037612	-	-	-	9.55	0.3760	48	106	10
8665960	-	-	-	9.60	0.3780	48	106	10
8665970	-	-	-	9.70	0.3819	49	106	10
8665975	-	-	-	9.75	0.3839	49	106	10
8665980	-	-	-	9.80	0.3858	49	106	10
8665990	-	-	-	9.90	0.3898	50	106	10
520039012	25/64	-	-	9.92	0.3906	50	106	7/16
8666000	-	-	-	10.00	0.3937	50	106	10
8666010	-	-	-	10.10	0.3976	51	113	11
48169101	-	-	-	10.10	0.3976	51	113	12
8666020	-	-	-	10.20	0.4016	51	113	11
48169102	-	-	-	10.20	0.4016	51	113	12
8666025	-	-	-	10.25	0.4035	52	113	11
8666030	-	-	-	10.30	0.4055	52	113	11
48169103	-	-	-	10.30	0.4055	52	113	12
520040612	13/32	-	-	10.32	0.4063	52	113	7/16
8666040	-	-	-	10.40	0.4094	52	113	11
48169104	-	-	-	10.40	0.4094	52	113	12
520041112	-	-	-	10.44	0.4110	53	113	12
8666050	-	-	-	10.50	0.4134	53	113	11
48169105	-	-	-	10.50	0.4134	53	113	12
8666060	-	-	-	10.60	0.4173	53	113	11
48169106	-	-	-	10.60	0.4173	53	113	12
8666070	-	-	-	10.70	0.4213	54	113	11
48169107	-	-	-	10.70	0.4213	54	113	12
520042212	27/64	-	-	10.72	0.4219	54	113	7/16

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

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HTE

Work Material

List No.	P					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 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
5200	◎	◎	○	○		◎	◎	◎	◎		○		◎	○			

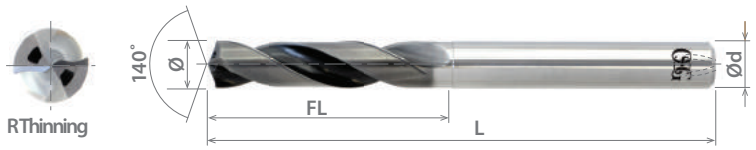
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List 5200 (Continued) NEW!

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

3D, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.8≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8666075	-	-	-	10.75	0.4232	54	113	11
8666080	-	-	-	10.80	0.4252	54	113	11
48169108	-	-	-	10.80	0.4252	54	113	12
520042712	-	-	-	10.86	0.4276	55	113	12
8666090	-	-	-	10.90	0.4291	55	113	11
48169109	-	-	-	10.90	0.4291	55	113	12
8666100	-	-	-	11.00	0.4331	55	113	11
48169110	-	-	-	11.00	0.4331	55	113	12
8666110	-	-	-	11.10	0.4370	56	120	12
520043712	7/16	-	-	11.11	0.4375	56	120	7/16
8666120	-	-	-	11.20	0.4409	56	120	12
8666130	-	-	-	11.30	0.4449	57	120	12
8666140	-	-	-	11.40	0.4488	57	120	12
8666150	-	-	-	11.50	0.4528	58	120	12
520045312	29/64	-	-	11.51	0.4531	58	120	1/2
8666160	-	-	-	11.60	0.4567	58	120	12
8666170	-	-	-	11.70	0.4606	59	120	12
8666180	-	-	-	11.80	0.4646	59	120	12
8666190	-	-	-	11.90	0.4685	60	120	12
520046912	15/32	-	-	11.91	0.4688	60	120	1/2
8666200	-	-	-	12.00	0.4724	60	120	12
8666210	-	-	-	12.10	0.4764	61	128	13
48169121	-	-	-	12.10	0.4764	61	128	14
8666220	-	-	-	12.20	0.4803	61	128	13
48169122	-	-	-	12.20	0.4803	61	128	14
8666230	-	-	-	12.30	0.4843	62	128	13
48169123	-	-	-	12.30	0.4843	62	128	14
520048512	31/64	-	-	12.30	0.4844	62	128	1/2
8666240	-	-	-	12.40	0.4882	62	128	13
48169124	-	-	-	12.40	0.4882	62	128	14
520049012	-	-	-	12.45	0.4902	63	128	14
8666250	-	-	-	12.50	0.4921	63	128	13
48169125	-	-	-	12.50	0.4921	63	128	14
8666260	-	-	-	12.60	0.4961	63	128	13
48169126	-	-	-	12.60	0.4961	63	128	14
520049912	-	-	-	12.68	0.4992	64	128	14
8666270	-	-	-	12.70	0.5000	64	128	13
520050012	1/2	-	-	12.70	0.5000	64	128	1/2
8666275	-	-	-	12.75	0.5020	64	128	13
8666280	-	-	-	12.80	0.5039	64	128	13
48169128	-	-	-	12.80	0.5039	64	128	14
8666290	-	-	-	12.90	0.5079	65	128	13
48169129	-	-	-	12.90	0.5079	65	128	14
8666300	-	-	-	13.00	0.5118	65	128	13
48169130	-	-	-	13.00	0.5118	65	128	14
520051512	-	-	-	13.08	0.5150	66	134	14
8666310	-	-	-	13.10	0.5157	66	134	14

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

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List 5200 (Continued) NEW!

3D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8666320	-	-	-	13.20	0.5197	66	134	14
8666330	-	-	-	13.30	0.5236	67	134	14
8666340	-	-	-	13.40	0.5276	67	134	14
520053112	17/32	-	-	13.49	0.5313	68	134	5/8
8666350	-	-	-	13.50	0.5315	68	134	14
8666360	-	-	-	13.60	0.5354	68	134	14
8666370	-	-	-	13.70	0.5394	69	134	14
8666380	-	-	-	13.80	0.5433	69	134	14
520054612	-	-	-	13.87	0.5461	70	134	14
8666390	-	-	-	13.90	0.5472	70	134	14
8666400	-	-	-	14.00	0.5512	70	134	14
8666410	-	-	-	14.10	0.5551	71	140	15
520055512	-	-	-	14.10	0.5551	71	140	16
8666420	-	-	-	14.20	0.5591	71	140	15
520055912	-	-	-	14.20	0.5591	71	140	16
520056212	9/16	-	-	14.29	0.5625	72	140	5/8
8666430	-	-	-	14.30	0.5630	72	140	15
520056312	-	-	-	14.30	0.5630	72	140	16
8666440	-	-	-	14.40	0.5669	72	140	15
520056612	-	-	-	14.40	0.5669	72	140	16
8666450	-	-	-	14.50	0.5709	73	140	15
48169145	-	-	-	14.50	0.5709	73	140	16
8666460	-	-	-	14.60	0.5748	73	140	15
520057412	-	-	-	14.60	0.5748	73	140	16
520057812	37/64	-	-	14.68	0.5780	74	140	5/8
8666470	-	-	-	14.70	0.5787	74	140	15
520057912	-	-	-	14.70	0.5787	74	140	16
8666480	-	-	-	14.80	0.5827	74	140	15
520058212	-	-	-	14.80	0.5827	74	140	16
8666490	-	-	-	14.90	0.5866	75	140	15
520058612	-	-	-	14.90	0.5866	75	140	16
8666500	-	-	-	15.00	0.5906	75	140	15
48169150	-	-	-	15.00	0.5906	75	140	16
8666510	-	-	-	15.10	0.5945	76	145	16
8666520	-	-	-	15.20	0.5984	76	145	16
8666530	-	-	-	15.30	0.6024	77	145	16
8666540	-	-	-	15.40	0.6063	77	145	16
8666550	-	-	-	15.50	0.6102	78	145	16
8666560	-	-	-	15.60	0.6142	78	145	16
8666570	-	-	-	15.70	0.6181	79	145	16
8666580	-	-	-	15.80	0.6220	79	145	16
520062512	5/8	-	-	15.88	0.6250	80	145	5/8
8666590	-	-	-	15.90	0.6260	80	145	16

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

continued on next page

HTE

Work Material

List No.	P					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 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
5200	◎	◎	○	○		◎	◎	◎	◎		○		◎	○			

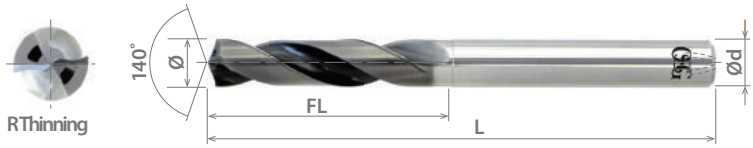
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List 5200 (Continued) NEW!

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

3D, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.8≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8666600	-	-	-	16.00	0.6299	80	145	16
520063312	-	-	-	16.10	0.6339	81	150	18
8666650	-	-	-	16.50	0.6496	83	150	17
48169165	-	-	-	16.50	0.6496	83	150	18
520065612	21/32	-	-	16.67	0.6563	85	150	3/4
520066312	-	-	-	16.84	0.6630	85	150	18
8666700	-	-	-	17.00	0.6693	85	150	17
48169170	-	-	-	17.00	0.6693	85	150	18
8666750	-	-	-	17.50	0.6890	88	155	18
520069312	-	-	-	17.61	0.6933	90	155	18
520069612	-	-	-	17.68	0.6961	90	155	18
520069812	-	-	-	17.73	0.6980	90	155	18
8666800	-	-	-	18.00	0.7087	90	155	18
8666850	-	-	-	18.50	0.7283	93	160	19
48169185	-	-	-	18.50	0.7283	93	160	20
520073312	-	-	-	18.64	0.7339	95	160	20
8666900	-	-	-	19.00	0.7480	95	160	19
48169190	-	-	-	19.00	0.7480	95	160	20
520075012	3/4	-	-	19.05	0.7500	95	160	3/4
520075712	-	-	-	19.25	0.7579	97	165	20
8666950	-	-	-	19.50	0.7677	98	165	20
520077412	-	-	-	19.66	0.7740	100	165	20
520077612	-	-	-	19.73	0.7768	100	165	20
520077812	-	-	-	19.76	0.7780	100	165	20
8667000	-	-	-	20.00	0.7874	100	165	20

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

HTE

Work Material

List No.	P					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 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
5200	▢	▢	▢	▢		▢	▢	▢	▢		▢		▢				

▢ good ▢ best

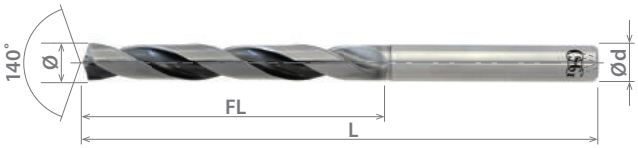
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List 5210 NEW!

5D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6





Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.76≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8667276	-	-	-	2.76	0.1087	25	78	3
8667278	-	-	-	2.78	0.1094	26	78	3
8667280	-	-	-	2.80	0.1102	26	78	3
8667290	-	-	-	2.90	0.1142	27	78	3
8667300	-	-	-	3.00	0.1181	27	78	3
8667310	-	-	-	3.10	0.1220	28	86	4
8667315	-	-	-	3.15	0.1240	29	86	4
521012512	1/8	-	-	3.18	0.1250	29	86	1/8
8667320	-	-	-	3.20	0.1260	29	86	4
8667326	-	-	-	3.26	0.1283	29	86	4
8667330	-	-	-	3.30	0.1299	30	86	4
8667340	-	-	-	3.40	0.1339	31	86	4
8667350	-	-	-	3.50	0.1378	32	86	4
8667360	-	-	-	3.60	0.1417	33	86	4
8667366	-	-	-	3.66	0.1441	33	86	4
8667368	-	-	-	3.68	0.1449	34	86	4
8667370	-	-	-	3.70	0.1457	34	86	4
8667375	-	-	-	3.75	0.1476	34	86	4
8667380	-	-	-	3.80	0.1496	35	86	4
8667390	-	-	-	3.90	0.1535	36	86	4
521015612	5/32	-	-	3.97	0.1563	36	86	4
8667400	-	-	-	4.00	0.1575	36	86	4
521016112	-	20	-	4.09	0.1610	37	95	6
8667410	-	-	-	4.10	0.1614	37	95	5
48170041	-	-	-	4.10	0.1614	37	95	6
8667420	-	-	-	4.20	0.1654	38	95	5
48170042	-	-	-	4.20	0.1654	38	95	6
8667430	-	-	-	4.30	0.1693	39	95	5
48170043	-	-	-	4.30	0.1693	39	95	6
521017112	11/64	-	-	4.37	0.1719	40	95	3/16
8667440	-	-	-	4.40	0.1732	40	95	5
48170044	-	-	-	4.40	0.1732	40	95	6
8667450	-	-	-	4.50	0.1772	41	95	5
48170045	-	-	-	4.50	0.1772	41	95	6
8667460	-	-	-	4.60	0.1811	42	95	5
48170046	-	-	-	4.60	0.1811	42	95	6
8667462	-	-	-	4.62	0.1819	42	95	5

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

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HTE

Work Material

List No.	P					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 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
5210	◎	◎	○	○		◎	◎	◎	◎		○		◎	○			

○ good ◎ best

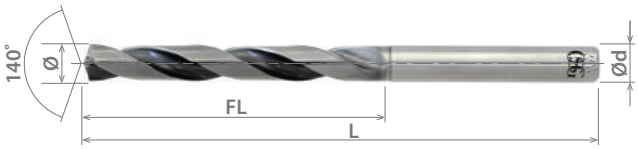
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List 5210 (Continued) NEW!

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

5D, Coolant-Through





Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.76≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8667464	-	-	-	4.64	0.1827	42	95	5
8667470	-	-	-	4.70	0.1850	43	95	5
48170047	-	-	-	4.70	0.1850	43	95	6
521018712	3/16	-	-	4.76	0.1875	44	95	3/16
8667480	-	-	-	4.80	0.1890	44	95	5
48170048	-	-	-	4.80	0.1890	44	95	6
8667485	-	-	-	4.85	0.1909	44	95	6
8667490	-	-	-	4.90	0.1929	45	95	5
48170049	-	-	-	4.90	0.1929	45	95	6
8667500	-	-	-	5.00	0.1969	45	95	5
48170050	-	-	-	5.00	0.1969	45	95	6
8667510	-	-	-	5.10	0.2008	41	100	6
521020312	13/64	-	-	5.16	0.2031	42	100	1/4
8667520	-	-	-	5.20	0.2047	42	100	6
8667525	-	-	-	5.25	0.2067	42	100	6
8667530	-	-	-	5.30	0.2087	43	100	6
8667540	-	-	-	5.40	0.2126	44	100	6
521021312	-	3	-	5.41	0.2130	44	100	6
8667550	-	-	-	5.50	0.2165	44	100	6
8667552	-	-	-	5.52	0.2173	45	100	6
8667554	-	-	-	5.54	0.2181	45	100	6
521021812	7/32	-	-	5.56	0.2188	45	100	1/4
8667560	-	-	-	5.60	0.2205	45	100	6
8667570	-	-	-	5.70	0.2244	46	100	6
8667580	-	-	-	5.80	0.2283	47	100	6
8667590	-	-	-	5.90	0.2323	48	100	6
521023412	15/64	-	-	5.95	0.2344	48	100	1/4
8667600	-	-	-	6.00	0.2362	48	100	6
8667610	-	-	-	6.10	0.2402	49	109	7
48170061	-	-	-	6.10	0.2402	49	109	8
8667620	-	-	-	6.20	0.2441	50	109	7
48170062	-	-	-	6.20	0.2441	50	109	8
8667625	-	-	-	6.25	0.2461	50	109	7
8667630	-	-	-	6.30	0.2480	51	109	7
48170063	-	-	-	6.30	0.2480	51	109	8
8667635	1/4	-	-	6.35	0.2500	52	109	1/4
8667640	-	-	-	6.40	0.2520	52	109	7
48170064	-	-	-	6.40	0.2520	52	109	8
8667650	-	-	-	6.50	0.2559	52	109	7
48170065	-	-	-	6.50	0.2559	52	109	8
521025712	-	-	F	6.53	0.2570	53	109	8
8667660	-	-	-	6.60	0.2598	53	109	7
48170066	-	-	-	6.60	0.2598	53	109	8
8667670	-	-	-	6.70	0.2638	54	109	7
48170067	-	-	-	6.70	0.2638	54	109	8
8667675	-	-	-	6.75	0.2657	54	109	7
521026512	17/64	-	-	6.75	0.2656	55	109	5/16

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

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List 5210 (Continued) NEW!

5D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8667680	-	-	-	6.80	0.2677	55	109	7
48170068	-	-	-	6.80	0.2677	55	109	8
8667690	-	-	-	6.90	0.2717	56	109	7
48170069	-	-	-	6.90	0.2717	56	109	8
8667700	-	-	-	7.00	0.2756	56	109	7
48170070	-	-	-	7.00	0.2756	56	109	8
8667710	-	-	-	7.10	0.2795	57	118	8
521028112	9/32	-	-	7.14	0.2813	58	118	5/16
8667720	-	-	-	7.20	0.2835	58	118	8
8667725	-	-	-	7.25	0.2854	58	118	8
8667730	-	-	-	7.30	0.2874	59	118	8
8667736	-	-	-	7.36	0.2898	59	118	8
8667738	-	-	-	7.38	0.2906	60	118	8
8667740	-	-	-	7.40	0.2913	60	118	8
8667750	-	-	-	7.50	0.2953	60	118	8
8667752	-	-	-	7.52	0.2961	61	118	8
8667754	-	-	-	7.54	0.2969	61	118	8
521029612	19/64	-	-	7.54	0.2969	60	118	5/16
8667760	-	-	-	7.60	0.2992	61	118	8
8667770	-	-	-	7.70	0.3031	62	118	8
8667775	-	-	-	7.75	0.3051	62	118	8
8667780	-	-	-	7.80	0.3071	63	118	8
8667790	-	-	-	7.90	0.3110	64	118	8
521031212	5/16	-	-	7.94	0.3125	64	118	5/16
8667800	-	-	-	8.00	0.3150	64	118	8
8667810	-	-	-	8.10	0.3189	65	128	9
48170081	-	-	-	8.10	0.3189	65	128	10
8667820	-	-	-	8.20	0.3228	66	128	9
48170082	-	-	-	8.20	0.3228	66	128	10
8667825	-	-	-	8.25	0.3248	66	128	9
8667830	-	-	-	8.30	0.3268	67	128	9
48170083	-	-	-	8.30	0.3268	67	128	10
521032812	21/64	-	-	8.33	0.3281	67	128	3/8
8667840	-	-	-	8.40	0.3307	68	128	9
48170084	-	-	-	8.40	0.3307	68	128	10
521033212	-	-	Q	8.43	0.3320	68	128	10
8667850	-	-	-	8.50	0.3346	68	128	9
48170085	-	-	-	8.50	0.3346	68	128	10
8667860	-	-	-	8.60	0.3386	69	128	9
48170086	-	-	-	8.60	0.3386	69	128	10
8667870	-	-	-	8.70	0.3425	70	128	9
48170087	-	-	-	8.70	0.3425	70	128	10
521034312	11/32	-	-	8.73	0.3438	70	128	3/8

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

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HTE

Work Material

List No.	P					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 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
5210	◎	◎	○	○		◎	◎	◎	◎		○		◎	○			

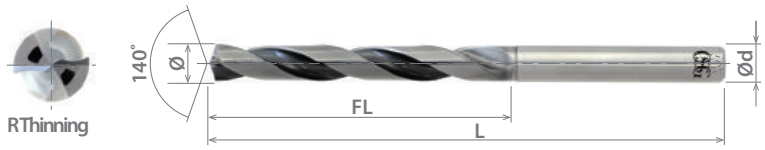
○ good ◎ best

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List 5210 (Continued) NEW!

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

5D, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.76≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8667875	-	-	-	8.75	0.3445	70	128	9
8667880	-	-	-	8.80	0.3465	71	128	9
48170088	-	-	-	8.80	0.3465	71	128	10
8667890	-	-	-	8.90	0.3504	72	128	9
48170089	-	-	-	8.90	0.3504	72	128	10
8667900	-	-	-	9.00	0.3543	72	128	9
48170090	-	-	-	9.00	0.3543	72	128	10
8667910	-	-	-	9.10	0.3583	73	136	10
521035912	23/64	-	-	9.13	0.3594	73	136	3/8
8667920	-	-	-	9.20	0.3622	74	136	10
8667924	-	-	-	9.24	0.3638	74	136	10
8667925	-	-	-	9.25	0.3642	74	136	10
8667926	-	-	-	9.26	0.3646	75	136	10
8667930	-	-	-	9.30	0.3661	75	136	10
8667936	-	-	-	9.36	0.3685	75	136	10
8667938	-	-	-	9.38	0.3693	76	136	10
8667940	-	-	-	9.40	0.3701	76	136	10
8667950	-	-	-	9.50	0.3740	76	136	10
8667952	-	-	-	9.52	0.3748	77	136	10
521037512	3/8	-	-	9.53	0.3750	76	136	3/8
8667954	-	-	-	9.54	0.3756	77	136	10
8667960	-	-	-	9.60	0.3780	77	136	10
8667970	-	-	-	9.70	0.3819	78	136	10
8667975	-	-	-	9.75	0.3839	78	136	10
8667980	-	-	-	9.80	0.3858	79	136	10
8667990	-	-	-	9.90	0.3898	80	136	10
521039012	25/64	-	-	9.92	0.3906	80	136	7/16
8668000	-	-	-	10.00	0.3937	80	136	10
8668010	-	-	-	10.10	0.3976	81	146	11
48170101	-	-	-	10.10	0.3976	81	146	12
8668020	-	-	-	10.20	0.4016	82	146	11
48170102	-	-	-	10.20	0.4016	82	146	12
8668025	-	-	-	10.25	0.4035	82	146	11
8668030	-	-	-	10.30	0.4055	83	146	11
48170103	-	-	-	10.30	0.4055	83	146	12
521040612	13/32	-	-	10.32	0.4063	83	146	7/16
8668040	-	-	-	10.40	0.4094	84	146	11
48170104	-	-	-	10.40	0.4094	84	146	12
8668050	-	-	-	10.50	0.4134	84	146	11
48170105	-	-	-	10.50	0.4134	84	146	12
8668060	-	-	-	10.60	0.4173	85	146	11
48170106	-	-	-	10.60	0.4173	85	146	12
8668070	-	-	-	10.70	0.4213	86	146	11
48170107	-	-	-	10.70	0.4213	86	146	12
521042212	27/64	-	-	10.72	0.4219	86	146	7/16
8668075	-	-	-	10.75	0.4232	86	146	11
8668080	-	-	-	10.80	0.4252	87	146	11

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

HTE

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List 5210 (Continued) NEW!

5D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
48170108	-	-	-	10.80	0.4252	87	146	12
8668090	-	-	-	10.90	0.4291	88	146	11
48170109	-	-	-	10.90	0.4291	88	146	12
8668100	-	-	-	11.00	0.4331	88	146	11
48170110	-	-	-	11.00	0.4331	88	146	12
8668110	-	-	-	11.10	0.4370	89	156	12
521043812	7/16	-	-	11.11	0.4375	89	156	7/16
8668120	-	-	-	11.20	0.4409	90	156	12
8668122	-	-	-	11.22	0.4417	90	156	12
8668124	-	-	-	11.24	0.4425	90	156	12
8668130	-	-	-	11.30	0.4449	91	156	12
8668136	-	-	-	11.36	0.4472	91	156	12
8668138	-	-	-	11.38	0.4480	92	156	12
8668140	-	-	-	11.40	0.4488	92	156	12
8668150	-	-	-	11.50	0.4528	92	156	12
521045312	29/64	-	-	11.51	0.4531	92	156	1/2
8668160	-	-	-	11.60	0.4567	93	156	12
8668170	-	-	-	11.70	0.4606	94	156	12
8668180	-	-	-	11.80	0.4646	95	156	12
8668190	-	-	-	11.90	0.4685	96	156	12
521046912	15/32	-	-	11.91	0.4688	96	156	1/2
8668200	-	-	-	12.00	0.4724	96	156	12
8668210	-	-	-	12.10	0.4764	97	167	13
48170121	-	-	-	12.10	0.4764	97	167	14
8668220	-	-	-	12.20	0.4803	98	167	13
48170122	-	-	-	12.20	0.4803	98	167	14
8668230	-	-	-	12.30	0.4843	99	167	13
48170123	-	-	-	12.30	0.4843	99	167	14
521048512	31/64	-	-	12.30	0.4844	99	167	1/2
8668240	-	-	-	12.40	0.4882	100	167	13
48170124	-	-	-	12.40	0.4882	100	167	14
8668250	-	-	-	12.50	0.4921	100	167	13
48170125	-	-	-	12.50	0.4921	100	167	14
8668260	-	-	-	12.60	0.4961	101	167	13
48170126	-	-	-	12.60	0.4961	101	167	14
8668270	-	-	-	12.70	0.5000	102	167	13
521050012	1/2	-	-	12.70	0.5000	102	167	1/2
8668275	-	-	-	12.75	0.5020	103	167	13
8668280	-	-	-	12.80	0.5039	103	167	13
48170128	-	-	-	12.80	0.5039	103	167	14
8668290	-	-	-	12.90	0.5079	104	167	13
48170129	-	-	-	12.90	0.5079	104	167	14
8668300	-	-	-	13.00	0.5118	104	167	13

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

continued on next page

HTE

Work Material

List No.	P					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 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
5210	▢	▢	▢	▢		▢	▢	▢	▢		▢		▢	▢			

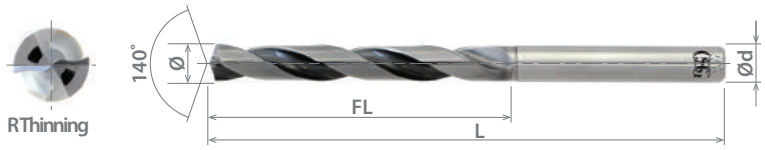
▢ good ▢ best

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List 5210 (Continued) NEW!

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

5D, Coolant-Through



Cutting Diameter Tolerance (h8)		
Size	mm	inch
2.76≤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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
48170130	-	-	-	13.00	0.5118	104	167	14
8668310	-	-	-	13.10	0.5157	105	176	14
8668320	-	-	-	13.20	0.5197	106	176	14
8668325	-	-	-	13.25	0.5217	106	176	14
8668330	-	-	-	13.30	0.5236	107	176	14
8668340	-	-	-	13.40	0.5276	108	176	14
521053112	17/32	-	-	13.49	0.5313	108	176	5/8
8668350	-	-	-	13.50	0.5315	108	176	14
8668360	-	-	-	13.60	0.5354	109	176	14
8668370	-	-	-	13.70	0.5394	110	176	14
8668380	-	-	-	13.80	0.5433	111	176	14
8668390	-	-	-	13.90	0.5472	112	176	14
8668400	-	-	-	14.00	0.5512	112	176	14
8668410	-	-	-	14.10	0.5551	113	185	15
521055512	-	-	-	14.10	0.5551	113	185	16
8668420	-	-	-	14.20	0.5591	114	185	15
521055912	-	-	-	14.20	0.5591	114	185	16
521056212	9/16	-	-	14.29	0.5625	115	185	5/8
8668430	-	-	-	14.30	0.5630	115	185	15
521056312	-	-	-	14.30	0.5630	115	185	16
8668440	-	-	-	14.40	0.5669	116	185	15
521056612	-	-	-	14.40	0.5669	116	185	16
8668450	-	-	-	14.50	0.5709	116	185	15
48170145	-	-	-	14.50	0.5709	116	185	16
8668460	-	-	-	14.60	0.5748	117	185	15
521057412	-	-	-	14.60	0.5748	117	185	16
8668470	-	-	-	14.70	0.5787	118	185	15
521057812	-	-	-	14.70	0.5787	118	185	16
8668480	-	-	-	14.80	0.5827	119	185	15
521058212	-	-	-	14.80	0.5827	119	185	16
8668490	-	-	-	14.90	0.5866	120	185	15
521058612	-	-	-	14.90	0.5866	120	185	16
8668500	-	-	-	15.00	0.5906	120	185	15
48170150	-	-	-	15.00	0.5906	120	185	16
8668510	-	-	-	15.10	0.5945	121	193	16
8668520	-	-	-	15.20	0.5984	122	193	16
8668525	-	-	-	15.25	0.6004	122	193	16
8668530	-	-	-	15.30	0.6024	123	193	16
8668540	-	-	-	15.40	0.6063	124	193	16
8668550	-	-	-	15.50	0.6102	124	193	16
8668560	-	-	-	15.60	0.6142	125	193	16
8668570	-	-	-	15.70	0.6181	126	193	16
8668580	-	-	-	15.80	0.6220	127	193	16
521062512	5/8	-	-	15.88	0.6250	128	193	5/8
8668590	-	-	-	15.90	0.6260	128	193	16
8668600	-	-	-	16.00	0.6299	128	193	16
521063312	-	-	-	16.10	0.6339	113	184	18

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

HTE

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List 5210 (Continued) NEW!

5D, Coolant-Through

SPEED FEED P248 | CARBIDE | WXL® | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8668650	-	-	-	16.50	0.6496	116	184	17
48170165	-	-	-	16.50	0.6496	116	184	18
521065612	21/32	-	-	16.67	0.6563	117	184	3/4
8668700	-	-	-	17.00	0.6693	119	184	17
48170170	-	-	-	17.00	0.6693	119	184	18
8668750	-	-	-	17.50	0.6890	123	191	18
8668800	-	-	-	18.00	0.7087	126	191	18
8668850	-	-	-	18.50	0.7283	130	198	19
48170185	-	-	-	18.50	0.7283	130	198	20
8668900	-	-	-	19.00	0.7480	133	198	19
48170190	-	-	-	19.00	0.7480	133	198	20
521075012	3/4	-	-	19.05	0.7500	134	205	3/4
521075712	-	-	-	19.25	0.7579	135	205	20
8668950	-	-	-	19.50	0.7677	137	205	20
8669000	-	-	-	20.00	0.7874	140	205	20

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

HTE

Work Material

List No.	P					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 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
5210	◎	◎	○	○		◎	◎	◎	◎		○		◎	○			

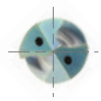
○ good ◎ best

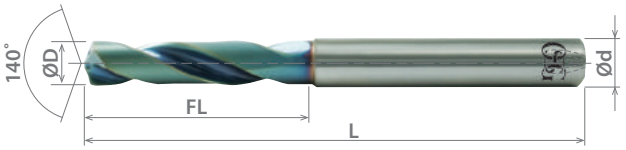
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List 5500 NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-3D, Coolant-Through





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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
550007812	–	–	–	2.00	0.0787	12	66	3
550008212	–	–	–	2.10	0.0827	13	66	3
550008612	–	–	–	2.20	0.0866	14	66	3
8630230	–	–	–	2.30	0.0906	14	66	3
550009312	3/32	–	–	2.38	0.0937	15	66	3
550009412	–	–	–	2.40	0.0945	15	66	3
8630250	–	–	–	2.50	0.0984	15	66	3
8630260	–	–	–	2.60	0.1024	16	66	3
550010612	–	–	–	2.70	0.1063	17	66	3
550010912	7/64	–	–	2.78	0.1094	17	66	3
8630280	–	–	–	2.80	0.1102	17	66	3
550011161	–	–	–	2.83	0.1116	18	66	3
8630290	–	–	–	2.90	0.1142	18	66	3
550011631	–	–	–	2.95	0.1163	18	66	3
8630300	–	–	–	3.00	0.1181	18	66	3
8630310	–	–	–	3.10	0.1220	19	74	4
550012511	1/8	–	–	3.18	0.1252	20	74	1/8
8630320	–	–	–	3.20	0.1260	20	74	4
8630330	–	–	–	3.30	0.1299	20	74	4
550013231	–	–	–	3.36	0.1323	21	74	4
8630340	–	–	–	3.40	0.1339	21	74	4
550013561	–	–	–	3.44	0.1356	21	74	4
8630350	–	–	–	3.50	0.1378	21	74	4
550013871	–	–	–	3.52	0.1387	22	74	4
550014051	–	–	–	3.57	0.1405	22	74	4
8630360	–	–	–	3.60	0.1417	22	74	4
8630370	–	–	–	3.70	0.1457	23	74	4
550014841	–	–	–	3.77	0.1484	23	74	4
8630380	–	–	–	3.80	0.1496	23	74	4
550015211	–	–	–	3.86	0.1521	24	74	4
8630390	–	–	–	3.90	0.1535	24	74	4
550015611	5/32	–	–	3.97	0.1562	24	74	5/32
8630400	–	–	–	4.00	0.1575	24	74	4
550015961	–	–	–	4.05	0.1596	25	80	5
550016111	–	20	–	4.09	0.1610	25	80	3/16
8630410	–	–	–	4.10	0.1614	25	80	5
550016361	–	–	–	4.16	0.1636	26	80	5
8630420	–	–	–	4.20	0.1654	26	80	5
550016811	–	–	–	4.27	0.1681	26	80	5
8630430	–	–	–	4.30	0.1693	26	80	5
550017111	11/64	–	–	4.37	0.1719	27	80	3/16
8630440	–	–	–	4.40	0.1732	27	80	5
550017541	–	–	–	4.46	0.1754	27	80	5
8630450	–	–	–	4.50	0.1772	27	80	5
8630460	–	–	–	4.60	0.1811	28	80	5
550018351	–	–	–	4.66	0.1835	29	80	5
8630470	–	–	–	4.70	0.1850	29	80	5
550018711	3/16	–	–	4.76	0.1874	29	80	3/16
8630480	–	–	–	4.80	0.1890	29	80	5
8630490	–	–	–	4.90	0.1929	30	80	5
8630500	–	–	–	5.00	0.1969	25	80	5

Packed: 1 pc.
Available WD1 coating only.

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List 5500 (Continued) NEW SIZES

WDO-3D, Coolant-Through

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8630510	–	–	–	5.10	0.2008	26	82	6
550020291	–	–	–	5.15	0.2029	26	82	6
550020311	13/64	–	–	5.18	0.2039	26	82	15/64
8630520	–	–	–	5.20	0.2047	26	82	6
550020701	–	–	–	5.26	0.2070	27	82	6
8630530	–	–	–	5.30	0.2087	27	82	6
8630540	–	–	–	5.40	0.2126	27	82	6
550021311	–	3	–	5.41	0.2130	28	82	1/4
550021521	–	–	–	5.47	0.2152	28	82	6
8630550	–	–	–	5.50	0.2165	28	82	6
550021811	7/32	–	–	5.56	0.2189	28	82	15/64
8630560	–	–	–	5.60	0.2205	28	82	6
8630570	–	–	–	5.70	0.2244	29	82	6
8630580	–	–	–	5.80	0.2283	29	82	6
8630590	–	–	–	5.90	0.2323	30	82	6
550023411	15/64	–	–	5.95	0.2344	30	82	15/64
8630600	–	–	–	6.00	0.2362	30	82	6
8630610	–	–	–	6.10	0.2402	31	88	7
550024221	–	–	–	6.15	0.2422	31	88	7
8630620	–	–	–	6.20	0.2441	31	88	7
8630630	–	–	–	6.30	0.2480	32	88	7
550025011	1/4	–	E	6.35	0.2500	32	88	1/4
8630640	–	–	–	6.40	0.2520	32	88	7
8630650	–	–	–	6.50	0.2559	33	88	7
550025711	–	–	F	6.53	0.2571	33	88	17/64
8630660	–	–	–	6.60	0.2598	33	88	7
550026201	–	–	–	6.65	0.2620	34	88	7
8630670	–	–	–	6.70	0.2638	34	88	7
550026511	17/64	–	–	6.75	0.2657	34	88	17/64
8630680	–	–	–	6.80	0.2677	34	88	7
550027011	–	–	–	6.86	0.2701	35	88	7
8630690	–	–	–	6.90	0.2717	35	88	7
8630700	–	–	–	7.00	0.2756	35	88	7
550027701	–	–	–	7.04	0.2770	36	94	8
8630710	–	–	–	7.10	0.2795	36	94	8
550028111	9/32	–	–	7.14	0.2811	36	94	9/32
8630720	–	–	–	7.20	0.2835	36	94	8
8630730	–	–	–	7.30	0.2874	37	94	8
8630740	–	–	–	7.40	0.2913	37	94	8
8630750	–	–	–	7.50	0.2953	38	94	8
550029611	19/64	–	–	7.54	0.2969	38	94	5/16
8630760	–	–	–	7.60	0.2992	38	94	8
8630770	–	–	–	7.70	0.3031	39	94	8
8630780	–	–	–	7.80	0.3071	39	94	8
8630790	–	–	–	7.90	0.3110	40	94	8
550031211	5/16	–	–	7.94	0.3126	40	94	5/16
8630800	–	–	–	8.00	0.3150	40	94	8

Packed: 1 pc.
Available WD1 coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5500	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎	◎	

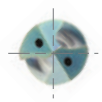
○ good ◎ best

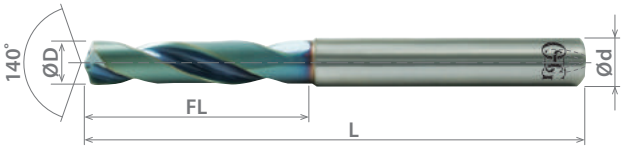
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List 5500 (Continued) NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-3D, Coolant-Through





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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8630810	–	–	–	8.10	0.3189	41	101	9
550032101	–	–	–	8.15	0.3210	41	101	9
8630820	–	–	–	8.20	0.3228	41	101	9
8630830	–	–	–	8.30	0.3268	42	101	9
550032811	21/64	–	–	8.33	0.3281	42	101	11/32
8630840	–	–	–	8.40	0.3307	42	101	9
550033111	–	–	Q	8.43	0.3319	43	101	11/32
8630850	–	–	–	8.50	0.3346	43	101	9
550033711	–	–	–	8.56	0.3371	43	101	9
8630860	–	–	–	8.60	0.3386	43	101	9
550034021	–	–	–	8.64	0.3402	44	101	9
550034161	–	–	–	8.68	0.3416	44	101	9
8630870	–	–	–	8.70	0.3425	44	101	9
550034311	11/32	–	–	8.73	0.3437	44	101	11/32
8630880	–	–	–	8.80	0.3465	44	101	9
550034881	–	–	–	8.86	0.3488	45	101	9
8630890	–	–	–	8.90	0.3504	45	101	9
8630900	–	–	–	9.00	0.3543	45	101	9
8630910	–	–	–	9.10	0.3583	46	106	10
550035911	23/64	–	–	9.13	0.3594	46	106	25/64
8630920	–	–	–	9.20	0.3622	46	106	10
8630930	–	–	–	9.30	0.3661	47	106	10
8630940	–	–	–	9.40	0.3701	47	106	10
8630950	–	–	–	9.50	0.3740	48	106	10
550037511	3/8	–	–	9.53	0.3752	48	106	3/8
550037601	–	–	–	9.55	0.3760	48	106	10
8630960	–	–	–	9.60	0.3780	48	106	10
8630970	–	–	–	9.70	0.3819	49	106	10
8630980	–	–	–	9.80	0.3858	49	106	10
8630990	–	–	–	9.90	0.3898	50	106	10
550039011	25/64	–	–	9.92	0.3906	50	106	25/64
8631000	–	–	–	10.00	0.3937	50	106	10
8631010	–	–	–	10.10	0.3976	51	113	11
8631020	–	–	–	10.20	0.4016	51	113	11
8631030	–	–	–	10.30	0.4055	52	113	11
550040611	13/32	–	–	10.32	0.4062	52	113	27/64
8631040	–	–	–	10.40	0.4094	52	113	11
550041111	–	–	–	10.44	0.4111	53	113	11
8631050	–	–	–	10.50	0.4134	53	113	11
8631060	–	–	–	10.60	0.4173	53	113	11
8631070	–	–	–	10.70	0.4213	54	113	11
550042211	27/64	–	–	10.72	0.4220	54	113	27/64
8631080	–	–	–	10.80	0.4252	54	113	11
550042761	–	–	–	10.86	0.4276	55	113	11
8631090	–	–	–	10.90	0.4291	55	113	11
8631100	–	–	–	11.00	0.4331	55	113	11
8631110	–	–	–	11.10	0.4370	56	120	12
550043711	7/16	–	–	11.11	0.4374	56	120	7/16
8631120	–	–	–	11.20	0.4409	56	120	12
8631130	–	–	–	11.30	0.4449	57	120	12

Packed: 1 pc.
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List 5500 (Continued) NEW SIZES

WDO-3D, Coolant-Through

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8631140	–	–	–	11.40	0.4488	57	120	12
8631150	–	–	–	11.50	0.4528	58	120	12
550045311	29/64	–	–	11.51	0.4531	58	120	15/32
8631160	–	–	–	11.60	0.4567	58	120	12
8631170	–	–	–	11.70	0.4606	59	120	12
8631180	–	–	–	11.80	0.4646	59	120	12
8631190	–	–	–	11.90	0.4685	60	120	12
550046811	15/32	–	–	11.91	0.4688	60	120	15/32
8631200	–	–	–	12.00	0.4724	60	120	12
8631210	–	–	–	12.10	0.4764	61	128	13
8631220	–	–	–	12.20	0.4803	61	128	13
8631230	–	–	–	12.30	0.4843	62	128	13
550048411	31/64	–	–	12.30	0.4844	62	128	1/2
8631240	–	–	–	12.40	0.4882	62	128	13
550049001	–	–	–	12.45	0.4900	63	128	13
8631250	–	–	–	12.50	0.4921	63	128	13
8631260	–	–	–	12.60	0.4961	63	128	13
550049911	–	–	–	12.68	0.4991	64	128	13
8631270	–	–	–	12.70	0.5000	64	128	13
550050011	1/2	–	–	12.70	0.5000	64	128	1/2
8631280	–	–	–	12.80	0.5039	64	128	13
8631290	–	–	–	12.90	0.5079	65	128	13
8631300	–	–	–	13.00	0.5118	65	128	13
550051501	–	–	–	13.08	0.5150	66	134	14
8631310	–	–	–	13.10	0.5157	66	134	14
8631320	–	–	–	13.20	0.5197	66	134	14
8631330	–	–	–	13.30	0.5236	67	134	14
8631340	–	–	–	13.40	0.5276	67	134	14
550053111	17/32	–	–	13.49	0.5311	68	134	35/64
8631350	–	–	–	13.50	0.5315	68	134	14
8631360	–	–	–	13.60	0.5354	68	134	14
8631370	–	–	–	13.70	0.5394	69	134	14
8631380	–	–	–	13.80	0.5433	69	134	14
550054601	–	–	–	13.87	0.5460	70	134	14
8631390	–	–	–	13.90	0.5472	70	134	14
8631400	–	–	–	14.00	0.5512	70	134	14
8631410	–	–	–	14.10	0.5551	71	140	15
8631420	–	–	–	14.20	0.5591	71	140	15
550056211	9/16	–	–	14.29	0.5626	72	140	9/16
8631430	–	–	–	14.30	0.5630	72	140	15
8631440	–	–	–	14.40	0.5669	72	140	15
8631450	–	–	–	14.50	0.5709	73	140	15
8631460	–	–	–	14.60	0.5748	73	140	15
550057781	–	–	–	14.68	0.5778	74	140	15
8631470	–	–	–	14.70	0.5787	74	140	15
8631480	–	–	–	14.80	0.5827	74	140	15
8631490	–	–	–	14.90	0.5866	75	140	15

Packed: 1 pc.
Available WD1 coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5500	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	○	○	▢	▢	▢	▢	

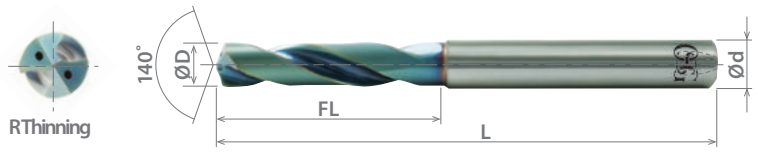
○ good ▢ best

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List 5500 (Continued) NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-3D, Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8631500	–	–	–	15.00	0.5906	75	140	15
8631510	–	–	–	15.10	0.5945	76	145	16
8631520	–	–	–	15.20	0.5984	76	145	16
8631530	–	–	–	15.30	0.6024	77	145	16
8631540	–	–	–	15.40	0.6063	77	145	16
8631550	–	–	–	15.50	0.6102	78	145	16
8631560	–	–	–	15.60	0.6142	78	145	16
8631570	–	–	–	15.70	0.6181	79	145	16
8631580	–	–	–	15.80	0.6220	79	145	16
550062511	5/8	–	–	15.88	0.6252	80	145	5/8
8631590	–	–	–	15.90	0.6260	80	145	16
8631600	–	–	–	16.00	0.6299	80	145	16
550063311	–	–	–	16.10	0.6339	83	150	18
8631650	–	–	–	16.50	0.6496	83	150	17
550065611	21/32	–	–	16.67	0.6563	85	150	21/32
550066301	–	–	–	16.84	0.6630	85	150	17
8631700	–	–	–	17.00	0.6693	85	150	17
8631750	–	–	–	17.50	0.6890	88	155	18
550069321	–	–	–	17.61	0.6932	90	155	18
550069601	–	–	–	17.68	0.6960	90	155	18
550069801	–	–	–	17.73	0.6980	90	155	18
8631800	–	–	–	18.00	0.7087	90	155	18
8631850	–	–	–	18.50	0.7283	93	160	19
550073391	–	–	–	18.64	0.7339	95	160	19
8631900	–	–	–	19.00	0.7480	95	160	19
550075011	3/4	–	–	19.05	0.7500	95	160	3/4
550075711	–	–	–	19.25	0.7579	98	165	20
8631950	–	–	–	19.50	0.7677	98	165	20
550077401	–	–	–	19.66	0.7740	100	165	20
550077661	–	–	–	19.73	0.7766	100	165	20
550077801	–	–	–	19.76	0.7780	100	165	20
8632000	–	–	–	20.00	0.7874	100	165	20

Packed: 1 pc.
Available WD1 coating only.

HTE

Work Material

List No.	P					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 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
5500	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	○	○	▢	▢	▢	▢	

○ good ▢ best

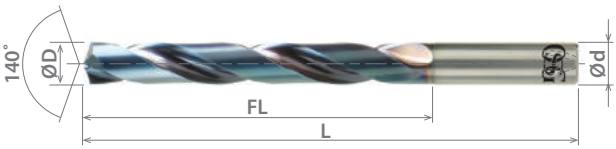
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List 5510 NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-5D, Coolant-Through





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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
551007812	–	–	–	2.00	0.0787	18	70	3
551008212	–	–	–	2.10	0.0827	19	70	3
551008612	–	–	–	2.20	0.0866	20	70	3
8632230	–	–	–	2.30	0.0906	21	70	3
551009312	3/32	–	–	2.38	0.0937	22	70	3
551009412	–	–	–	2.40	0.0945	22	70	3
8632250	–	–	–	2.50	0.0984	23	70	3
8632260	–	–	–	2.60	0.1024	24	78	3
551010612	–	–	–	2.70	0.1063	25	78	3
8632278	7/64	–	–	2.78	0.1094	26	78	3
8632280	–	–	–	2.80	0.1102	26	78	3
8632290	–	–	–	2.90	0.1142	27	78	3
8632300	–	–	–	3.00	0.1181	27	78	3
8632310	–	–	–	3.10	0.1220	28	86	4
551012511	1/8	–	–	3.18	0.1252	29	86	1/8
8632320	–	–	–	3.20	0.1260	29	86	4
8632330	–	–	–	3.30	0.1299	30	86	4
8632340	–	–	–	3.40	0.1339	31	86	4
8632350	–	–	–	3.50	0.1378	32	86	4
8632360	–	–	–	3.60	0.1417	33	86	4
8632370	–	–	–	3.70	0.1457	34	86	4
8632380	–	–	–	3.80	0.1496	35	86	4
8632390	–	–	–	3.90	0.1535	36	86	4
551015611	5/32	–	–	3.97	0.1562	36	86	5/32
8632400	–	–	–	4.00	0.1575	36	86	4
551016111	–	20	–	4.09	0.1610	37	95	3/16
8632410	–	–	–	4.10	0.1614	37	95	5
8632420	–	–	–	4.20	0.1654	38	95	5
8632430	–	–	–	4.30	0.1693	39	95	5
551017111	11/64	–	–	4.37	0.1719	40	95	3/16
8632440	–	–	–	4.40	0.1732	40	95	5
8632450	–	–	–	4.50	0.1772	41	95	5
8632460	–	–	–	4.60	0.1811	42	95	5
8632470	–	–	–	4.70	0.1850	43	95	5
551018711	3/16	–	–	4.76	0.1874	44	95	3/16
8632480	–	–	–	4.80	0.1890	44	95	5
8632490	–	–	–	4.90	0.1929	45	95	5
8632500	–	–	–	5.00	0.1969	45	95	5
8632510	–	–	–	5.10	0.2008	41	100	6

Packed: 1 pc.
Available WD1 coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5510	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	○	○	▢	▢	▢	▢	

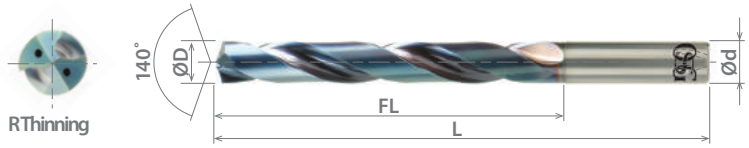
○ good ▢ best

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List 5510 (Continued) NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-5D, Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
551020311	13/64	–	–	5.16	0.2031	42	100	15/64
8632520	–	–	–	5.20	0.2047	42	100	6
8632530	–	–	–	5.30	0.2087	43	100	6
8632540	–	–	–	5.40	0.2126	44	100	6
551021311	–	3	–	5.41	0.2130	44	100	1/4
8632550	–	–	–	5.50	0.2165	44	100	6
551021811	7/32	–	–	5.56	0.2189	45	100	15/64
8632560	–	–	–	5.60	0.2205	45	100	6
8632570	–	–	–	5.70	0.2244	46	100	6
8632580	–	–	–	5.80	0.2283	47	100	6
8632590	–	–	–	5.90	0.2323	48	100	6
551023411	15/64	–	–	5.95	0.2344	48	100	15/64
8632600	–	–	–	6.00	0.2362	48	100	6
8632610	–	–	–	6.10	0.2402	49	109	7
8632620	–	–	–	6.20	0.2441	50	109	7
8632630	–	–	–	6.30	0.2480	51	109	7
551025011	1/4	–	E	6.35	0.2500	52	109	1/4
8632640	–	–	–	6.40	0.2520	52	109	7
8632650	–	–	–	6.50	0.2559	52	109	7
551025711	–	–	F	6.53	0.2571	53	109	17/64
8632660	–	–	–	6.60	0.2598	53	109	7
8632670	–	–	–	6.70	0.2638	54	109	7
551026511	17/64	–	–	6.75	0.2657	55	109	17/64
8632680	–	–	–	6.80	0.2677	55	109	7
8632690	–	–	–	6.90	0.2717	56	109	7
8632700	–	–	–	7.00	0.2756	56	109	7
8632710	–	–	–	7.10	0.2795	57	118	8
551028111	9/32	–	–	7.14	0.2811	58	118	9/32
8632720	–	–	–	7.20	0.2835	58	118	8
8632730	–	–	–	7.30	0.2874	59	118	8
8632740	–	–	–	7.40	0.2913	60	118	8
8632750	–	–	–	7.50	0.2953	60	118	8
551029611	19/64	–	–	7.54	0.2969	60	118	5/16
8632760	–	–	–	7.60	0.2992	61	118	8
8632770	–	–	–	7.70	0.3031	62	118	8
8632780	–	–	–	7.80	0.3071	63	118	8
8632790	–	–	–	7.90	0.3110	64	118	8
551031211	5/16	–	–	7.94	0.3126	64	118	5/16
8632800	–	–	–	8.00	0.3150	64	118	8
8632810	–	–	–	8.10	0.3189	65	128	9
8632820	–	–	–	8.20	0.3228	66	128	9
8632830	–	–	–	8.30	0.3268	67	128	9
551032811	21/64	–	–	8.33	0.3281	67	128	11/32
8632840	–	–	–	8.40	0.3307	68	128	9
551033111	–	–	Q	8.43	0.3319	68	128	11/32
8632850	–	–	–	8.50	0.3346	68	128	9
8632860	–	–	–	8.60	0.3386	69	128	9
8632870	–	–	–	8.70	0.3425	70	128	9
551034311	11/32	–	–	8.73	0.3437	70	128	11/32
8632880	–	–	–	8.80	0.3465	71	128	9

Packed: 1 pc.
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List 5510 (Continued) NEW SIZES

WDO-5D, Coolant-Through

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8632890	–	–	–	8.90	0.3504	72	128	9
8632900	–	–	–	9.00	0.3543	72	128	9
8632910	–	–	–	9.10	0.3583	73	136	10
551035911	23/64	–	–	9.13	0.3594	73	136	25/64
8632920	–	–	–	9.20	0.3622	74	136	10
8632930	–	–	–	9.30	0.3661	75	136	10
8632940	–	–	–	9.40	0.3701	76	136	10
8632950	–	–	–	9.50	0.3740	76	136	10
551037511	3/8	–	–	9.53	0.3752	76	136	3/8
8632960	–	–	–	9.60	0.3780	77	136	10
8632970	–	–	–	9.70	0.3819	78	136	10
8632980	–	–	–	9.80	0.3858	79	136	10
8632990	–	–	–	9.90	0.3898	80	136	10
551039011	25/64	–	–	9.92	0.3906	80	136	25/64
8633000	–	–	–	10.00	0.3937	80	136	10
8633010	–	–	–	10.10	0.3976	81	146	11
8633020	–	–	–	10.20	0.4016	82	146	11
8633030	–	–	–	10.30	0.4055	83	146	11
551040611	13/32	–	–	10.32	0.4062	83	146	27/64
8633040	–	–	–	10.40	0.4094	84	146	11
8633050	–	–	–	10.50	0.4134	84	146	11
8633060	–	–	–	10.60	0.4173	85	146	11
8633070	–	–	–	10.70	0.4213	86	146	11
551042211	27/64	–	–	10.72	0.4220	86	146	27/64
8633080	–	–	–	10.80	0.4252	87	146	11
8633090	–	–	–	10.90	0.4291	88	146	11
8633100	–	–	–	11.00	0.4331	88	146	11
8633110	–	–	–	11.10	0.4370	89	156	12
551043711	7/16	–	–	11.11	0.4374	89	156	7/16
8633120	–	–	–	11.20	0.4409	90	156	12
8633130	–	–	–	11.30	0.4449	91	156	12
8633140	–	–	–	11.40	0.4488	92	156	12
8633150	–	–	–	11.50	0.4528	92	156	12
551045311	29/64	–	–	11.51	0.4531	92	156	15/32
8633160	–	–	–	11.60	0.4567	93	156	12
8633170	–	–	–	11.70	0.4606	94	156	12
8633180	–	–	–	11.80	0.4646	95	156	12
8633190	–	–	–	11.90	0.4685	96	156	12
551046811	15/32	–	–	11.91	0.4688	96	156	15/32
8633200	–	–	–	12.00	0.4724	96	156	12
8633210	–	–	–	12.10	0.4764	97	167	13
8633220	–	–	–	12.20	0.4803	98	167	13
8633230	–	–	–	12.30	0.4843	99	167	13
551048411	31/64	–	–	12.30	0.4844	99	167	1/2
8633240	–	–	–	12.40	0.4882	100	167	13

Packed: 1 pc.
Available WD1 coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5510	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	

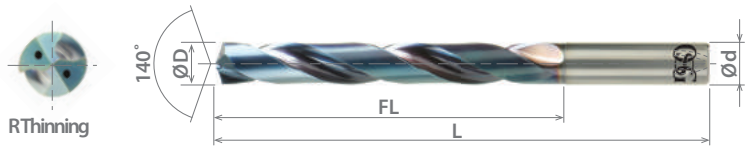
▢ good ▢ best

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List 5510 (Continued) NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-5D, Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8633250	–	–	–	12.50	0.4921	100	167	13
8633260	–	–	–	12.60	0.4961	101	167	13
551050011	1/2	–	–	12.70	0.5000	102	167	1/2
8633270	–	–	–	12.70	0.5000	102	167	13
8633280	–	–	–	12.80	0.5039	103	167	13
8633290	–	–	–	12.90	0.5079	104	167	13
8633300	–	–	–	13.00	0.5118	104	167	13
8633310	–	–	–	13.10	0.5157	105	176	14
8633320	–	–	–	13.20	0.5197	106	176	14
8633330	–	–	–	13.30	0.5236	107	176	14
8633340	–	–	–	13.40	0.5276	108	176	14
551053111	17/32	–	–	13.49	0.5311	108	176	35/64
8633350	–	–	–	13.50	0.5315	108	176	14
8633360	–	–	–	13.60	0.5354	109	176	14
8633370	–	–	–	13.70	0.5394	110	176	14
8633380	–	–	–	13.80	0.5433	111	176	14
8633390	–	–	–	13.90	0.5472	112	176	14
8633400	–	–	–	14.00	0.5512	112	176	14
8633410	–	–	–	14.10	0.5551	113	185	15
8633420	–	–	–	14.20	0.5591	114	185	15
551056211	9/16	–	–	14.29	0.5626	115	185	9/16
8633430	–	–	–	14.30	0.5630	115	185	15
8633440	–	–	–	14.40	0.5669	116	185	15
8633450	–	–	–	14.50	0.5709	116	185	15
8633460	–	–	–	14.60	0.5748	117	185	15
8633470	–	–	–	14.70	0.5787	118	185	15
8633480	–	–	–	14.80	0.5827	119	185	15
8633490	–	–	–	14.90	0.5866	120	185	15
8633500	–	–	–	15.00	0.5906	120	185	15
8633510	–	–	–	15.10	0.5945	121	193	16
8633520	–	–	–	15.20	0.5984	122	193	16
8633530	–	–	–	15.30	0.6024	123	193	16
8633540	–	–	–	15.40	0.6063	124	193	16
8633550	–	–	–	15.50	0.6102	124	193	16
8633560	–	–	–	15.60	0.6142	125	193	16
8633570	–	–	–	15.70	0.6181	126	193	16
8633580	–	–	–	15.80	0.6220	127	193	16
551062511	5/8	–	–	15.88	0.6252	128	193	5/8
8633590	–	–	–	15.90	0.6260	128	193	16
8633600	–	–	–	16.00	0.6299	128	193	16
551063311	–	–	–	16.10	0.6339	132	201	18
8633650	–	–	–	16.50	0.6496	132	201	17
551065611	21/32	–	–	16.67	0.6563	134	201	21/32
8633700	–	–	–	17.00	0.6693	136	201	17
8633750	–	–	–	17.50	0.6890	140	209	18
8633800	–	–	–	18.00	0.7087	144	209	18
8633850	–	–	–	18.50	0.7283	148	217	19
8633900	–	–	–	19.00	0.7480	152	217	19
551075011	3/4	–	–	19.05	0.7500	154	217	3/4
551075711	–	–	–	19.25	0.7579	154	217	20

Packed: 1 pc.
Available WD1 coating only.

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List 5510 (Continued) NEW SIZES

WDO-5D, Coolant-Through

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8633950	–	–	–	19.50	0.7677	156	225	20
8634000	–	–	–	20.00	0.7874	160	225	20

Packed: 1 pc.
Available WD1 coating only.

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Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
5510	▣	▣	▣	▣	▣	▣	▣	▣	▣	▢	▢	▢	▣	▣	▣	▣	

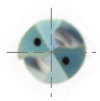
▢ good ▣ best

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List 5520 NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-8D, Coolant-Through





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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
*552007812	–	–	–	2.00	0.0787	22	75	3
*552008212	–	–	–	2.10	0.0827	24	75	3
*552008612	–	–	–	2.20	0.0866	25	75	3
*552009012	–	–	–	2.30	0.0906	26	75	3
*552009312	3/32	–	–	2.38	0.0937	27	75	3
*552009412	–	–	–	2.40	0.0945	27	75	3
*552009812	–	–	–	2.50	0.0984	28	75	3
*552010212	–	–	–	2.60	0.1024	29	80	3
*552010612	–	–	–	2.70	0.1063	30	80	3
*552010911	7/64	–	–	2.78	0.1094	31	80	3
*552011011	–	–	–	2.80	0.1102	31	80	3
*552011411	–	–	–	2.90	0.1142	32	80	3
8634300	–	–	–	3.00	0.1181	33	80	3
552012211	–	–	–	3.10	0.1220	34	95	4
552012511	1/8	–	–	3.18	0.1252	35	95	1/8
552012611	–	–	–	3.20	0.1260	36	95	4
552012911	–	–	–	3.30	0.1299	36	95	4
552013311	–	–	–	3.40	0.1339	37	95	4
8634350	–	–	–	3.50	0.1378	39	95	4
552014111	–	–	–	3.60	0.1417	40	95	4
552014511	–	–	–	3.70	0.1457	41	95	4
552014911	–	–	–	3.80	0.1496	42	95	4
552015311	–	–	–	3.90	0.1535	43	95	4
552015611	5/32	–	–	3.97	0.1563	44	95	5/32
8634400	–	–	–	4.00	0.1575	44	95	4
552016111	–	20	–	4.09	0.1610	45	105	3/16
552016112	–	–	–	4.10	0.1614	45	105	5
552016511	–	–	–	4.20	0.1654	46	105	5
552016911	–	–	–	4.30	0.1693	47	105	5
552017111	11/64	–	–	4.37	0.1720	47	105	3/16
552017311	–	–	–	4.40	0.1732	48	105	5
8634450	–	–	–	4.50	0.1772	50	105	5
552018111	–	–	–	4.60	0.1811	51	105	5
552018511	–	–	–	4.70	0.1850	52	105	5
552018711	3/16	–	–	4.76	0.1874	52	105	3/16
552018911	–	–	–	4.80	0.1890	53	105	5
552019211	–	–	–	4.90	0.1929	54	105	5
8634500	–	–	–	5.00	0.1969	55	105	5
552020011	–	–	–	5.10	0.2008	56	115	6
552020311	13/64	–	–	5.16	0.2031	57	115	15/64
552020411	–	–	–	5.20	0.2047	57	115	6
552020811	–	–	–	5.30	0.2087	58	115	6
552021211	–	–	–	5.40	0.2126	59	115	6
552021311	–	3	–	5.41	0.2130	60	115	1/4
8634550	–	–	–	5.50	0.2165	61	115	6
552021811	7/32	–	–	5.56	0.2189	61	115	15/64
552022011	–	–	–	5.60	0.2205	62	115	6
552022411	–	–	–	5.70	0.2244	63	115	6
552022811	–	–	–	5.80	0.2283	64	115	6
552023211	–	–	–	5.90	0.2323	65	115	6
552023411	15/64	–	–	5.95	0.2343	66	115	15/64
8634600	–	–	–	6.00	0.2362	66	115	6

Packed: 1 pc.
Available WD1 coating only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

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List 5520 (Continued) NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-8D, Coolant-Through

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
552024011	–	–	–	6.10	0.2402	67	125	7
552024411	–	–	–	6.20	0.2441	68	125	7
552024811	–	–	–	6.30	0.2480	69	125	7
552025011	1/4	–	–	6.35	0.2500	70	125	1/4
552025211	–	–	–	6.40	0.2520	70	125	7
8634650	–	–	–	6.50	0.2559	72	125	7
552025711	–	–	F	6.53	0.2571	72	125	17/64
552025911	–	–	–	6.60	0.2598	73	125	7
552026311	–	–	–	6.70	0.2638	74	125	7
552026511	17/64	–	–	6.75	0.2657	74	125	17/64
552026711	–	–	–	6.80	0.2677	75	125	7
552027111	–	–	–	6.90	0.2717	76	125	7
8634700	–	–	–	7.00	0.2756	77	125	7
552027911	–	–	–	7.10	0.2795	78	140	8
552028111	9/32	–	–	7.14	0.2811	79	140	9/32
552028311	–	–	–	7.20	0.2835	79	140	8
552028711	–	–	–	7.30	0.2874	80	140	8
552029111	–	–	–	7.40	0.2913	81	140	8
8634750	–	–	–	7.50	0.2953	83	140	8
552029611	19/64	–	–	7.54	0.2969	84	140	5/16
552029911	–	–	–	7.60	0.2992	84	140	8
552030311	–	–	–	7.70	0.3031	85	140	8
552030711	–	–	–	7.80	0.3071	86	140	8
552031111	–	–	–	7.90	0.3110	87	140	8
552031211	5/16	–	–	7.94	0.3126	87	140	5/16
8634800	–	–	–	8.00	0.3150	88	140	8
552031811	–	–	–	8.10	0.3189	89	150	9
552032211	–	–	–	8.20	0.3228	90	150	9
552032611	–	–	–	8.30	0.3268	91	150	9
552032811	21/64	–	–	8.33	0.3280	92	150	11/32
552033011	–	–	–	8.40	0.3307	92	150	9
552033111	–	–	Q	8.43	0.3319	93	150	11/32
8634850	–	–	–	8.50	0.3346	94	150	9
552033811	–	–	–	8.60	0.3386	95	150	9
552034211	–	–	–	8.70	0.3425	96	150	9
552034311	11/32	–	–	8.73	0.3437	96	150	11/32
552034611	–	–	–	8.80	0.3465	97	150	9
552035011	–	–	–	8.90	0.3504	98	150	9
8634900	–	–	–	9.00	0.3543	99	150	9
552035811	–	–	–	9.10	0.3583	100	160	10
552035911	23/64	–	–	9.13	0.3594	101	160	25/64
552036211	–	–	–	9.20	0.3622	101	160	10
552036611	–	–	–	9.30	0.3661	102	160	10
552037011	–	–	–	9.40	0.3701	103	160	10
8634950	–	–	–	9.50	0.3740	105	160	10
552037511	3/8	–	–	9.53	0.3752	105	160	3/8
552037811	–	–	–	9.60	0.3780	106	160	10
552038111	–	–	–	9.70	0.3819	107	160	10

Packed: 1 pc.
Available WD1 coating only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

continued on next page

HTE

Work Material

List No.	P					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 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
5520	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	○	○	▢	▢	▢	▢	

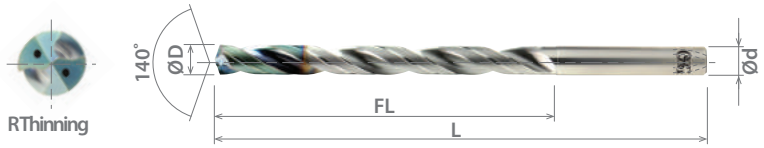
○ good ▢ best

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List 5520 (Continued) NEW SIZES

SPEED FEED P249 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-8D, Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
552038511	–	–	–	9.80	0.3858	108	160	10
552038911	–	–	–	9.90	0.3898	109	160	10
552039011	25/64	–	–	9.92	0.3906	110	160	25/64
8635000	–	–	–	10.00	0.3937	110	160	10
552039711	–	–	–	10.10	0.3976	111	182	11
552040111	–	–	–	10.20	0.4016	112	182	11
552040511	–	–	–	10.30	0.4055	113	182	11
552040611	13/32	–	–	10.32	0.4063	113	182	27/64
552040911	–	–	–	10.40	0.4094	114	182	11
8635050	–	–	–	10.50	0.4134	116	182	11
552041711	–	–	–	10.60	0.4173	117	182	11
552042111	–	–	–	10.70	0.4213	118	182	11
552042211	27/64	–	–	10.72	0.4220	118	182	27/64
552042511	–	–	–	10.80	0.4252	119	182	11
552042911	–	–	–	10.90	0.4291	120	182	11
8635100	–	–	–	11.00	0.4331	121	182	11
552043711	–	–	–	11.10	0.4370	122	194	12
552043811	7/16	–	–	11.11	0.4374	122	194	7/16
552044011	–	–	–	11.20	0.4409	123	194	12
552044411	–	–	–	11.30	0.4449	124	194	12
552044811	–	–	–	11.40	0.4488	125	194	12
8635150	–	–	–	11.50	0.4528	127	194	12
552045311	29/64	–	–	11.51	0.4531	127	194	15/32
552045611	–	–	–	11.60	0.4567	128	194	12
552046011	–	–	–	11.70	0.4606	129	194	12
552046411	–	–	–	11.80	0.4646	130	194	12
552046811	–	–	–	11.90	0.4685	131	194	12
8635200	–	–	–	12.00	0.4724	132	194	12
552047611	–	–	–	12.10	0.4764	133	206	13
552048011	–	–	–	12.20	0.4803	134	206	13
552048411	–	–	–	12.30	0.4843	135	206	13
552048811	–	–	–	12.40	0.4882	136	206	13
8635250	–	–	–	12.50	0.4921	138	206	13
552049611	–	–	–	12.60	0.4961	139	206	13
552050011	1/2	–	–	12.70	0.5000	140	206	1/2
552053111	17/32	–	–	13.49	0.5311	149	218	35/64
552053211	–	–	–	13.50	0.5315	149	218	14
552055111	–	–	–	14.00	0.5512	154	218	14
552056211	9/16	–	–	14.29	0.5626	157	230	9/16
552057011	–	–	–	14.50	0.5709	160	230	15
552062511	5/8	–	—	15.88	0.6252	175	241	5/8

Packed: 1 pc.
Available WD1 coating only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

HTE

Work Material

List No.	P					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 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
5520	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎	◎	

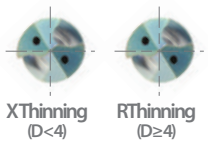
○ good ◎ best

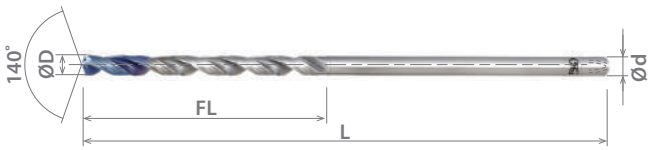
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List 5530

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-10D, Coolant-Through





Cutting Diameter Tolerance (h8)		
Size	mm	inch
2≤D≤3	-0.005 / -0.024	-0.0002 / -0.0009
3<D≤6	-0.010 / -0.032	-0.0004 / -0.0013
6<D≤10	-0.015 / -0.040	-0.0006 / -0.0016
10<D≤14.29	-0.020 / -0.050	-0.0008 / -0.0020

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
*553007812	–	–	–	2.00	0.0787	26	75	3
*553008212	–	–	–	2.10	0.0827	33	75	3
*553008612	–	–	–	2.20	0.0866	33	75	3
*553009012	–	–	–	2.30	0.0906	33	75	3
*553009312	3/32	–	–	2.38	0.0937	33	75	3
*553009412	–	–	–	2.40	0.0945	33	75	3
*553009812	–	–	–	2.50	0.0984	33	75	3
*553010212	–	–	–	2.60	0.1024	40	90	3
*553010612	–	–	–	2.70	0.1063	40	90	3
*553010912	7/64	–	–	2.78	0.1094	40	90	3
*553011012	–	–	–	2.80	0.1102	40	90	3
*553011412	–	–	–	2.90	0.1142	40	90	3
8636300	–	–	–	3.00	0.1181	40	90	3
553012212	–	–	–	3.10	0.1220	45	100	4
553012512	1/8	–	–	3.18	0.1252	45	100	1/8
553012612	–	–	–	3.20	0.1260	45	100	4
553012912	–	–	–	3.30	0.1299	45	100	4
553013312	–	–	–	3.40	0.1339	50	100	4
8636350	–	–	–	3.50	0.1378	50	100	4
553014112	–	–	–	3.60	0.1417	50	100	4
553014512	–	–	–	3.70	0.1457	50	100	4
553014912	–	25	–	3.80	0.1496	50	100	4
553015312	–	–	–	3.90	0.1535	50	100	4
553015612	5/32	–	–	3.97	0.1563	50	100	3/16
8636400	–	–	–	4.00	0.1575	50	100	4
553016112	–	20	–	4.09	0.1610	55	115	3/16
553016212	–	–	–	4.10	0.1614	55	115	5
553016512	–	–	–	4.20	0.1654	55	115	5
553016912	–	–	–	4.30	0.1693	60	115	5
553017312	–	–	–	4.40	0.1732	60	115	5
8636450	–	16	–	4.50	0.1772	60	115	5
553018112	–	–	–	4.60	0.1811	60	115	5
553018512	–	13	–	4.70	0.1850	65	115	5
553018712	3/16	–	–	4.76	0.1874	65	115	3/16
553018912	–	12	–	4.80	0.1890	65	115	5
553019212	–	–	–	4.90	0.1929	65	115	5
8636500	–	–	–	5.00	0.1969	65	115	5
553020012	–	–	–	5.10	0.2008	70	128	6
553020312	13/64	–	–	5.16	0.2031	70	128	15/64
553020412	–	–	–	5.20	0.2047	70	128	6
553020812	–	–	–	5.30	0.2087	70	128	6

Packed: 1 pc.
Available WD1 coating only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

continued on next page

HTE

Work Material

List No.	P					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 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
5530	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○	○	

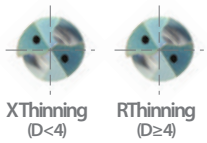
○ good ◎ best

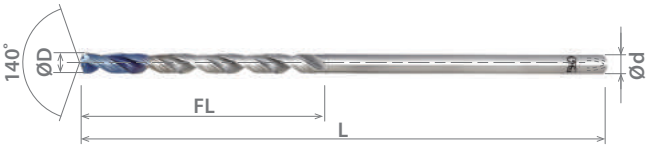
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List 5530 (Continued)

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-10D, Coolant-Through





Cutting Diameter Tolerance (e7)		
Size	mm	inch
2≤D≤3	-0.005 / -0.024	-0.0002 / -0.0009
3<D≤6	-0.010 / -0.032	-0.0004 / -0.0013
6<D≤10	-0.015 / -0.040	-0.0006 / -0.0016
10<D≤14.29	-0.020 / -0.050	-0.0008 / -0.0020

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
553021212	–	–	–	5.40	0.2126	78	128	6
553021312	–	3	–	5.41	0.2130	78	128	1/4
8636550	–	–	–	5.50	0.2165	78	128	6
553021812	7/32	–	–	5.56	0.2189	78	128	15/64
553022012	–	–	–	5.60	0.2205	78	128	6
553022412	–	–	–	5.70	0.2244	78	128	6
553022812	–	–	–	5.80	0.2283	78	128	6
553023212	–	–	–	5.90	0.2323	78	128	6
8636600	–	–	–	6.00	0.2362	78	128	6
553024012	–	–	–	6.10	0.2402	87	140	7
8636620	–	–	–	6.20	0.2441	87	140	7
553024812	–	–	–	6.30	0.2480	87	140	7
553025012	1/4	–	E	6.35	0.2500	87	140	1/4
553025212	–	–	–	6.40	0.2520	87	140	7
8636650	–	–	–	6.50	0.2559	87	140	7
553025712	–	–	F	6.53	0.2571	87	140	17/64
553025912	–	–	–	6.60	0.2598	87	140	7
553026312	–	–	–	6.70	0.2638	87	140	7
553026512	17/64	–	–	6.75	0.2657	90	140	17/64
553026712	–	–	–	6.80	0.2677	90	140	7
553027112	–	–	I	6.90	0.2717	90	140	7
8636700	–	–	–	7.00	0.2756	90	140	7
553027912	–	–	–	7.10	0.2795	100	155	8
553028112	9/32	–	–	7.14	0.2811	100	155	9/32
553028312	–	–	–	7.20	0.2835	100	155	8
553028712	–	–	–	7.30	0.2874	100	155	8
553029112	–	–	–	7.40	0.2913	100	155	8
8636750	–	–	–	7.50	0.2953	100	155	8
553029912	–	–	–	7.60	0.2992	105	155	8
553030312	–	–	–	7.70	0.3031	105	155	8
553030712	–	–	–	7.80	0.3071	105	155	8
553031112	–	–	–	7.90	0.3110	105	155	8
553031212	5/16	–	–	7.94	0.3126	105	155	5/16
8636800	–	–	–	8.00	0.3150	105	155	8
553031812	–	–	–	8.10	0.3189	110	165	9
553032212	–	–	P	8.20	0.3228	110	165	9
8636830	–	–	–	8.30	0.3268	110	165	9
553033012	–	–	–	8.40	0.3307	110	165	9
553033212	–	–	Q	8.43	0.3319	110	165	11/32
8636850	–	–	–	8.50	0.3346	110	165	9
553033812	–	–	–	8.60	0.3386	115	165	9
553034212	–	–	–	8.70	0.3425	115	165	9
553034312	11/32	–	–	8.73	0.3437	115	165	11/32
553034612	–	–	–	8.80	0.3465	115	165	9
553035012	–	–	–	8.90	0.3504	115	165	9
8636900	–	–	–	9.00	0.3543	115	165	9
553035812	–	–	–	9.10	0.3583	125	190	10
553036212	–	–	–	9.20	0.3622	125	190	10
553036612	–	–	–	9.30	0.3661	125	190	10

Packed: 1 pc.
Available WD1 coating only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

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List 5530 (Continued)

WDO-10D, Coolant-Through

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
553037012	–	–	–	9.40	0.3701	125	190	10
8636950	–	–	–	9.50	0.3740	125	190	10
553037512	3/8	–	–	9.53	0.3752	130	190	3/8
553037812	–	–	–	9.60	0.3780	130	190	10
553038112	–	–	–	9.70	0.3819	130	190	10
553038512	–	–	W	9.80	0.3858	130	190	10
553038912	–	–	–	9.90	0.3898	130	190	10
8637000	–	–	–	10.00	0.3937	130	190	10
553039712	–	–	–	10.10	0.3976	140	205	11
553040112	–	–	–	10.20	0.4016	140	205	11
553040512	–	–	–	10.30	0.4055	140	205	11
553040912	–	–	–	10.40	0.4094	140	205	11
553041312	–	–	–	10.50	0.4134	140	205	11
553041712	–	–	–	10.60	0.4173	140	205	11
553042112	–	–	–	10.70	0.4213	140	205	11
553042212	27/64	–	–	10.72	0.4220	145	205	27/64
553042512	–	–	–	10.80	0.4252	145	205	11
553042912	–	–	–	10.90	0.4291	145	205	11
8637100	–	–	–	11.00	0.4331	145	205	11
553043712	–	–	–	11.10	0.4370	155	215	12
553043812	7/16	–	–	11.11	0.4374	155	215	7/16
553044012	–	–	–	11.20	0.4409	155	215	12
553044412	–	–	–	11.30	0.4449	155	215	12
553044812	–	–	–	11.40	0.4488	155	215	12
553045212	–	–	–	11.50	0.4528	155	215	12
553045312	29/64	–	–	11.51	0.4531	155	215	15/32
553045612	–	–	–	11.60	0.4567	155	215	12
553046012	–	–	–	11.70	0.4606	155	215	12
553046412	–	–	–	11.80	0.4646	155	215	12
553046812	–	–	–	11.90	0.4685	155	215	12
8637200	–	–	–	12.00	0.4724	155	215	12
553049212	–	–	–	12.50	0.4921	155	215	13
553050012	1/2	–	–	12.70	0.5000	155	215	1/2
553056212	9/16	–	–	14.29	0.5626	180	230	9/16

Packed: 1 pc.
Available WD1 coating only.
* Sizes ≤ 2.90 mm have a single margin. Sizes ≥ 3 mm have a double margin.

HTE

Work Material

List No.	P					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 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
5530	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○	○	

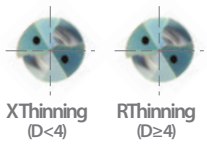
○ good ◎ best

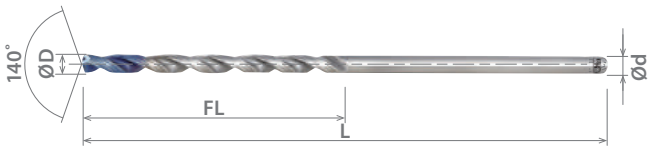
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List 5535 NEW!

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-15D, Coolant-Through





Cutting Diameter Tolerance (e7)		
Size	mm	inch
D=3	-0.005 / -0.024	-0.0002 / -0.0009
3<D≤6	-0.010 / -0.032	-0.0004 / -0.0013
6<D≤10	-0.015 / -0.040	-0.0006 / -0.0016
10<D≤14.29	-0.020 / -0.050	-0.0008 / -0.0020

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8638300	–	–	–	3.00	0.1181	55	105	3
553512512	1/8	–	–	3.18	0.1252	60	125	1/8
48150032	–	–	–	3.20	0.1260	60	125	4
8638350	–	–	–	3.50	0.1378	65	125	4
553514112	9/64	–	–	3.57	0.1406	65	125	5/32
553515612	5/32	–	–	3.97	0.1563	75	125	3/16
8638400	–	–	–	4.00	0.1575	75	125	4
553517212	11/64	–	–	4.37	0.1720	85	140	3/16
48150044	–	–	–	4.40	0.1732	85	140	6
48150045	–	–	–	4.50	0.1772	85	140	6
553518712	3/16	–	–	4.76	0.1874	90	140	3/16
48150048	–	–	–	4.80	0.1890	90	140	6
48150050	–	–	–	5.00	0.1969	90	140	6
48150051	–	–	–	5.10	0.2008	95	160	6
553520312	13/64	–	–	5.16	0.2031	95	160	1/4
48150052	–	–	–	5.20	0.2047	95	160	6
553521312	–	–	–	5.41	0.2130	110	160	6
8638550	–	–	–	5.50	0.2165	110	160	6
553521912	7/32	–	–	5.56	0.2189	110	160	1/4
553523412	15/64	–	–	5.95	0.2343	110	160	1/4
8638600	–	–	–	6.00	0.2362	110	160	6
48150062	–	–	–	6.20	0.2441	120	175	8
553525012	1/4	–	–	6.35	0.2500	120	175	1/4
48150065	–	–	–	6.50	0.2559	120	175	8
553526612	17/64	–	–	6.75	0.2657	125	175	5/16
48150070	–	–	–	7.00	0.2756	125	175	8
553528112	9/32	–	–	7.14	0.2811	135	195	5/16
8638750	–	–	–	7.50	0.2953	135	195	8
553529712	19/64	–	–	7.54	0.2969	145	195	5/16
553531312	5/16	–	–	7.94	0.3126	145	195	5/16
8638800	–	–	–	8.00	0.3150	145	195	8
48150081	–	–	–	8.10	0.3189	155	210	10
553532812	21/64	–	–	8.33	0.3280	155	210	3/8
48150085	–	–	–	8.50	0.3346	155	210	10
553534412	11/32	–	–	8.73	0.3437	160	210	3/8
48150090	–	–	–	9.00	0.3543	160	210	10
553535912	23/64	–	–	9.13	0.3594	170	240	3/8
48150094	–	–	–	9.40	0.3701	170	240	10
8638950	–	–	–	9.50	0.3740	170	240	10
553537512	3/8	–	–	9.53	0.3752	180	240	3/8
48150098	–	–	–	9.80	0.3858	180	240	10
553539112	25/64	–	–	9.92	0.3906	180	240	7/16
8639000	–	–	–	10.00	0.3937	180	240	10
553540612	13/32	–	–	10.32	0.4063	190	260	7/16
48150105	–	–	–	10.50	0.4134	190	260	12
553542212	27/64	–	–	10.72	0.4220	200	260	7/16
48150110	–	–	–	11.00	0.4331	200	260	12
553543712	7/16	–	–	11.11	0.4374	210	280	7/16
48150115	–	–	–	11.50	0.4528	210	280	12
553545312	29/64	–	–	11.51	0.4531	210	280	1/2
553546912	15/32	–	–	11.91	0.4689	215	280	1/2

Packed: 1 pc.
Available WD1 coating only.

HTE

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List 5535 (Continued) NEW!

WDO-15D, Coolant-Through

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8639200	–	–	–	12.00	0.4724	215	280	12
48150125	–	–	–	12.50	0.4921	225	290	14
553550012	1/2	–	–	12.70	0.5000	230	295	1/2
553553112	17/32	–	–	13.49	0.5311	245	315	5/8
553556312	9/16	–	–	14.29	0.5626	260	330	5/8

Packed: 1 pc.
Available WD1 coating only.

HTE

Work Material

List No.	P					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 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
5535	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○		

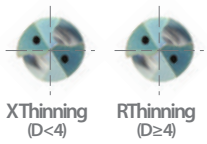
○ good ◎ best

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List 5540 NEW SIZES

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-20D, Coolant-Through





Cutting Diameter Tolerance (e7)		
Size	mm	inch
D=3	-0.005 / -0.024	-0.0002 / -0.0009
3<D≤6	-0.010 / -0.032	-0.0004 / -0.0013
6<D≤10	-0.015 / -0.040	-0.0006 / -0.0016
10<D≤14.29	-0.020 / -0.050	-0.0008 / -0.0020

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8646300	–	–	–	3.00	0.1181	70	120	3
554012512	1/8	–	–	3.18	0.1252	70	120	1/8
48200032	–	–	–	3.20	0.1260	80	140	4
8646350	–	–	–	3.50	0.1378	85	140	4
554014012	9/64	–	–	3.57	0.1406	85	140	5/32
554015612	5/32	–	–	3.97	0.1563	90	140	3/16
8646400	–	–	–	4.00	0.1575	90	140	4
554017212	11/64	–	–	4.37	0.1720	110	165	3/16
8646450	–	16	–	4.50	0.1772	110	165	5
554018712	3/16	–	–	4.76	0.1874	110	165	3/16
48200048	–	–	–	4.80	0.1890	115	165	6
8646500	–	–	–	5.00	0.1969	115	165	5
48200051	–	–	–	5.10	0.2008	120	190	6
554020312	13/64	–	–	5.16	0.2031	120	190	15/64
48200052	–	–	–	5.20	0.2047	120	190	6
554021312	–	–	–	5.41	0.2130	140	190	6
8646550	–	–	–	5.50	0.2165	140	190	6
554021812	7/32	–	–	5.56	0.2189	140	190	15/64
554023412	15/64	–	–	5.95	0.2343	140	190	1/4
8646600	–	–	–	6.00	0.2362	140	190	6
48200062	–	–	–	6.20	0.2441	155	210	8
554025012	1/4	–	E	6.35	0.2500	150	200	1/4
8646650	–	–	–	6.50	0.2559	155	210	7
554026512	17/64	–	–	6.75	0.2657	155	210	17/64
8646700	–	–	–	7.00	0.2756	160	210	7
554028112	9/32	–	–	7.14	0.2811	170	230	9/32
8646750	–	–	–	7.50	0.2953	170	230	8
554029612	19/64	–	–	7.54	0.2969	180	230	5/16
554031212	5/16	–	–	7.94	0.3126	180	230	5/16
8646800	–	–	–	8.00	0.3150	180	230	8
48200081	–	–	–	8.10	0.3189	195	260	10
554032812	21/64	–	–	8.33	0.3280	195	260	3/8
8646850	–	–	–	8.50	0.3346	195	260	9
554034312	11/32	–	–	8.73	0.3437	210	260	11/32
8646900	–	–	–	9.00	0.3543	210	260	9
554035912	23/64	–	–	9.13	0.3594	220	290	3/8
48200094	–	–	–	9.40	0.3701	220	290	10
8646950	–	–	–	9.50	0.3740	220	290	10
554037512	3/8	–	–	9.53	0.3752	220	290	3/8
48200098	–	–	–	9.80	0.3858	230	290	10
554039012	25/64	–	–	9.92	0.3906	230	290	7/16
8647000	–	–	–	10.00	0.3937	230	290	10
554040612	13/32	–	–	10.32	0.4063	250	310	7/16
554041312	–	–	–	10.50	0.4134	250	310	11
554042212	27/64	–	–	10.72	0.4220	250	310	27/64
8647100	–	–	–	11.00	0.4331	250	310	11
554043712	7/16	–	–	11.11	0.4374	270	330	7/16
554045212	–	–	–	11.50	0.4528	270	330	12
554045312	29/64	–	–	11.51	0.4531	270	330	15/32

Packed: 1 pc.
Available WD1 coating only.

HTE

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 5540 NEW SIZES

WDO-20D, Coolant-Through

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
554046812	15/32	–	–	11.91	0.4689	270	330	1/2
8647200	–	–	–	12.00	0.4724	270	330	12
554049212	–	–	–	12.50	0.4921	280	330	13
554050012	1/2	–	–	12.70	0.5000	280	330	1/2
554053112	17/32	–	–	13.49	0.5311	310	380	5/8
554056212	9/16	–	–	14.29	0.5626	315	365	9/16

Packed: 1 pc.
Available WD1 coating only.

HTE

Work Material

List No.	P					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 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
5540	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○		

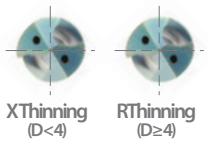
○ good ◎ best

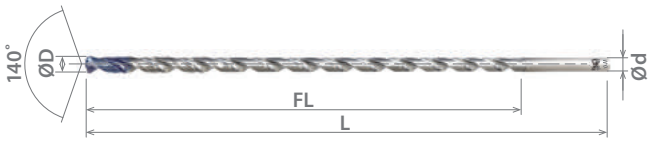
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 5550 NEW SIZES

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-30D, Coolant-Through





Cutting Diameter Tolerance (e7)		
Size	mm	inch
D=3	-0.005 / -0.024	-0.0002 / -0.0009
3<D≤6	-0.010 / -0.032	-0.0004 / -0.0013
6<D≤10	-0.015 / -0.040	-0.0006 / -0.0016
10<D≤14.29	-0.020 / -0.050	-0.0008 / -0.0020

EDP Number	Diameter					xD	Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d
555011812	–	–	–	3.00	0.1181	25 x D	85	135	3
555012512	1/8	–	–	3.18	0.1252	25 x D	95	165	1/8
48300032	–	–	–	3.20	0.1260	30 x D	105	185	4
8648350	–	–	–	3.50	0.1378	30 x D	116	185	4
555014012	9/64	–	–	3.57	0.1406	30 x D	116	185	5/32
555015612	5/32	–	–	3.97	0.1563	30 x D	132	185	3/16
8648400	–	–	–	4.00	0.1575	30 x D	132	185	4
555017212	11/64	–	–	4.37	0.1720	30 x D	150	215	3/16
8648450	–	16	–	4.50	0.1772	30 x D	150	215	5
555018712	3/16	–	–	4.76	0.1874	30 x D	155	210	3/16
48300048	–	–	–	4.80	0.1890	30 x D	165	215	6
8648500	–	–	–	5.00	0.1969	30 x D	165	215	5
48300051	–	–	–	5.10	0.2008	30 x D	180	250	6
555020312	13/64	–	–	5.16	0.2031	30 x D	180	250	15/64
48300052	–	–	–	5.20	0.2047	30 x D	180	250	6
555021312	–	–	–	5.41	0.2130	30 x D	200	250	6
8648550	–	–	–	5.50	0.2165	30 x D	200	250	6
555021812	7/32	–	–	5.56	0.2189	30 x D	200	250	15/64
555023412	15/64	–	–	5.95	0.2343	30 x D	200	250	1/4
8648600	–	–	–	6.00	0.2362	30 x D	200	250	6
48300062	–	–	–	6.20	0.2441	30 x D	215	280	8
555025012	1/4	–	E	6.35	0.2500	30 x D	215	280	1/4
8648650	–	–	–	6.50	0.2559	30 x D	215	280	7
555026512	17/64	–	–	6.75	0.2657	30 x D	230	280	17/64
8648700	–	–	–	7.00	0.2756	30 x D	230	280	7
555028112	9/32	–	–	7.14	0.2811	30 x D	250	315	9/32
8648750	–	–	–	7.50	0.2953	30 x D	250	315	8
555029612	19/64	–	–	7.54	0.2969	30 x D	265	315	5/16
555031212	5/16	–	–	7.94	0.3126	30 x D	265	315	5/16
8648800	–	–	–	8.00	0.3150	30 x D	265	315	8
48300081	–	–	–	8.10	0.3189	30 x D	280	350	10
555032812	21/64	–	–	8.33	0.3280	30 x D	280	350	3/8
8648850	–	–	–	8.50	0.3346	30 x D	280	350	9
555034312	11/32	–	–	8.73	0.3437	30 x D	300	350	11/32
8648900	–	–	–	9.00	0.3543	30 x D	300	350	9
555035912	23/64	–	–	9.13	0.3594	30 x D	315	390	3/8
48300094	–	–	–	9.40	0.3701	30 x D	315	390	10
8648950	–	–	–	9.50	0.3740	30 x D	315	390	10
555037512	3/8	–	–	9.53	0.3752	30 x D	315	390	3/8
48300098	–	–	–	9.80	0.3858	30 x D	330	390	10
555039012	25/64	–	–	9.92	0.3906	30 x D	330	390	7/16
8649000	–	–	–	10.00	0.3937	30 x D	330	390	10
555040612	13/32	–	–	10.32	0.4063	30 x D	340	400	7/16
555041312	–	–	–	10.50	0.4134	30 x D	350	400	11
555042212	27/64	–	–	10.72	0.4220	30 x D	350	400	27/64
555043312	–	–	–	11.00	0.4331	30 x D	350	400	11
555043712	7/16	–	–	11.11	0.4374	30 x D	350	400	7/16
555045212	–	–	–	11.50	0.4528	28 x D	350	400	12
555045312	29/64	–	–	11.51	0.4531	28 x D	350	400	15/32

Packed: 1 pc.
Available WD1 coating only.

HTE

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 5550 NEW SIZES

SPEED FEED P250 | CARBIDE | WD1 | COOLANT THROUGH | 30° | SHRINK h6

WDO-30D, Coolant-Through

EDP Number	Diameter					xD	Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch		FL	L	d
555046812	15/32	–	–	11.91	0.4689	25 x D	340	400	1/2
555047212	–	–	–	12.00	0.4724	26 x D	350	400	12
555049212	–	–	–	12.50	0.4921	25 x D	350	400	13
555050012	1/2	–	–	12.70	0.5000	25 x D	350	400	1/2
555053112	17/32	–	–	13.49	0.5311	22 x D	340	400	5/8
555056212	9/16	–	–	14.29	0.5626	22 x D	350	400	9/16

Packed: 1 pc.
Available WD1 coating only.

HTE

Work Material

List No.	P					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 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
5550	◎	◎	◎	◎	◎	◎	◎	○	◎		○		○	◎	○		

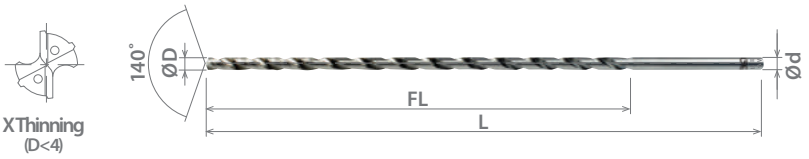
○ good ◎ best

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List 5275

SPEED FEED P251 | CARBIDE | BR | COOLANT THROUGH | 30° | SHRINK h6

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



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	15 x D	75	125	4
8567340	–	–	–	4.00	0.1575	20 x D	90	140	4
8567345	–	16	–	4.50	0.1772	20 x D	110	165	5
8567150	–	–	–	5.00	0.1969	15 x D	90	140	5
8567350	–	–	–	5.00	0.1969	20 x D	115	165	5
8567450	–	–	–	5.00	0.1969	30 x D	165	215	5
8567355	–	–	–	5.50	0.2165	20 x D	140	190	6
8567455	–	–	–	5.50	0.2165	30 x D	200	250	6
8567160	–	–	–	6.00	0.2362	15 x D	110	160	6
8567360	–	–	–	6.00	0.2362	20 x D	140	190	6
8567460	–	–	–	6.00	0.2362	30 x D	200	250	6
8567165	–	–	–	6.50	0.2559	15 x D	120	175	7
8567170	–	–	–	7.00	0.2756	15 x D	125	175	7
8567370	–	–	–	7.00	0.2756	20 x D	160	210	7
8567470	–	–	–	7.00	0.2756	30 x D	230	280	7
8567180	–	–	–	8.00	0.3150	15 x D	145	195	8
8567380	–	–	–	8.00	0.3150	20 x D	180	230	8
8567480	–	–	–	8.00	0.3150	30 x D	265	315	8
8567190	–	–	–	9.00	0.3543	15 x D	160	210	9
8567390	–	–	–	9.00	0.3543	20 x D	210	260	9
8567200	–	–	–	10.00	0.3937	15 x D	180	240	10
8567400	–	–	–	10.00	0.3937	20 x D	230	290	10

Packed: 1 pc.
Available Bright finish only.

HTE

Work Material

List No.	P					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 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
5275										◻	◻						

◻ good ◻ best

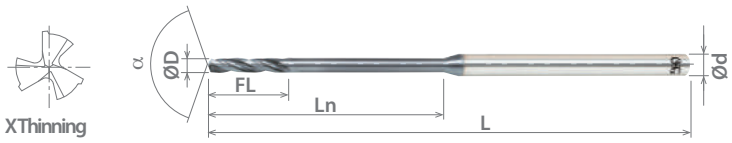
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List 5310

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

SPEED FEED P252 | CARBIDE | EXO® | EXTRA LONG | 25° | SHRINK h6

Cutting Diameter Tolerance (h8)		
Size	mm	inch
1≤D≤3	+0 / -0.014	+0 / -0.0006



EDP Number	Diameter					Neck Length	Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	L1	FL	L	d	α
8569010	–	–	–	1.00	0.0394	20	5	57	3	140°
8569011	–	–	–	1.10	0.0433	20	5.5	57	3	140°
8569012	–	–	–	1.20	0.0472	20	6.5	57	3	140°
8569013	–	–	–	1.30	0.0512	20	6.5	57	3	140°
8569014	–	54	–	1.40	0.0551	20	7.5	57	3	140°
8569015	–	–	–	1.50	0.0591	20	7.5	57	3	140°
8569016	–	–	–	1.60	0.0630	20	8.5	57	3	140°
8569017	–	51	–	1.70	0.0669	20	8.5	57	3	140°
8569018	–	–	–	1.80	0.0709	20	9.5	57	3	140°
8569019	–	–	–	1.90	0.0748	20	9.5	57	3	140°
8569020	–	–	–	2.00	0.0787	30	10.5	65	3	140°
8569025	–	–	–	2.50	0.0984	30	13	65	3	120°
8569030	–	–	–	3.00	0.1181	30	15	65	3	120°

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

HTE

Work Material

List No.	P					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 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
5310														▢	▢	▣	▣

▢ good ▣ best

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List 5315

UVM-DRL, Miniature, Pilot

SPEED FEED P253 | CARBIDE | SS | 30° | SHRINK h3

Cutting Diameter Tolerance		
Size	mm	inch
0.05	+0 / -0.003	+0 / -0.0001



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

Packed: 1 pc.
Available Super Smooth coating only.

HTE

Work Material

List No.	P					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 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
5315						◎	◎	◎		○	○	◎	○	○	○	◎	

○ good ◎ best

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List 5320

UVM-DRL, Miniature, 5D

SPEED FEED P253 | CARBIDE | SS | 30° | SHRINK h3

Cutting Diameter Tolerance		
Size	mm	inch
0.02 - 0.08	+0 / -0.003	+0 / -0.0001



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8589002	-	-	-	0.02	0.00079	0.12	38	3
8589052	-	-	-	0.02	0.00079	0.12	38	1/8
8589003	-	-	-	0.03	0.00118	0.18	38	3
8589053	-	-	-	0.03	0.00118	0.18	38	1/8
8589004	-	-	-	0.04	0.00157	0.24	38	3
8589054	-	-	-	0.04	0.00157	0.24	38	1/8
8589005	-	-	-	0.05	0.00197	0.30	38	3
8589055	-	-	-	0.05	0.00197	0.30	38	1/8
8589008	-	-	-	0.08	0.00315	0.48	38	3
8589058	-	-	-	0.08	0.00315	0.48	38	1/8

Packed: 1 pc.
Available Super Smooth coating only.

HTE

Work Material

List No.	P					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 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
5320						▢	▢	▢		▢	▢	▢	▢	▢	▢	▢	

▢ good ▢ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 5325

10D, UVM-DRL, Miniature

SPEED FEED P253 | CARBIDE | SS | 30° | SHRINK h3

Cutting Diameter Tolerance		
Size	mm	inch
0.02 - 0.08	+0 / -0.003	+0 / -0.0001



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8589102	-	-	-	0.02	0.00079	0.22	38	3
8589152	-	-	-	0.02	0.00079	0.22	38	1/8
8589103	-	-	-	0.03	0.00118	0.33	38	3
8589153	-	-	-	0.03	0.00118	0.33	38	1/8
8589104	-	-	-	0.04	0.00157	0.44	38	3
8589154	-	-	-	0.04	0.00157	0.44	38	1/8
8589105	-	-	-	0.05	0.00197	0.55	38	3
8589155	-	-	-	0.05	0.00197	0.55	38	1/8
8589108	-	-	-	0.08	0.00315	0.88	38	3
8589158	-	-	-	0.08	0.00315	0.88	38	1/8

Packed: 1 pc.
Available Super Smooth coating only.

HTE

Work Material

List No.	P					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 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
5325						▢	▢	▢		▢	▢	▢	▢	▢	▢	▢	

▢ good ▢ best

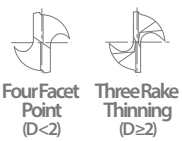
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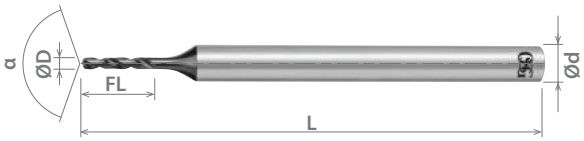
List 5330 NEW SIZES

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

WX-MS-GDS, Precision Drill

Cutting Diameter Tolerance		
Size	mm	inch
0.20 - 5.00	+0 / -0.010	+0 / -0.0004





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

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5330	◎	◎	◎	○	○	○	○	○	○	◎	◎		○				

○ good ◎ best

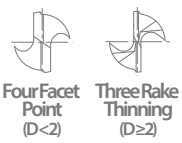
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List 5330 (Continued) NEW SIZES

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

WX-MS-GDS, Precision Drill

Cutting Diameter Tolerance		
Size	mm	inch
0.20 - 5.00	+0 / -0.010	+0 / -0.0004





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
3300060	-	-	-	0.60	0.0236	3.5	38	3	140°
3300061	-	73	-	0.61	0.0240	4.0	38	3	140°
3300062	-	-	-	0.62	0.0244	4.0	38	3	140°
3300063	-	-	-	0.63	0.0248	4.0	38	3	140°
3300064	-	72	-	0.64	0.0252	4.0	38	3	140°
3300065	-	-	-	0.65	0.0256	4.0	38	3	140°
3300066	-	71	-	0.66	0.0260	4.0	38	3	140°
3300067	-	-	-	0.67	0.0264	4.0	38	3	140°
3300068	-	-	-	0.68	0.0268	4.5	38	3	140°
3300069	-	-	-	0.69	0.0272	4.5	38	3	140°
3300070	-	-	-	0.70	0.0276	4.5	38	3	140°
3300071	-	70	-	0.71	0.0280	4.5	38	3	140°
3300072	-	-	-	0.72	0.0283	4.5	38	3	140°
3300073	-	-	-	0.73	0.0287	4.5	38	3	140°
3300074	-	69	-	0.74	0.0291	4.5	38	3	140°
3300075	-	-	-	0.75	0.0295	4.5	38	3	140°
3300076	-	-	-	0.76	0.0299	5.0	38	3	140°
3300077	-	-	-	0.77	0.0303	5.0	38	3	140°
3300078	-	-	-	0.78	0.0307	5.0	38	3	140°
3300079	1/32	68	-	0.79	0.0311	5.0	38	3	140°
3300080	-	-	-	0.80	0.0315	5.0	38	3	140°
3300081	-	67	-	0.81	0.0319	5.0	38	3	140°
3300082	-	-	-	0.82	0.0323	5.0	38	3	140°
3300083	-	-	-	0.83	0.0327	5.0	38	3	140°
3300084	-	66	-	0.84	0.0331	5.0	38	3	140°
3300085	-	-	-	0.85	0.0335	5.0	38	3	140°
3300086	-	-	-	0.86	0.0339	5.5	38	3	140°
3300087	-	-	-	0.87	0.0343	5.5	38	3	140°
3300088	-	-	-	0.88	0.0346	5.5	38	3	140°
3300089	-	65	-	0.89	0.0350	5.5	38	3	140°
3300090	-	-	-	0.90	0.0354	5.5	38	3	140°
3300091	-	64	-	0.91	0.0358	5.5	38	3	140°
3300092	-	-	-	0.92	0.0362	5.5	38	3	140°
3300093	-	-	-	0.93	0.0366	5.5	38	3	140°
3300094	-	63	-	0.94	0.0370	5.5	38	3	140°
3300095	-	-	-	0.95	0.0374	5.5	38	3	140°
3300096	-	-	-	0.96	0.0378	6.0	38	3	140°
3300097	-	62	-	0.97	0.0382	6.0	38	3	140°
3300098	-	-	-	0.98	0.0386	6.0	38	3	140°
3300099	-	61	-	0.99	0.0390	6.0	38	3	140°
3300100	-	-	-	1.00	0.0394	6.0	38	3	140°
3300101	-	-	-	1.01	0.0398	6.0	38	3	140°
3300102	-	60	-	1.02	0.0402	6.0	38	3	140°
3300103	-	-	-	1.03	0.0406	6.0	38	3	140°
3300104	-	59	-	1.04	0.0409	6.0	38	3	140°
3300105	-	-	-	1.05	0.0413	6.0	38	3	140°
3300106	-	-	-	1.06	0.0417	6.0	38	3	140°
3300107	-	58	-	1.07	0.0421	7.0	42	3	140°
3300108	-	-	-	1.08	0.0425	7.0	42	3	140°
3300109	-	57	-	1.09	0.0429	7.0	42	3	140°

Packed: 1 pc.
Available TiAlN coating only.

HTE

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List 5330 (Continued) NEW SIZES

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

WX-MS-GDS, Precision Drill

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
3300110	-	-	-	1.10	0.0433	7.0	42	3	140°
3300111	-	-	-	1.11	0.0437	7.0	42	3	140°
3300112	-	-	-	1.12	0.0441	7.0	42	3	140°
3300113	-	-	-	1.13	0.0445	7.0	42	3	140°
3300114	-	-	-	1.14	0.0449	7.0	42	3	140°
3300115	-	-	-	1.15	0.0453	7.0	42	3	140°
3300116	-	-	-	1.16	0.0457	7.0	42	3	140°
3300117	-	-	-	1.17	0.0461	7.0	42	3	140°
3300118	-	56	-	1.18	0.0465	7.0	42	3	140°
3300119	3/64	-	-	1.19	0.0469	8.0	42	3	140°
3300120	-	-	-	1.20	0.0472	8.0	42	3	140°
3300121	-	-	-	1.21	0.0476	8.0	42	3	140°
3300122	-	-	-	1.22	0.0480	8.0	42	3	140°
3300123	-	-	-	1.23	0.0484	8.0	42	3	140°
3300124	-	-	-	1.24	0.0488	8.0	42	3	140°
3300125	-	-	-	1.25	0.0492	8.0	42	3	140°
3300126	-	-	-	1.26	0.0496	8.0	42	3	140°
3300127	-	-	-	1.27	0.0500	8.0	42	3	140°
3300128	-	-	-	1.28	0.0504	8.0	42	3	140°
3300129	-	-	-	1.29	0.0508	8.0	42	3	140°
3300130	-	-	-	1.30	0.0512	8.0	42	3	140°
3300131	-	-	-	1.31	0.0516	8.0	42	3	140°
3300132	-	55	-	1.32	0.0520	8.0	42	3	140°
3300133	-	-	-	1.33	0.0524	9.0	42	3	140°
3300134	-	-	-	1.34	0.0528	9.0	42	3	140°
3300135	-	-	-	1.35	0.0531	9.0	42	3	140°
3300136	-	-	-	1.36	0.0535	9.0	42	3	140°
3300137	-	-	-	1.37	0.0539	9.0	42	3	140°
3300138	-	-	-	1.38	0.0543	9.0	42	3	140°
3300139	-	-	-	1.39	0.0547	9.0	42	3	140°
3300140	-	54	-	1.40	0.0551	9.0	42	3	140°
3300141	-	-	-	1.41	0.0555	9.0	42	3	140°
3300142	-	-	-	1.42	0.0559	9.0	42	3	140°
3300143	-	-	-	1.43	0.0563	9.0	42	3	140°
3300144	-	-	-	1.44	0.0567	9.0	42	3	140°
3300145	-	-	-	1.45	0.0571	9.0	42	3	140°
3300146	-	-	-	1.46	0.0575	9.0	42	3	140°
3300147	-	-	-	1.47	0.0579	9.0	42	3	140°
3300148	-	-	-	1.48	0.0583	9.0	42	3	140°
3300149	-	-	-	1.49	0.0587	9.0	42	3	140°
3300150	-	-	-	1.50	0.0591	9.0	42	3	140°
3300151	-	53	-	1.51	0.0594	10	42	3	140°
3300152	-	-	-	1.52	0.0598	10	42	3	140°
3300153	-	-	-	1.53	0.0602	10	42	3	140°
3300154	-	-	-	1.54	0.0606	10	42	3	140°
3300155	-	-	-	1.55	0.0610	10	42	3	140°

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5330	▢	▢	▢	○	○	○	○	○	○	▢	▢		○				

○ good ▢ best

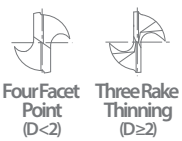
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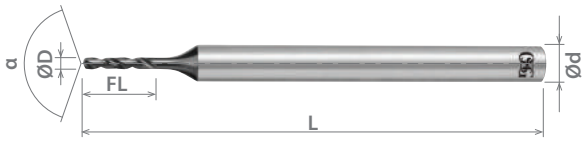
List 5330 (Continued) NEW SIZES

WX-MS-GDS, Precision Drill

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

Cutting Diameter Tolerance		
Size	mm	inch
0.20 - 5.00	+0 / -0.010	+0 / -0.0004





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
3300156	-	-	-	1.56	0.0614	10	42	3	140°
3300157	-	-	-	1.57	0.0618	10	42	3	140°
3300158	-	-	-	1.58	0.0622	10	42	3	140°
3300159	1/16	-	-	1.59	0.0626	10	42	3	140°
3300160	-	-	-	1.60	0.0630	10	42	3	140°
3300161	-	52	-	1.61	0.0634	10	42	3	140°
3300162	-	-	-	1.62	0.0638	10	42	3	140°
3300163	-	-	-	1.63	0.0642	10	42	3	140°
3300164	-	-	-	1.64	0.0646	10	42	3	140°
3300165	-	-	-	1.65	0.0650	10	42	3	140°
3300166	-	-	-	1.66	0.0654	10	42	3	140°
3300167	-	-	-	1.67	0.0657	10	42	3	140°
3300168	-	-	-	1.68	0.0661	10	42	3	140°
3300169	-	-	-	1.69	0.0665	10	42	3	140°
3300170	-	51	-	1.70	0.0669	10	42	3	140°
3300171	-	-	-	1.71	0.0673	11	42	3	140°
3300172	-	-	-	1.72	0.0677	11	42	3	140°
3300173	-	-	-	1.73	0.0681	11	42	3	140°
3300174	-	-	-	1.74	0.0685	11	42	3	140°
3300175	-	-	-	1.75	0.0689	11	42	3	140°
3300176	-	-	-	1.76	0.0693	11	42	3	140°
3300177	-	-	-	1.77	0.0697	11	42	3	140°
3300178	-	50	-	1.78	0.0701	11	42	3	140°
3300179	-	-	-	1.79	0.0705	11	42	3	140°
3300180	-	-	-	1.80	0.0709	11	42	3	140°
3300181	-	-	-	1.81	0.0713	11	42	3	140°
3300182	-	-	-	1.82	0.0717	11	42	3	140°
3300183	-	-	-	1.83	0.0720	11	42	3	140°
3300184	-	-	-	1.84	0.0724	11	42	3	140°
3300185	-	49	-	1.85	0.0728	11	42	3	140°
3300186	-	-	-	1.86	0.0732	11	42	3	140°
3300187	-	-	-	1.87	0.0736	11	42	3	140°
3300188	-	-	-	1.88	0.0740	11	42	3	140°
3300189	-	-	-	1.89	0.0744	11	42	3	140°
3300190	-	-	-	1.90	0.0748	11	42	3	140°
3300191	-	-	-	1.91	0.0752	12	50	3	140°
3300192	-	-	-	1.92	0.0756	12	50	3	140°
3300193	-	48	-	1.93	0.0760	12	50	3	140°
3300194	-	-	-	1.94	0.0764	12	50	3	140°
3300195	-	-	-	1.95	0.0768	12	50	3	140°
3300196	-	-	-	1.96	0.0772	12	50	3	140°
3300197	-	-	-	1.97	0.0776	12	50	3	140°
3300198	5/64	-	-	1.98	0.0780	12	50	3	140°
3300199	-	47	-	1.99	0.0783	12	50	3	140°
3300200	-	-	-	2.00	0.0787	12	50	3	140°
48172201	-	-	-	2.01	0.0791	12	50	3	140°
48172202	-	-	-	2.02	0.0795	12	50	3	140°
48172203	-	-	-	2.03	0.0799	12	50	3	140°
48172204	-	-	-	2.04	0.0803	12	50	3	140°
3300205	-	-	-	2.05	0.0807	12	50	3	140°

Packed: 1 pc.
Available TiAlN coating only.

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List 5330 (Continued) NEW SIZES

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

WX-MS-GDS, Precision Drill

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
48172206	-	46	-	2.06	0.0811	12	50	3	140°
48172207	-	-	-	2.07	0.0815	12	50	3	140°
48172208	-	45	-	2.08	0.0819	12	50	3	140°
48172209	-	-	-	2.09	0.0823	12	50	3	140°
3300210	-	-	-	2.10	0.0827	12	50	3	140°
48172211	-	-	-	2.11	0.0831	12	50	3	140°
48172212	-	-	-	2.12	0.0835	12	50	3	140°
48172213	-	-	-	2.13	0.0839	13	50	3	140°
48172214	-	-	-	2.14	0.0843	13	50	3	140°
3300215	-	-	-	2.15	0.0846	13	50	3	140°
48172216	-	-	-	2.16	0.0850	13	50	3	140°
48172217	-	-	-	2.17	0.0854	13	50	3	140°
48172218	-	44	-	2.18	0.0858	13	50	3	140°
48172219	-	-	-	2.19	0.0862	13	50	3	140°
3300220	-	-	-	2.20	0.0866	13	50	3	140°
48172221	-	-	-	2.21	0.0870	13	50	3	140°
48172222	-	-	-	2.22	0.0874	13	50	3	140°
48172223	-	-	-	2.23	0.0878	13	50	3	140°
48172224	-	-	-	2.24	0.0882	13	50	3	140°
3300225	-	-	-	2.25	0.0886	13	50	3	140°
48172226	-	43	-	2.26	0.0890	13	50	3	140°
48172227	-	-	-	2.27	0.0894	13	50	3	140°
48172228	-	-	-	2.28	0.0898	13	50	3	140°
48172229	-	-	-	2.29	0.0902	13	50	3	140°
3300230	-	-	-	2.30	0.0906	13	50	3	140°
48172231	-	-	-	2.31	0.0909	13	50	3	140°
48172232	-	-	-	2.32	0.0913	13	50	3	140°
48172233	-	-	-	2.33	0.0917	13	50	3	140°
48172234	-	-	-	2.34	0.0921	13	50	3	140°
3300235	-	-	-	2.35	0.0925	13	50	3	140°
48172236	-	-	-	2.36	0.0929	13	50	3	140°
48172237	-	42	-	2.37	0.0933	14	50	3	140°
48172238	3/32	-	-	2.38	0.0937	14	50	3	140°
48172239	-	-	-	2.39	0.0941	14	50	3	140°
3300240	-	-	-	2.40	0.0945	14	50	3	130°
48172241	-	-	-	2.41	0.0949	14	50	3	130°
48172242	-	-	-	2.42	0.0953	14	50	3	130°
48172243	-	-	-	2.43	0.0957	14	50	3	130°
48172244	-	41	-	2.44	0.0961	14	50	3	130°
3300245	-	-	-	2.45	0.0965	14	50	3	130°
48172246	-	-	-	2.46	0.0969	14	50	3	130°
48172247	-	-	-	2.47	0.0972	14	50	3	130°
48172248	-	-	-	2.48	0.0976	14	50	3	130°
48172249	-	40	-	2.49	0.0980	14	50	3	130°
3300250	-	-	-	2.50	0.0984	14	50	3	130°
48172251	-	-	-	2.51	0.0988	14	50	3	130°

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5330	◎	◎	◎	○	○	○	○	○	○	◎	◎		○				

○ good ◎ best

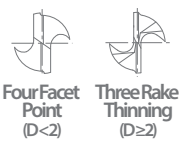
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List 5330 (Continued) NEW SIZES

WX-MS-GDS, Precision Drill

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

Cutting Diameter Tolerance		
Size	mm	inch
0.20 - 5.00	+0 / -0.010	+0 / -0.0004





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
48172252	-	-	-	2.52	0.0992	14	50	3	130°
48172253	-	39	-	2.53	0.0996	14	50	3	130°
48172254	-	-	-	2.54	0.1000	14	50	3	130°
3300255	-	-	-	2.55	0.1004	14	50	3	130°
48172256	-	-	-	2.56	0.1008	14	50	3	130°
48172257	-	-	-	2.57	0.1012	14	50	3	130°
48172258	-	38	-	2.58	0.1016	14	50	3	130°
48172259	-	-	-	2.59	0.1020	14	50	3	130°
3300260	-	-	-	2.60	0.1024	14	50	3	130°
48172261	-	-	-	2.61	0.1028	14	50	3	130°
48172262	-	-	-	2.62	0.1031	14	50	3	130°
48172263	-	-	-	2.63	0.1035	14	50	3	130°
48172264	-	37	-	2.64	0.1039	14	50	3	130°
3300265	-	-	-	2.65	0.1043	14	50	3	130°
48172266	-	-	-	2.66	0.1047	16	50	3	130°
48172267	-	-	-	2.67	0.1051	16	50	3	130°
48172268	-	-	-	2.68	0.1055	16	50	3	130°
48172269	-	-	-	2.69	0.1059	16	50	3	130°
3300270	-	-	-	2.70	0.1063	16	50	3	130°
48172271	-	36	-	2.71	0.1067	16	50	3	130°
48172272	-	-	-	2.72	0.1071	16	50	3	130°
48172273	-	-	-	2.73	0.1075	16	50	3	130°
48172274	-	-	-	2.74	0.1079	16	50	3	130°
3300275	-	-	-	2.75	0.1083	16	50	3	130°
48172276	-	-	-	2.76	0.1087	16	50	3	130°
48172277	-	-	-	2.77	0.1091	16	50	3	130°
48172278	7/64	-	-	2.78	0.1094	16	50	3	130°
48172279	-	35	-	2.79	0.1098	16	50	3	130°
3300280	-	-	-	2.80	0.1102	16	50	3	130°
48172281	-	-	-	2.81	0.1106	16	50	3	130°
48172282	-	34	-	2.82	0.1110	16	50	3	130°
48172283	-	-	-	2.83	0.1114	16	50	3	130°
48172284	-	-	-	2.84	0.1118	16	50	3	130°
3300285	-	-	-	2.85	0.1122	16	50	3	130°
48172286	-	-	-	2.86	0.1126	16	50	3	130°
48172287	-	33	-	2.87	0.1130	16	50	3	130°
48172288	-	-	-	2.88	0.1134	16	50	3	130°
48172289	-	-	-	2.89	0.1138	16	50	3	130°
3300290	-	-	-	2.90	0.1142	16	50	3	130°
48172291	-	-	-	2.91	0.1146	16	50	3	130°
48172292	-	-	-	2.92	0.1150	16	50	3	130°
48172293	-	-	-	2.93	0.1154	16	50	3	130°
48172294	-	-	-	2.94	0.1157	16	50	3	130°
3300295	-	32	-	2.95	0.1161	16	50	3	130°
48172296	-	-	-	2.96	0.1165	16	50	3	130°
48172297	-	-	-	2.97	0.1169	16	50	3	130°
48172298	-	-	-	2.98	0.1173	16	50	3	130°
48172299	-	-	-	2.99	0.1177	16	50	3	130°
3300300	-	-	-	3.00	0.1181	16	50	3	130°
48172301	-	-	-	3.01	0.1185	18	56	4	130°

Packed: 1 pc.
Available TiAlN coating only.

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List 5330 (Continued) NEW SIZES

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

WX-MS-GDS, Precision Drill

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
48172302	-	-	-	3.02	0.1189	18	56	4	130°
48172303	-	-	-	3.03	0.1193	18	56	4	130°
48172304	-	-	-	3.04	0.1197	18	56	4	130°
3300305	-	31	-	3.05	0.1201	18	56	4	130°
48172306	-	-	-	3.06	0.1205	18	56	4	130°
48172307	-	-	-	3.07	0.1209	18	56	4	130°
48172308	-	-	-	3.08	0.1213	18	56	4	130°
48172309	-	-	-	3.09	0.1217	18	56	4	130°
3300310	-	-	-	3.10	0.1220	18	56	4	130°
48172311	-	-	-	3.11	0.1224	18	56	4	130°
48172312	-	-	-	3.12	0.1228	18	56	4	130°
48172313	-	-	-	3.13	0.1232	18	56	4	130°
48172314	-	-	-	3.14	0.1236	18	56	4	130°
3300315	-	-	-	3.15	0.1240	18	56	4	130°
48172316	-	-	-	3.16	0.1244	18	56	4	130°
48172317	-	-	-	3.17	0.1248	18	56	4	130°
48172318	1/8	-	-	3.18	0.1252	18	56	4	130°
48172319	-	-	-	3.19	0.1256	18	56	4	130°
3300320	-	-	-	3.20	0.1260	18	56	4	130°
48172321	-	-	-	3.21	0.1264	18	56	4	130°
48172322	-	-	-	3.22	0.1268	18	56	4	130°
48172323	-	-	-	3.23	0.1272	18	56	4	130°
48172324	-	-	-	3.24	0.1276	18	56	4	130°
3300325	-	-	-	3.25	0.1280	18	56	4	130°
48172326	-	30	-	3.26	0.1283	18	56	4	130°
48172327	-	-	-	3.27	0.1287	18	56	4	130°
48172328	-	-	-	3.28	0.1291	18	56	4	130°
48172329	-	-	-	3.29	0.1295	18	56	4	130°
3300330	-	-	-	3.30	0.1299	18	56	4	130°
48172331	-	-	-	3.31	0.1303	18	56	4	130°
48172332	-	-	-	3.32	0.1307	18	56	4	130°
48172333	-	-	-	3.33	0.1311	18	56	4	130°
48172334	-	-	-	3.34	0.1315	18	56	4	130°
3300335	-	-	-	3.35	0.1319	18	56	4	130°
48172336	-	-	-	3.36	0.1323	20	56	4	130°
48172337	-	-	-	3.37	0.1327	20	56	4	130°
48172338	-	-	-	3.38	0.1331	20	56	4	130°
48172339	-	-	-	3.39	0.1335	20	56	4	130°
3300340	-	-	-	3.40	0.1339	20	56	4	130°
48172341	-	-	-	3.41	0.1343	20	56	4	130°
48172342	-	-	-	3.42	0.1346	20	56	4	130°
48172343	-	-	-	3.43	0.1350	20	56	4	130°
48172344	-	-	-	3.44	0.1354	20	56	4	130°
3300345	-	29	-	3.45	0.1358	20	56	4	130°
48172346	-	-	-	3.46	0.1362	20	56	4	130°
48172347	-	-	-	3.47	0.1366	20	56	4	130°

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

HTE

Work Material

List No.	P					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 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
5330	▢	▢	▢	○	○	○	○	○	○	▢	▢		○				

○ good ▢ best

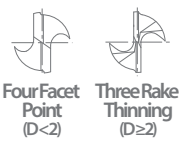
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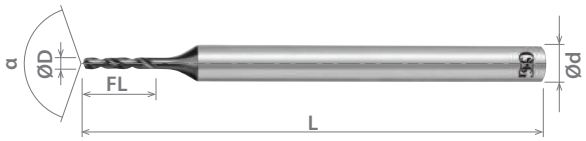
List 5330 (Continued) NEW SIZES

WX-MS-GDS, Precision Drill

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

Cutting Diameter Tolerance		
Size	mm	inch
0.20 - 5.00	+0 / -0.010	+0 / -0.0004





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
48172348	-	-	-	3.48	0.1370	20	56	4	130°
48172349	-	-	-	3.49	0.1374	20	56	4	130°
3300350	-	-	-	3.50	0.1378	20	56	4	130°
48172351	-	-	-	3.51	0.1382	20	56	4	130°
48172352	-	-	-	3.52	0.1386	20	56	4	130°
48172353	-	-	-	3.53	0.1390	20	56	4	130°
48172354	-	-	-	3.54	0.1394	20	56	4	130°
3300355	-	-	-	3.55	0.1398	20	56	4	130°
48172356	-	-	-	3.56	0.1402	20	56	4	130°
48172357	9/64	-	-	3.57	0.1406	20	56	4	130°
48172358	-	-	-	3.58	0.1409	20	56	4	130°
48172359	-	-	-	3.59	0.1413	20	56	4	130°
3300360	-	-	-	3.60	0.1417	20	56	4	130°
48172361	-	-	-	3.61	0.1421	20	56	4	130°
48172362	-	-	-	3.62	0.1425	20	56	4	130°
48172363	-	-	-	3.63	0.1429	20	56	4	130°
48172364	-	-	-	3.64	0.1433	20	56	4	130°
3300365	-	-	-	3.65	0.1437	20	56	4	130°
48172366	-	27	-	3.66	0.1441	20	56	4	130°
48172367	-	-	-	3.67	0.1445	20	56	4	130°
48172368	-	-	-	3.68	0.1449	20	56	4	130°
48172369	-	-	-	3.69	0.1453	20	56	4	130°
3300370	-	-	-	3.70	0.1457	20	56	4	130°
48172371	-	-	-	3.71	0.1461	20	56	4	130°
48172372	-	-	-	3.72	0.1465	20	56	4	130°
48172373	-	26	-	3.73	0.1469	20	56	4	130°
48172374	-	-	-	3.74	0.1472	20	56	4	130°
3300375	-	-	-	3.75	0.1476	20	56	4	130°
48172376	-	-	-	3.76	0.1480	22	56	4	130°
48172377	-	-	-	3.77	0.1484	22	56	4	130°
48172378	-	-	-	3.78	0.1488	22	56	4	130°
48172379	-	-	-	3.79	0.1492	22	56	4	130°
3300380	-	25	-	3.80	0.1496	22	56	4	130°
48172381	-	-	-	3.81	0.1500	22	56	4	130°
48172382	-	-	-	3.82	0.1504	22	56	4	130°
48172383	-	-	-	3.83	0.1508	22	56	4	130°
48172384	-	-	-	3.84	0.1512	22	56	4	130°
3300385	-	-	-	3.85	0.1516	22	56	4	130°
48172386	-	24	-	3.86	0.1520	22	56	4	130°
48172387	-	-	-	3.87	0.1524	22	56	4	130°
48172388	-	-	-	3.88	0.1528	22	56	4	130°
48172389	-	-	-	3.89	0.1531	22	56	4	130°
3300390	-	-	-	3.90	0.1535	22	56	4	130°
48172391	-	23	-	3.91	0.1539	22	56	4	130°
48172392	-	-	-	3.92	0.1543	22	56	4	130°
48172393	-	-	-	3.93	0.1547	22	56	4	130°
48172394	-	-	-	3.94	0.1551	22	56	4	130°
3300395	-	-	-	3.95	0.1555	22	56	4	130°
48172396	-	-	-	3.96	0.1559	22	56	4	130°
48172397	5/32	-	-	3.97	0.1563	22	56	4	130°

Packed: 1 pc.
Available TiAlN coating only.

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List 5330 (Continued) NEW SIZES

SPEED FEED P254 | CARBIDE | TiAlN | 30° | SHRINK h6

WX-MS-GDS, Precision Drill

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
48172398	-	-	-	3.98	0.1567	22	56	4	130°
48172399	-	22	-	3.99	0.1571	22	56	4	130°
3300400	-	-	-	4.00	0.1575	22	56	4	130°
3300405	-	-	-	4.05	0.1594	22	64	5	130°
3300410	-	-	-	4.10	0.1614	22	64	5	130°
3300415	-	-	-	4.15	0.1634	22	64	5	130°
3300420	-	-	-	4.20	0.1654	22	64	5	130°
3300425	-	-	-	4.25	0.1673	22	64	5	130°
3300430	-	-	-	4.30	0.1693	24	64	5	130°
3300435	-	-	-	4.35	0.1713	24	64	5	130°
3300440	-	-	-	4.40	0.1732	24	64	5	130°
3300445	-	-	-	4.45	0.1752	24	64	5	130°
3300450	-	16	-	4.50	0.1772	24	64	5	130°
3300455	-	-	-	4.55	0.1791	24	64	5	130°
3300460	-	-	-	4.60	0.1811	24	64	5	130°
3300465	-	-	-	4.65	0.1831	24	64	5	130°
3300470	-	13	-	4.70	0.1850	24	64	5	130°
3300475	-	-	-	4.75	0.1870	24	64	5	130°
3300480	-	12	-	4.80	0.1890	26	64	5	130°
3300485	-	-	-	4.85	0.1909	26	64	5	130°
3300490	-	-	-	4.90	0.1929	26	64	5	130°
3300495	-	-	-	4.95	0.1949	26	64	5	130°
3300500	-	-	-	5.00	0.1969	26	64	5	130°

Packed: 1 pc.
Available TiAlN coating only.

HTE

Work Material

List No.	P					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 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
5330	◎	◎	◎	○	○	○	○	○	○	◎	◎		○				

○ good ◎ best

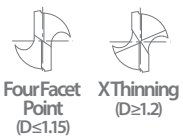
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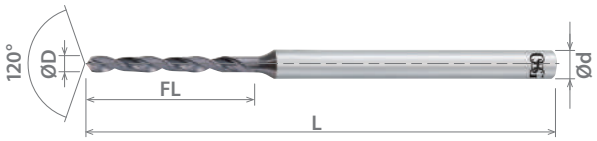
List 5340

MRS-GDL, Precision Drill

SPEED FEED P255 | CARBIDE | SS | 30° | SHRINK h6

Cutting Diameter Tolerance		
Size	mm	inch
0.50 - 3.00	+0 / -0.008	+0 / -0.0003





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8577050	-	-	-	0.50	0.0197	6.0	42	3
8577054	-	-	-	0.54	0.0213	6.6	42	3
8577055	-	-	-	0.55	0.0217	6.6	42	3
8577056	-	-	-	0.56	0.0220	7.2	42	3
8577060	-	-	-	0.60	0.0236	7.2	42	3
8577063	-	-	-	0.63	0.0248	7.8	46	3
8577064	-	72	-	0.64	0.0252	7.8	46	3
8577065	-	-	-	0.65	0.0256	7.8	46	3
8577070	-	-	-	0.70	0.0276	8.4	46	3
8577071	-	70	-	0.71	0.0280	9.0	46	3
8577072	-	-	-	0.72	0.0283	9.0	46	3
8577073	-	-	-	0.73	0.0287	9.0	46	3
8577074	-	69	-	0.74	0.0291	9.0	46	3
8577075	-	-	-	0.75	0.0295	9.0	46	3
8577080	-	-	-	0.80	0.0315	9.6	46	3
8577081	-	67	-	0.81	0.0319	10.2	46	3
8577082	-	-	-	0.82	0.0323	10.2	46	3
8577090	-	-	-	0.90	0.0354	10.8	46	3
8577091	-	64	-	0.91	0.0358	11.4	46	3
8577092	-	-	-	0.92	0.0362	11.4	46	3
8577100	-	-	-	1.00	0.0394	12.0	46	3
8577110	-	-	-	1.10	0.0433	13.2	50	3
8577111	-	-	-	1.11	0.0437	13.8	50	3
8577112	-	-	-	1.12	0.0441	13.8	50	3
8577115	-	-	-	1.15	0.0453	13.8	50	3
8577120	-	-	-	1.20	0.0472	14.4	50	3
8577127	-	-	-	1.27	0.0500	15.6	50	3
8577128	-	-	-	1.28	0.0504	15.6	50	3
8577129	-	-	-	1.29	0.0508	15.6	50	3
8577130	-	-	-	1.30	0.0512	15.6	50	3
8577140	-	54	-	1.40	0.0551	16.8	54	3
8577145	-	-	-	1.45	0.0571	17.4	54	3
8577146	-	-	-	1.46	0.0575	18.0	54	3
8577147	-	-	-	1.47	0.0579	18.0	54	3
8577150	-	-	-	1.50	0.0591	18.0	54	3
8577151	-	53	-	1.51	0.0594	18.6	54	3
8577152	-	-	-	1.52	0.0598	18.6	54	3
8577153	-	-	-	1.53	0.0602	18.6	54	3
8577155	-	-	-	1.55	0.0610	18.6	54	3
8577156	-	-	-	1.56	0.0614	19.2	54	3
8577157	-	-	-	1.57	0.0618	19.2	54	3
8577160	-	-	-	1.60	0.0630	19.2	54	3
8577170	-	51	-	1.70	0.0669	20.4	58	3
8577180	-	-	-	1.80	0.0709	21.6	58	3
8577181	-	-	-	1.81	0.0713	22.2	58	3
8577182	-	-	-	1.82	0.0717	22.2	58	3
8577183	-	-	-	1.83	0.0720	22.2	58	3
8577190	-	-	-	1.90	0.0748	22.8	58	3
8577198	5/64	-	-	1.98	0.0780	24.0	58	3
8577199	-	47	-	1.99	0.0783	24.0	58	3

Packed: 1 pc.
Available Super Smooth coating only.

HTE

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List 5340 (Continued)

MRS-GDL, Precision Drill

SPEED FEED P255 | CARBIDE | SS | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8577200	-	-	-	2.00	0.0787	24.0	58	3
8577210	-	-	-	2.10	0.0827	25.2	62	3
8577212	-	-	-	2.12	0.0835	25.8	62	3
8577213	-	-	-	2.13	0.0839	25.8	62	3
8577214	-	-	-	2.14	0.0843	25.8	62	3
8577220	-	-	-	2.20	0.0866	26.4	62	3
8577229	-	-	-	2.29	0.0902	27.6	62	3
8577230	-	-	-	2.30	0.0906	27.6	62	3
8577231	-	-	-	2.31	0.0909	28.2	62	3
8577239	-	-	-	2.39	0.0941	28.8	62	3
8577240	-	-	-	2.40	0.0945	28.8	62	3
8577241	-	-	-	2.41	0.0949	29.4	66	3
8577242	-	-	-	2.42	0.0953	29.4	66	3
8577250	-	-	-	2.50	0.0984	30.0	66	3
8577255	-	-	-	2.55	0.1004	30.6	66	3
8577256	-	-	-	2.56	0.1008	31.2	66	3
8577257	-	-	-	2.57	0.1012	31.2	66	3
8577260	-	-	-	2.60	0.1024	31.2	66	3
8577270	-	-	-	2.70	0.1063	32.4	66	3
8577277	-	-	-	2.77	0.1091	33.6	66	3
8577278	7/64	-	-	2.78	0.1094	33.6	66	3
8577279	-	35	-	2.79	0.1098	33.6	66	3
8577280	-	-	-	2.80	0.1102	33.6	66	3
8577290	-	-	-	2.90	0.1142	34.8	66	3
8577300	-	-	-	3.00	0.1181	36.0	66	3

Packed: 1 pc.
Available Super Smooth coating only.

HTE

Work Material

List No.	P					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 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
5340	○	○	○	○	○	◎	◎	◎		◎	◎		○				

○ good ◎ best

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List HP243

3D

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

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



RThinning



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP243-0394	-	-	-	1.00	0.0394	7	35	3
HP243-0433	-	-	-	1.10	0.0433	7	35	3
HP243-0469	3/64	-	-	1.19	0.0469	8	35	3
HP243-0472	-	-	-	1.20	0.0472	8	35	3
HP243-0512	-	-	-	1.30	0.0512	8	35	3
HP243-0551	-	-	-	1.40	0.0551	9	35	3
HP243-0591	-	-	-	1.50	0.0591	9	40	3
HP243-0626	1/16	-	-	1.59	0.0626	10	40	3
HP243-0630	-	-	-	1.60	0.0630	10	40	3
HP243-0669	-	-	-	1.70	0.0669	10	40	3
HP243-0709	-	-	-	1.80	0.0709	11	40	3
HP243-0748	-	-	-	1.90	0.0748	11	40	3
HP243-0780	5/64	-	-	1.98	0.0780	13	45	3
HP243-0787	-	-	-	2.00	0.0787	13	45	3
HP243-0827	-	-	-	2.10	0.0827	13	45	3
HP243-0866	-	-	-	2.20	0.0866	13	45	3
HP243-0906	-	-	-	2.30	0.0906	13	45	3
HP243-0937	3/32	-	-	2.38	0.0937	15	45	3
HP243-0945	-	-	-	2.40	0.0945	15	45	3
HP243-0984	-	-	-	2.50	0.0984	15	50	3
HP243-1024	-	-	-	2.60	0.1024	15	50	3
HP243-1063	-	-	-	2.70	0.1063	17	50	3
HP243-1094	7/64	-	-	2.78	0.1094	17	50	3
HP243-1102	-	-	-	2.80	0.1102	17	50	3
HP243-1142	-	-	-	2.90	0.1142	17	50	3
HP243-1181	-	-	-	3.00	0.1181	20	62	6
HP243-1220	-	-	-	3.10	0.1220	20	62	6
HP243-1248	1/8	-	-	3.17	0.1248	20	62	6
HP243-1260	-	-	-	3.20	0.1260	20	62	6
HP243-1299	-	-	-	3.30	0.1299	20	62	6
HP243-1339	-	-	-	3.40	0.1339	20	62	6
HP243-1378	-	-	-	3.50	0.1378	20	62	6
HP243-1406	9/64	-	-	3.57	0.1406	20	62	6
HP243-1417	-	-	-	3.60	0.1417	20	62	6
HP243-1457	-	-	-	3.70	0.1457	20	62	6
HP243-1496	-	25	-	3.80	0.1496	24	66	6
HP243-1535	-	-	-	3.90	0.1535	24	66	6
HP243-1563	5/32	-	-	3.97	0.1563	24	66	6
HP243-1575	-	-	-	4.00	0.1575	24	66	6
HP243-1610	-	20	-	4.09	0.1610	24	66	6
HP243-1614	-	-	-	4.10	0.1614	24	66	6
HP243-1654	-	-	-	4.20	0.1654	24	66	6
HP243-1693	-	-	-	4.30	0.1693	24	66	6
HP243-1720	11/64	-	-	4.37	0.1720	24	66	6
HP243-1732	-	-	-	4.40	0.1732	24	66	6
HP243-1772	-	16	-	4.50	0.1772	24	66	6
HP243-1811	-	-	-	4.60	0.1811	24	66	6
HP243-1831	-	-	-	4.65	0.1831	24	66	6
HP243-1850	-	13	-	4.70	0.1850	24	66	6
HP243-1874	3/16	-	-	4.76	0.1874	28	66	6

Packed: 1 pc.
Available TiAlN coating only.

HPC

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List HP243 (Continued)

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

3D

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP243-1890	-	12	-	4.80	0.1890	28	66	6
HP243-1929	-	-	-	4.90	0.1929	28	66	6
HP243-1969	-	-	-	5.00	0.1969	28	66	6
HP243-2008	-	-	-	5.10	0.2008	28	66	6
HP243-2031	13/64	-	-	5.16	0.2031	28	66	6
HP243-2047	-	-	-	5.20	0.2047	28	66	6
HP243-2087	-	-	-	5.30	0.2087	28	66	6
HP243-2126	-	-	-	5.40	0.2126	28	66	6
HP243-2130	-	3	-	5.41	0.2130	28	66	6
HP243-2165	-	-	-	5.50	0.2165	28	66	6
HP243-2189	7/32	-	-	5.56	0.2189	28	66	6
HP243-2205	-	-	-	5.60	0.2205	28	66	6
HP243-2244	-	-	-	5.70	0.2244	28	66	6
HP243-2283	-	-	-	5.80	0.2283	28	66	6
HP243-2323	-	-	-	5.90	0.2323	28	66	6
HP243-2343	15/64	-	-	5.95	0.2343	28	66	6
HP243-2362	-	-	-	6.00	0.2362	28	66	6
HP243-2402	-	-	-	6.10	0.2402	34	79	8
HP243-2441	-	-	-	6.20	0.2441	34	79	8
HP243-2480	-	-	-	6.30	0.2480	34	79	8
HP243-2500	1/4	-	E	6.35	0.2500	34	79	8
HP243-2520	-	-	-	6.40	0.2520	34	79	8
HP243-2559	-	-	-	6.50	0.2559	34	79	8
HP243-2571	-	-	F	6.53	0.2571	34	79	8
HP243-2598	-	-	-	6.60	0.2598	34	79	8
HP243-2638	-	-	-	6.70	0.2638	34	79	8
HP243-2657	17/64	-	-	6.75	0.2657	34	79	8
HP243-2677	-	-	-	6.80	0.2677	34	79	8
HP243-2717	-	-	I	6.90	0.2717	34	79	8
HP243-2756	-	-	-	7.00	0.2756	34	79	8
HP243-2795	-	-	-	7.10	0.2795	41	79	8
HP243-2811	9/32	-	-	7.14	0.2811	41	79	8
HP243-2835	-	-	-	7.20	0.2835	41	79	8
HP243-2874	-	-	-	7.30	0.2874	41	79	8
HP243-2913	-	-	-	7.40	0.2913	41	79	8
HP243-2953	-	-	-	7.50	0.2953	41	79	8
HP243-2969	19/64	-	-	7.54	0.2969	41	79	8
HP243-2992	-	-	-	7.60	0.2992	41	79	8
HP243-3031	-	-	-	7.70	0.3031	41	79	8
HP243-3071	-	-	-	7.80	0.3071	41	79	8
HP243-3110	-	-	-	7.90	0.3110	41	79	8
HP243-3126	5/16	-	-	7.94	0.3126	41	79	8
HP243-3150	-	-	-	8.00	0.3150	41	79	8
HP243-3189	-	-	-	8.10	0.3189	47	89	10
HP243-3228	-	-	P	8.20	0.3228	47	89	10
HP243-3268	-	-	-	8.30	0.3268	47	89	10

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

HPC

Work Material

List No.	P					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 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
HP243	◎	◎	◎	◎	◎				◎		○			◎	○		

○ good ◎ best

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List HP243 (Continued)

3D

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

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



RThinning



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP243-3280	21/64	-	-	8.33	0.3280	47	89	10
HP243-3307	-	-	-	8.40	0.3307	47	89	10
HP243-3319	-	-	Q	8.43	0.3319	47	89	10
HP243-3346	-	-	-	8.50	0.3346	47	89	10
HP243-3386	-	-	-	8.60	0.3386	47	89	10
HP243-3425	-	-	-	8.70	0.3425	47	89	10
HP243-3437	11/32	-	-	8.73	0.3437	47	89	10
HP243-3465	-	-	-	8.80	0.3465	47	89	10
HP243-3504	-	-	-	8.90	0.3504	47	89	10
HP243-3543	-	-	-	9.00	0.3543	47	89	10
HP243-3583	-	-	-	9.10	0.3583	47	89	10
HP243-3594	23/64	-	-	9.13	0.3594	47	89	10
HP243-3622	-	-	-	9.20	0.3622	47	89	10
HP243-3642	-	-	-	9.25	0.3642	47	89	10
HP243-3661	-	-	-	9.30	0.3661	47	89	10
HP243-3701	-	-	-	9.40	0.3701	47	89	10
HP243-3740	-	-	-	9.50	0.3740	47	89	10
HP243-3748	3/8	-	-	9.52	0.3748	47	89	10
HP243-3780	-	-	-	9.60	0.3780	47	89	10
HP243-3819	-	-	-	9.70	0.3819	47	89	10
HP243-3858	-	-	W	9.80	0.3858	47	89	10
HP243-3898	-	-	-	9.90	0.3898	47	89	10
HP243-3906	25/64	-	-	9.92	0.3906	47	89	10
HP243-3937	-	-	-	10.00	0.3937	47	89	10
HP243-3976	-	-	-	10.10	0.3976	55	102	12
HP243-4016	-	-	-	10.20	0.4016	55	102	12
HP243-4055	-	-	-	10.30	0.4055	55	102	12
HP243-4063	13/32	-	-	10.32	0.4063	55	102	12
HP243-4094	-	-	-	10.40	0.4094	55	102	12
HP243-4134	-	-	-	10.50	0.4134	55	102	12
HP243-4173	-	-	-	10.60	0.4173	55	102	12
HP243-4213	-	-	-	10.70	0.4213	55	102	12
HP243-4220	27/64	-	-	10.72	0.4220	55	102	12
HP243-4252	-	-	-	10.80	0.4252	55	102	12
HP243-4291	-	-	-	10.90	0.4291	55	102	12
HP243-4331	-	-	-	11.00	0.4331	55	102	12
HP243-4370	-	-	-	11.10	0.4370	55	102	12
HP243-4374	7/16	-	-	11.11	0.4374	55	102	12
HP243-4409	-	-	-	11.20	0.4409	55	102	12
HP243-4449	-	-	-	11.30	0.4449	55	102	12
HP243-4488	-	-	-	11.40	0.4488	55	102	12
HP243-4528	-	-	-	11.50	0.4528	55	102	12
HP243-4531	29/64	-	-	11.51	0.4531	55	102	12
HP243-4567	-	-	-	11.60	0.4567	55	102	12
HP243-4606	-	-	-	11.70	0.4606	55	102	12
HP243-4646	-	-	-	11.80	0.4646	55	102	12
HP243-4685	-	-	-	11.90	0.4685	55	102	12
HP243-4689	15/32	-	-	11.91	0.4689	55	102	12
HP243-4724	-	-	-	12.00	0.4724	55	102	12
HP243-4764	-	-	-	12.10	0.4764	60	107	14

Packed: 1 pc.
Available TiAlN coating only.

HPC

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List HP243 (Continued)

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

3D

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP243-4803	-	-	-	12.20	0.4803	60	107	14
HP243-4843	31/64	-	-	12.30	0.4843	60	107	14
HP243-4882	-	-	-	12.40	0.4882	60	107	14
HP243-4921	-	-	-	12.50	0.4921	60	107	14
HP243-4961	-	-	-	12.60	0.4961	60	107	14
HP243-5000	1/2	-	-	12.70	0.5000	60	107	14
HP243-5039	-	-	-	12.80	0.5039	60	107	14
HP243-5079	-	-	-	12.90	0.5079	60	107	14
HP243-5118	-	-	-	13.00	0.5118	60	107	14
HP243-5157	33/64	-	-	13.10	0.5157	60	107	14
HP243-5197	-	-	-	13.20	0.5197	60	107	14
HP243-5236	-	-	-	13.30	0.5236	60	107	14
HP243-5276	-	-	-	13.40	0.5276	60	107	14
HP243-5311	17/32	-	-	13.49	0.5311	60	107	14
HP243-5315	-	-	-	13.50	0.5315	60	107	14
HP243-5394	-	-	-	13.70	0.5394	60	107	14
HP243-5512	-	-	-	14.00	0.5512	60	107	14
HP243-5626	9/16	-	-	14.29	0.5626	65	115	16
HP243-5709	-	-	-	14.50	0.5709	65	115	16
HP243-5780	37/64	-	-	14.68	0.5780	65	115	16
HP243-5787	-	-	-	14.70	0.5787	65	115	16
HP243-5906	-	-	-	15.00	0.5906	65	115	16
HP243-5937	19/32	-	-	15.08	0.5937	65	115	16
HP243-6102	-	-	-	15.50	0.6102	65	115	16
HP243-6181	-	-	-	15.70	0.6181	65	115	16
HP243-6248	5/8	-	-	15.87	0.6248	65	115	16
HP243-6299	-	-	-	16.00	0.6299	65	115	16
HP243-6339				16.10	0.6339	73	123	18
HP243-6496	-	-	-	16.50	0.6496	73	123	18
HP243-6563	21/32	-	-	16.67	0.6563	73	123	18
HP243-6693	-	-	-	17.00	0.6693	73	123	18
HP243-6890	-	-	-	17.50	0.6890	73	123	18
HP243-7087	-	-	-	18.00	0.7087	73	123	18
HP243-7283	-	-	-	18.50	0.7283	79	131	20
HP243-7480	-	-	-	19.00	0.7480	79	131	20
HP243-7500	3/4	-	-	19.05	0.7500	79	131	20
HP243-7579				19.25	0.7579	79	131	20
HP243-7677	-	-	-	19.50	0.7677	79	131	20
HP243-7874	-	-	-	20.00	0.7874	79	131	20

Packed: 1 pc.
Available TiAlN coating only.

HPC

Work Material

List No.	P					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 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
HP243	◎	◎	◎	◎	◎				◎		○			○	○		

○ good ◎ best

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List HP245

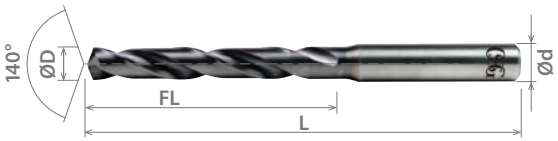
5D

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

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



RThinning



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP245-0394	-	-	-	1.00	0.0394	9	38	3
HP245-0433	-	-	-	1.10	0.0433	9	38	3
HP245-0469	3/64	-	-	1.19	0.0469	11	38	3
HP245-0472	-	-	-	1.20	0.0472	11	38	3
HP245-0512	-	-	-	1.30	0.0512	11	38	3
HP245-0551	-	-	-	1.40	0.0551	12	38	3
HP245-0591	-	-	-	1.50	0.0591	12	45	3
HP245-0626	1/16	-	-	1.59	0.0626	14	45	3
HP245-0630	-	-	-	1.60	0.0630	14	45	3
HP245-0669	-	-	-	1.70	0.0669	14	45	3
HP245-0709	-	-	-	1.80	0.0709	16	45	3
HP245-0748	-	-	-	1.90	0.0748	16	45	3
HP245-0780	5/64	-	-	1.98	0.0780	18	50	3
HP245-0787	-	-	-	2.00	0.0787	18	50	3
HP245-0827	-	-	-	2.10	0.0827	18	50	3
HP245-0866	-	-	-	2.20	0.0866	20	52	3
HP245-0906	-	-	-	2.30	0.0906	20	52	3
HP245-0937	3/32	-	-	2.38	0.0937	22	52	3
HP245-0945	-	-	-	2.40	0.0945	22	52	3
HP245-0984	-	-	-	2.50	0.0984	22	56	3
HP245-1024	-	-	-	2.60	0.1024	22	56	3
HP245-1063	-	-	-	2.70	0.1063	23	56	3
HP245-1094	7/64	-	-	2.78	0.1094	23	56	3
HP245-1102	-	-	-	2.80	0.1102	23	56	3
HP245-1142	-	-	-	2.90	0.1142	23	56	3
HP245-1181	-	-	-	3.00	0.1181	28	66	6
HP245-1220	-	-	-	3.10	0.1220	28	66	6
HP245-1248	1/8	-	-	3.17	0.1248	28	66	6
HP245-1260	-	-	-	3.20	0.1260	28	66	6
HP245-1299	-	-	-	3.30	0.1299	28	66	6
HP245-1339	-	-	-	3.40	0.1339	28	66	6
HP245-1378	-	-	-	3.50	0.1378	28	66	6
HP245-1406	9/64	-	-	3.57	0.1406	28	66	6
HP245-1417	-	-	-	3.60	0.1417	28	66	6
HP245-1457	-	-	-	3.70	0.1457	28	66	6
HP245-1496	-	25	-	3.80	0.1496	36	74	6
HP245-1535	-	-	-	3.90	0.1535	36	74	6
HP245-1563	5/32	-	-	3.97	0.1563	36	74	6
HP245-1575	-	-	-	4.00	0.1575	36	74	6
HP245-1610	-	20	-	4.09	0.1610	36	74	6
HP245-1614	-	-	-	4.10	0.1614	36	74	6
HP245-1654	-	-	-	4.20	0.1654	36	74	6
HP245-1693	-	-	-	4.30	0.1693	36	74	6
HP245-1720	11/64	-	-	4.37	0.1720	36	74	6
HP245-1732	-	-	-	4.40	0.1732	36	74	6
HP245-1772	-	16	-	4.50	0.1772	36	74	6
HP245-1811	-	-	-	4.60	0.1811	36	74	6
HP245-1831	-	-	-	4.65	0.1831	36	74	6
HP245-1850	-	13	-	4.70	0.1850	36	74	6
HP245-1874	3/16	-	-	4.76	0.1874	44	82	6

Packed: 1 pc.
Available TiAlN coating only.

HPC

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List HP245 (Continued)

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

5D

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	44	82	6
HP245-1969	-	-	-	5.00	0.1969	44	82	6
HP245-2008	-	-	-	5.10	0.2008	44	82	6
HP245-2031	13/64	-	-	5.16	0.2031	44	82	6
HP245-2047	-	-	-	5.20	0.2047	44	82	6
HP245-2087	-	-	-	5.30	0.2087	44	82	6
HP245-2126	-	-	-	5.40	0.2126	44	82	6
HP245-2130	-	3	-	5.41	0.2130	44	82	6
HP245-2165	-	-	-	5.50	0.2165	44	82	6
HP245-2189	7/32	-	-	5.56	0.2189	44	82	6
HP245-2205	-	-	-	5.60	0.2205	44	82	6
HP245-2244	-	-	-	5.70	0.2244	44	82	6
HP245-2283	-	-	-	5.80	0.2283	44	82	6
HP245-2323	-	-	-	5.90	0.2323	44	82	6
HP245-2343	15/64	-	-	5.95	0.2343	44	82	6
HP245-2362	-	-	-	6.00	0.2362	44	82	6
HP245-2402	-	-	-	6.10	0.2402	53	91	8
HP245-2441	-	-	-	6.20	0.2441	53	91	8
HP245-2480	-	-	-	6.30	0.2480	53	91	8
HP245-2500	1/4	-	E	6.35	0.2500	53	91	8
HP245-2520	-	-	-	6.40	0.2520	53	91	8
HP245-2559	-	-	-	6.50	0.2559	53	91	8
HP245-2571	-	-	F	6.53	0.2571	53	91	8
HP245-2598	-	-	-	6.60	0.2598	53	91	8
HP245-2638	-	-	-	6.70	0.2638	53	91	8
HP245-2657	17/64	-	-	6.75	0.2657	53	91	8
HP245-2677	-	-	-	6.80	0.2677	53	91	8
HP245-2717	-	-	I	6.90	0.2717	53	91	8
HP245-2756	-	-	-	7.00	0.2756	53	91	8
HP245-2795	-	-	-	7.10	0.2795	53	91	8
HP245-2811	9/32	-	-	7.14	0.2811	53	91	8
HP245-2835	-	-	-	7.20	0.2835	53	91	8
HP245-2874	-	-	-	7.30	0.2874	53	91	8
HP245-2913	-	-	-	7.40	0.2913	53	91	8
HP245-2953	-	-	-	7.50	0.2953	53	91	8
HP245-2969	19/64	-	-	7.54	0.2969	53	91	8
HP245-2992	-	-	-	7.60	0.2992	53	91	8
HP245-3031	-	-	-	7.70	0.3031	53	91	8
HP245-3071	-	-	-	7.80	0.3071	53	91	8
HP245-3110	-	-	-	7.90	0.3110	53	91	8
HP245-3126	5/16	-	-	7.94	0.3126	53	91	8
HP245-3150	-	-	-	8.00	0.3150	53	91	8
HP245-3189	-	-	-	8.10	0.3189	61	103	10
HP245-3228	-	-	P	8.20	0.3228	61	103	10
HP245-3268	-	-	-	8.30	0.3268	61	103	10

Packed: 1 pc.
Available TiAlN coating only.

continued on next page HPC

Work Material

List No.	P					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 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
HP245	◎	◎	◎	◎	◎				◎		○			◎	○		

○ good ◎ best

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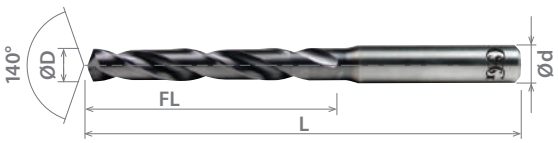
List HP245 (Continued)

5D

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP245-3280	21/64	-	-	8.33	0.3280	61	103	10
HP245-3307	-	-	-	8.40	0.3307	61	103	10
HP245-3319	-	-	Q	8.43	0.3319	61	103	10
HP245-3346	-	-	-	8.50	0.3346	61	103	10
HP245-3386	-	-	-	8.60	0.3386	61	103	10
HP245-3425	-	-	-	8.70	0.3425	61	103	10
HP245-3437	11/32	-	-	8.73	0.3437	61	103	10
HP245-3465	-	-	-	8.80	0.3465	61	103	10
HP245-3504	-	-	-	8.90	0.3504	61	103	10
HP245-3543	-	-	-	9.00	0.3543	61	103	10
HP245-3583	-	-	-	9.10	0.3583	61	103	10
HP245-3594	23/64	-	-	9.13	0.3594	61	103	10
HP245-3622	-	-	-	9.20	0.3622	61	103	10
HP245-3642	-	-	-	9.25	0.3642	61	103	10
HP245-3661	-	-	-	9.30	0.3661	61	103	10
HP245-3701	-	-	-	9.40	0.3701	61	103	10
HP245-3740	-	-	-	9.50	0.3740	61	103	10
HP245-3748	3/8	-	-	9.52	0.3748	61	103	10
HP245-3780	-	-	-	9.60	0.3780	61	103	10
HP245-3819	-	-	-	9.70	0.3819	61	103	10
HP245-3858	-	-	W	9.80	0.3858	61	103	10
HP245-3898	-	-	-	9.90	0.3898	61	103	10
HP245-3906	25/64	-	-	9.92	0.3906	61	103	10
HP245-3937	-	-	-	10.00	0.3937	61	103	10
HP245-3976	-	-	-	10.10	0.3976	71	118	12
HP245-4016	-	-	-	10.20	0.4016	71	118	12
HP245-4055	-	-	-	10.30	0.4055	71	118	12
HP245-4063	13/32	-	-	10.32	0.4063	71	118	12
HP245-4094	-	-	-	10.40	0.4094	71	118	12
HP245-4134	-	-	-	10.50	0.4134	71	118	12
HP245-4173	-	-	-	10.60	0.4173	71	118	12
HP245-4213	-	-	-	10.70	0.4213	71	118	12
HP245-4220	27/64	-	-	10.72	0.4220	71	118	12
HP245-4252	-	-	-	10.80	0.4252	71	118	12
HP245-4291	-	-	-	10.90	0.4291	71	118	12
HP245-4331	-	-	-	11.00	0.4331	71	118	12
HP245-4370	-	-	-	11.10	0.4370	71	118	12
HP245-4374	7/16	-	-	11.11	0.4374	71	118	12
HP245-4409	-	-	-	11.20	0.4409	71	118	12
HP245-4449	-	-	-	11.30	0.4449	71	118	12
HP245-4488	-	-	-	11.40	0.4488	71	118	12
HP245-4528	-	-	-	11.50	0.4528	71	118	12
HP245-4531	29/64	-	-	11.51	0.4531	71	118	12
HP245-4567	-	-	-	11.60	0.4567	71	118	12
HP245-4606	-	-	-	11.70	0.4606	71	118	12
HP245-4646	-	-	-	11.80	0.4646	71	118	12
HP245-4685	-	-	-	11.90	0.4685	71	118	12
HP245-4689	15/32	-	-	11.91	0.4689	71	118	12
HP245-4724	-	-	-	12.00	0.4724	71	118	12
HP245-4764	-	-	-	12.10	0.4764	77	124	14

Packed: 1 pc.
Available TiAlN coating only.

HPC

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List HP245 (Continued)

SPEED FEED P256 | CARBIDE | TiAlN | 30° | SHRINK h6

5D

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP245-4803	-	-	-	12.20	0.4803	77	124	14
HP245-4843	31/64	-	-	12.30	0.4843	77	124	14
HP245-4882	-	-	-	12.40	0.4882	77	124	14
HP245-4921	-	-	-	12.50	0.4921	77	124	14
HP245-4961	-	-	-	12.60	0.4961	77	124	14
HP245-5000	1/2	-	-	12.70	0.5000	77	124	14
HP245-5039	-	-	-	12.80	0.5039	77	124	14
HP245-5079	-	-	-	12.90	0.5079	77	124	14
HP245-5118	-	-	-	13.00	0.5118	77	124	14
HP245-5157	33/64	-	-	13.10	0.5157	77	124	14
HP245-5197	-	-	-	13.20	0.5197	77	124	14
HP245-5236	-	-	-	13.30	0.5236	77	124	14
HP245-5394	-	-	-	13.70	0.5394	77	124	14
HP245-5276	-	-	-	13.40	0.5276	77	124	14
HP245-5311	17/32	-	-	13.49	0.5311	77	124	14
HP245-5315	-	-	-	13.50	0.5315	77	124	14
HP245-5512	-	-	-	14.00	0.5512	77	124	14
HP245-5626	9/16	-	-	14.29	0.5626	83	133	16
HP245-5709	-	-	-	14.50	0.5709	83	133	16
HP245-5780	37/64	-	-	14.68	0.5780	83	133	16
HP245-5787	-	-	-	14.70	0.5787	83	133	16
HP245-5906	-	-	-	15.00	0.5906	83	133	16
HP245-5937	19/32	-	-	15.08	0.5937	83	133	16
HP245-6102	-	-	-	15.50	0.6102	83	133	16
HP245-6181	-	-	-	15.70	0.6181	83	133	16
HP245-6248	5/8	-	-	15.87	0.6248	83	133	16
HP245-6299	-	-	-	16.00	0.6299	83	133	16
HP245-6339				16.10	0.6339	93	143	18
HP245-6496	-	-	-	16.50	0.6496	93	143	18
HP245-6563	21/32	-	-	16.67	0.6563	93	143	18
HP245-6693	-	-	-	17.00	0.6693	93	143	18
HP245-6890	-	-	-	17.50	0.6890	93	143	18
HP245-7087	-	-	-	18.00	0.7087	93	143	18
HP245-7283	-	-	-	18.50	0.7283	101	153	20
HP245-7480	-	-	-	19.00	0.7480	101	153	20
HP245-7500	3/4	-	-	19.05	0.7500	101	153	20
HP245-7579				19.25	0.7579	101	153	20
HP245-7677	-	-	-	19.50	0.7677	101	153	20
HP245-7874	-	-	-	20.00	0.7874	101	153	20

Packed: 1 pc.
Available TiAlN coating only.

HPC

Work Material

List No.	P					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 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
HP245	◎	◎	◎	◎	◎				◎		○			◎	○		

○ good ◎ best

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List HP253

3D, Coolant-Through

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6



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

Packed: 1 pc.
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HPC

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List HP253 (Continued)

3D, Coolant-Through

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP253-2638	–	–	–	6.70	0.2638	34	79	8
HP253-2657	17/64	–	–	6.75	0.2657	34	79	8
HP253-2677	–	–	–	6.80	0.2677	34	79	8
HP253-2717	–	–	I	6.90	0.2717	34	79	8
HP253-2756	–	–	–	7.00	0.2756	34	79	8
HP253-2795	–	–	–	7.10	0.2795	41	79	8
HP253-2811	9/32	–	–	7.14	0.2811	41	79	8
HP253-2835	–	–	–	7.20	0.2835	41	79	8
HP253-2874	–	–	–	7.30	0.2874	41	79	8
HP253-2913	–	–	–	7.40	0.2913	41	79	8
HP253-2953	–	–	–	7.50	0.2953	41	79	8
HP253-2969	19/64	–	–	7.54	0.2969	41	79	8
HP253-2992	–	–	–	7.60	0.2992	41	79	8
HP253-3031	–	–	–	7.70	0.3031	41	79	8
HP253-3071	–	–	–	7.80	0.3071	41	79	8
HP253-3110	–	–	–	7.90	0.3110	41	79	8
HP253-3126	5/16	–	–	7.94	0.3126	41	79	8
HP253-3150	–	–	–	8.00	0.3150	41	79	8
HP253-3189	–	–	–	8.10	0.3189	47	89	10
HP253-3228	–	–	P	8.20	0.3228	47	89	10
HP253-3268	–	–	–	8.30	0.3268	47	89	10
HP253-3280	21/64	–	–	8.33	0.3280	47	89	10
HP253-3307	–	–	–	8.40	0.3307	47	89	10
HP253-3319	–	–	Q	8.43	0.3319	47	89	10
HP253-3346	–	–	–	8.50	0.3346	47	89	10
HP253-3386	–	–	–	8.60	0.3386	47	89	10
HP253-3425	–	–	–	8.70	0.3425	47	89	10
HP253-3437	11/32	–	–	8.73	0.3437	47	89	10
HP253-3465	–	–	–	8.80	0.3465	47	89	10
HP253-3504	–	–	–	8.90	0.3504	47	89	10
HP253-3543	–	–	–	9.00	0.3543	47	89	10
HP253-3583	–	–	–	9.10	0.3583	47	89	10
HP253-3594	23/64	–	–	9.13	0.3594	47	89	10
HP253-3622	–	–	–	9.20	0.3622	47	89	10
HP253-3642	–	–	–	9.25	0.3642	47	89	10
HP253-3661	–	–	–	9.30	0.3661	47	89	10
HP253-3701	–	–	–	9.40	0.3701	47	89	10
HP253-3740	–	–	–	9.50	0.3740	47	89	10
HP253-3748	3/8	–	–	9.52	0.3748	47	89	10
HP253-3780	–	–	–	9.60	0.3780	47	89	10
HP253-3819	–	–	–	9.70	0.3819	47	89	10
HP253-3858	–	–	W	9.80	0.3858	47	89	10
HP253-3898	–	–	–	9.90	0.3898	47	89	10
HP253-3906	25/64	–	–	9.92	0.3906	47	89	10
HP253-3937	–	–	–	10.00	0.3937	47	89	10
HP253-3976	–	–	–	10.10	0.3976	55	102	12

Packed: 1 pc.
Available TiAlN coating only.

continued on next page HPC

Work Material

List No.	P					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 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
HP253	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		

○ good ◎ best

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List HP253 (Continued)

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

3D, Coolant-Through





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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP253-4016	–	–	–	10.20	0.4016	55	102	12
HP253-4055	–	–	–	10.30	0.4055	55	102	12
HP253-4063	13/32	–	–	10.32	0.4063	55	102	12
HP253-4094	–	–	–	10.40	0.4094	55	102	12
HP253-4134	–	–	–	10.50	0.4134	55	102	12
HP253-4173	–	–	–	10.60	0.4173	55	102	12
HP253-4213	–	–	–	10.70	0.4213	55	102	12
HP253-4220	27/64	–	–	10.72	0.4220	55	102	12
HP253-4252	–	–	–	10.80	0.4252	55	102	12
HP253-4291	–	–	–	10.90	0.4291	55	102	12
HP253-4331	–	–	–	11.00	0.4331	55	102	12
HP253-4370	–	–	–	11.10	0.4370	55	102	12
HP253-4374	7/16	–	–	11.11	0.4374	55	102	12
HP253-4409	–	–	–	11.20	0.4409	55	102	12
HP253-4449	–	–	–	11.30	0.4449	55	102	12
HP253-4488	–	–	–	11.40	0.4488	55	102	12
HP253-4528	–	–	–	11.50	0.4528	55	102	12
HP253-4531	29/64	–	–	11.51	0.4531	55	102	12
HP253-4567	–	–	–	11.60	0.4567	55	102	12
HP253-4606	–	–	–	11.70	0.4606	55	102	12
HP253-4646	–	–	–	11.80	0.4646	55	102	12
HP253-4685	–	–	–	11.90	0.4685	55	102	12
HP253-4689	15/32	–	–	11.91	0.4689	55	102	12
HP253-4724	–	–	–	12.00	0.4724	55	102	12
HP253-4764	–	–	–	12.10	0.4764	60	107	14
HP253-4803	–	–	–	12.20	0.4803	60	107	14
HP253-4843	31/64	–	–	12.30	0.4843	60	107	14
HP253-4882	–	–	–	12.40	0.4882	60	107	14
HP253-4921	–	–	–	12.50	0.4921	60	107	14
HP253-4961	–	–	–	12.60	0.4961	60	107	14
HP253-5000	1/2	–	–	12.70	0.5000	60	107	14
HP253-5039	–	–	–	12.80	0.5039	60	107	14
HP253-5079	–	–	–	12.90	0.5079	60	107	14
HP253-5118	–	–	–	13.00	0.5118	60	107	14
HP253-5157	33/64	–	–	13.10	0.5157	60	107	14
HP253-5197	–	–	–	13.20	0.5197	60	107	14
HP253-5236	–	–	–	13.30	0.5236	60	107	14
HP253-5276	–	–	–	13.40	0.5276	60	107	14
HP253-5311	17/32	–	–	13.49	0.5311	60	107	14
HP253-5315	–	–	–	13.50	0.5315	60	107	14
HP253-5394	–	–	–	13.70	0.5394	60	107	14
HP253-5512	–	–	–	14.00	0.5512	60	107	14
HP253-5626	9/16	–	–	14.29	0.5626	65	115	16
HP253-5709	–	–	–	14.50	0.5709	65	115	16
HP253-5780	37/64	–	–	14.68	0.5780	65	115	16
HP253-5787	–	–	–	14.70	0.5787	65	115	16
HP253-5906	–	–	–	15.00	0.5906	65	115	16
HP253-5937	19/32	–	–	15.08	0.5937	65	115	15
HP253-6102	–	–	–	15.50	0.6102	65	115	16
HP253-6181	–	–	–	15.70	0.6181	65	115	16

Packed: 1 pc.
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HPC

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List HP253 (Continued)

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

3D, Coolant-Through

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

Packed: 1 pc.
Available TiAlN coating only.

HPC

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
HP253	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		

○ good ◎ best

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List HP255

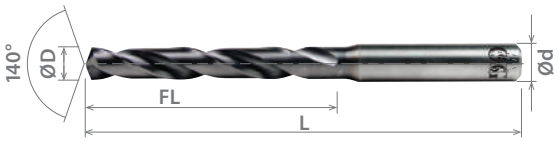
5D, Coolant-Through

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

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



RThinning



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

Packed: 1 pc.
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List HP255 (Continued)

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

5D, Coolant-Through

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP255-2638	–	–	–	6.70	0.2638	53	91	8
HP255-2657	17/64	–	–	6.75	0.2657	53	91	8
HP255-2677	–	–	–	6.80	0.2677	53	91	8
HP255-2717	–	–	I	6.90	0.2717	53	91	8
HP255-2756	–	–	–	7.00	0.2756	53	91	8
HP255-2795	–	–	–	7.10	0.2795	53	91	8
HP255-2811	9/32	–	–	7.14	0.2811	53	91	8
HP255-2835	–	–	–	7.20	0.2835	53	91	8
HP255-2874	–	–	–	7.30	0.2874	53	91	8
HP255-2913	–	–	–	7.40	0.2913	53	91	8
HP255-2953	–	–	–	7.50	0.2953	53	91	8
HP255-2969	19/64	–	–	7.54	0.2969	53	91	8
HP255-2992	–	–	–	7.60	0.2992	53	91	8
HP255-3031	–	–	–	7.70	0.3031	53	91	8
HP255-3071	–	–	–	7.80	0.3071	53	91	8
HP255-3110	–	–	–	7.90	0.3110	53	91	8
HP255-3126	5/16	–	–	7.94	0.3126	53	91	8
HP255-3150	–	–	–	8.00	0.3150	53	91	8
HP255-3189	–	–	–	8.10	0.3189	61	103	10
HP255-3228	–	–	P	8.20	0.3228	61	103	10
HP255-3268	–	–	–	8.30	0.3268	61	103	10
HP255-3280	21/64	–	–	8.33	0.3280	61	103	10
HP255-3307	–	–	–	8.40	0.3307	61	103	10
HP255-3319	–	–	Q	8.43	0.3319	61	103	10
HP255-3346	–	–	–	8.50	0.3346	61	103	10
HP255-3386	–	–	–	8.60	0.3386	61	103	10
HP255-3425	–	–	–	8.70	0.3425	61	103	10
HP255-3437	11/32	–	–	8.73	0.3437	61	103	10
HP255-3465	–	–	–	8.80	0.3465	61	103	10
HP255-3504	–	–	–	8.90	0.3504	61	103	10
HP255-3543	–	–	–	9.00	0.3543	61	103	10
HP255-3583	–	–	–	9.10	0.3583	61	103	10
HP255-3594	23/64	–	–	9.13	0.3594	61	103	10
HP255-3622	–	–	–	9.20	0.3622	61	103	10
HP255-3642	–	–	–	9.25	0.3642	61	103	10
HP255-3661	–	–	–	9.30	0.3661	61	103	10
HP255-3701	–	–	–	9.40	0.3701	61	103	10
HP255-3740	–	–	–	9.50	0.3740	61	103	10
HP255-3748	3/8	–	–	9.52	0.3748	61	103	10
HP255-3780	–	–	–	9.60	0.3780	61	103	10
HP255-3819	–	–	–	9.70	0.3819	61	103	10
HP255-3858	–	–	W	9.80	0.3858	61	103	10
HP255-3898	–	–	–	9.90	0.3898	61	103	10
HP255-3906	25/64	–	–	9.92	0.3906	61	103	10
HP255-3937	–	–	–	10.00	0.3937	61	103	10
HP255-3976	–	–	–	10.10	0.3976	71	118	12

Packed: 1 pc.
Available TiAlN coating only.

continued on next page

HPC

Work Material

List No.	P					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 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
HP255	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		

○ good ◎ best

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List HP255 (Continued)

5D, Coolant-Through

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP255-4016	–	–	–	10.20	0.4016	71	118	12
HP255-4055	–	–	–	10.30	0.4055	71	118	12
HP255-4063	13/32	–	–	10.32	0.4063	71	118	12
HP255-4094	–	–	–	10.40	0.4094	71	118	12
HP255-4134	–	–	–	10.50	0.4134	71	118	12
HP255-4173	–	–	–	10.60	0.4173	71	118	12
HP255-4213	–	–	–	10.70	0.4213	71	118	12
HP255-4220	27/64	–	–	10.72	0.4220	71	118	12
HP255-4252	–	–	–	10.80	0.4252	71	118	12
HP255-4291	–	–	–	10.90	0.4291	71	118	12
HP255-4331	–	–	–	11.00	0.4331	71	118	12
HP255-4370	–	–	–	11.10	0.4370	71	118	12
HP255-4374	7/16	–	–	11.11	0.4374	71	118	12
HP255-4409	–	–	–	11.20	0.4409	71	118	12
HP255-4449	–	–	–	11.30	0.4449	71	118	12
HP255-4488	–	–	–	11.40	0.4488	71	118	12
HP255-4528	–	–	–	11.50	0.4528	71	118	12
HP255-4531	29/64	–	–	11.51	0.4531	71	118	12
HP255-4567	–	–	–	11.60	0.4567	71	118	12
HP255-4606	–	–	–	11.70	0.4606	71	118	12
HP255-4646	–	–	–	11.80	0.4646	71	118	12
HP255-4685	–	–	–	11.90	0.4685	71	118	12
HP255-4689	15/32	–	–	11.91	0.4689	71	118	12
HP255-4724	–	–	–	12.00	0.4724	71	118	12
HP255-4764	–	–	–	12.10	0.4764	77	124	14
HP255-4803	–	–	–	12.20	0.4803	77	124	14
HP255-4843	31/64	–	–	12.30	0.4843	77	124	14
HP255-4882	–	–	–	12.40	0.4882	77	124	14
HP255-4921	–	–	–	12.50	0.4921	77	124	14
HP255-4961	–	–	–	12.60	0.4961	77	124	14
HP255-5000	1/2	–	–	12.70	0.5000	77	124	14
HP255-5039	–	–	–	12.80	0.5039	77	124	14
HP255-5079	–	–	–	12.90	0.5079	77	124	14
HP255-5118	–	–	–	13.00	0.5118	77	124	14
HP255-5157	33/64	–	–	13.10	0.5157	77	124	14
HP255-5197	–	–	–	13.20	0.5197	77	124	14
HP255-5236	–	–	–	13.30	0.5236	77	124	14
HP255-5276	–	–	–	13.40	0.5276	77	124	14
HP255-5311	17/32	–	–	13.49	0.5311	77	124	14
HP255-5315	–	–	–	13.50	0.5315	77	124	14
HP255-5394	–	–	–	13.70	0.5394	77	124	14
HP255-5512	–	–	–	14.00	0.5512	77	124	14
HP255-5626	9/16	–	–	14.29	0.5626	83	133	16
HP255-5709	–	–	–	14.50	0.5709	83	133	16
HP255-5780	37/64	–	–	14.68	0.5780	83	133	16
HP255-5787	–	–	–	14.70	0.5787	83	133	16
HP255-5906	–	–	–	15.00	0.5906	83	133	16
HP255-5937	19/32	–	–	15.08	0.5937	83	133	16
HP255-6102	–	–	–	15.50	0.6102	83	133	16
HP255-6181	–	–	–	15.70	0.6181	83	133	16

Packed: 1 pc.
Available TiAlN coating only.

HPC

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List HP255 (Continued)

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

5D, Coolant-Through

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

Packed: 1 pc.
Available TiAlN coating only.

HPC

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
HP255	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		

○ good ◎ best

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List HP258

8D, Coolant-Through

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

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



RThinning



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP258-1181	-	-	-	3.00	0.1181	34	77	4
HP258-1220	-	-	-	3.10	0.1220	36	77	4
HP258-1248	1/8	-	-	3.17	0.1248	36	77	4
HP258-1260	-	-	-	3.20	0.1260	36	77	4
HP258-1299	-	-	-	3.30	0.1299	36	77	4
HP258-1339	-	-	-	3.40	0.1339	36	77	4
HP258-1378	-	-	-	3.50	0.1378	36	77	4
HP258-1406	9/64	-	-	3.57	0.1406	36	77	4
HP258-1417	-	-	-	3.60	0.1417	36	77	4
HP258-1457	-	-	-	3.70	0.1457	36	77	4
HP258-1496	-	25	-	3.80	0.1496	45	85	4
HP258-1535	-	-	-	3.90	0.1535	45	85	4
HP258-1563	5/32	-	-	3.97	0.1563	45	85	4
HP258-1575	-	-	-	4.00	0.1575	45	85	4
HP258-1610	-	20	-	4.09	0.1610	45	85	6
HP258-1614	-	-	-	4.10	0.1614	45	85	6
HP258-1654	-	-	-	4.20	0.1654	45	85	6
HP258-1693	-	-	-	4.30	0.1693	45	85	6
HP258-1720	11/64	-	-	4.37	0.1720	45	85	6
HP258-1732	-	-	-	4.40	0.1732	45	85	6
HP258-1772	-	16	-	4.50	0.1772	45	85	6
HP258-1811	-	-	-	4.60	0.1811	45	85	6
HP258-1831	-	-	-	4.65	0.1831	45	85	6
HP258-1850	-	13	-	4.70	0.1850	45	85	6
HP258-1874	3/16	-	-	4.76	0.1874	50	90	6
HP258-1890	-	-	-	4.80	0.1890	50	90	6
HP258-1929	-	-	-	4.90	0.1929	50	90	6
HP258-1969	-	-	-	5.00	0.1969	50	90	6
HP258-2008	-	-	-	5.10	0.2008	57	97	6
HP258-2031	13/64	-	-	5.16	0.2031	57	97	6
HP258-2047	-	-	-	5.20	0.2047	57	97	6
HP258-2087	-	-	-	5.30	0.2087	57	97	6
HP258-2126	-	-	-	5.40	0.2126	57	97	6
HP258-2130	-	3	-	5.41	0.2130	57	97	6
HP258-2165	-	-	-	5.50	0.2165	57	97	6
HP258-2189	7/32	-	-	5.56	0.2189	57	97	6
HP258-2205	-	-	-	5.60	0.2205	57	97	6
HP258-2244	-	-	-	5.70	0.2244	57	97	6
HP258-2283	-	-	-	5.80	0.2283	57	97	6
HP258-2323	-	-	-	5.90	0.2323	57	97	6
HP258-2343	15/64	-	-	5.95	0.2343	57	97	6
HP258-2362	-	-	-	6.00	0.2362	57	97	6
HP258-2402	-	-	-	6.10	0.2402	66	106	8
HP258-2441	-	-	-	6.20	0.2441	66	106	8
HP258-2480	-	-	-	6.30	0.2480	66	106	8
HP258-2500	1/4	-	E	6.35	0.2500	66	106	8
HP258-2520	-	-	-	6.40	0.2520	66	106	8
HP258-2559	-	-	-	6.50	0.2559	66	106	8
HP258-2571	-	-	F	6.53	0.2571	66	106	8
HP258-2598	-	-	-	6.60	0.2598	66	106	8

Packed: 1 pc.
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List HP258 (Continued)

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

8D, Coolant-Through

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP258-2638	-	-	-	6.70	0.2638	66	106	8
HP258-2657	17/64	-	-	6.75	0.2657	66	106	8
HP258-2677	-	-	-	6.80	0.2677	66	106	8
HP258-2717	-	-	I	6.90	0.2717	76	116	8
HP258-2756	-	-	-	7.00	0.2756	76	116	8
HP258-2795	-	-	-	7.10	0.2795	76	116	8
HP258-2811	9/32	-	-	7.14	0.2811	76	116	8
HP258-2835	-	-	-	7.20	0.2835	76	116	8
HP258-2874	-	-	-	7.30	0.2874	76	116	8
HP258-2913	-	-	-	7.40	0.2913	76	116	8
HP258-2953	-	-	-	7.50	0.2953	76	116	8
HP258-2969	19/64	-	-	7.54	0.2969	76	116	8
HP258-2992	-	-	-	7.60	0.2992	76	116	8
HP258-3031	-	-	-	7.70	0.3031	76	116	8
HP258-3071	-	-	-	7.80	0.3071	76	116	8
HP258-3110	-	-	-	7.90	0.3110	76	116	8
HP258-3126	5/16	-	-	7.94	0.3126	76	116	8
HP258-3150	-	-	-	8.00	0.3150	76	116	8
HP258-3189	-	-	-	8.10	0.3189	87	131	10
HP258-3228	-	-	P	8.20	0.3228	87	131	10
HP258-3268	-	-	-	8.30	0.3268	87	131	10
HP258-3280	21/64	-	-	8.33	0.3280	87	131	10
HP258-3307	-	-	-	8.40	0.3307	87	131	10
HP258-3319	-	-	Q	8.43	0.3319	87	131	10
HP258-3346	-	-	-	8.50	0.3346	87	131	10
HP258-3386	-	-	-	8.60	0.3386	87	131	10
HP258-3425	-	-	-	8.70	0.3425	87	131	10
HP258-3437	11/32	-	-	8.73	0.3437	87	131	10
HP258-3465	-	-	-	8.80	0.3465	87	131	10
HP258-3504	-	-	-	8.90	0.3504	87	131	10
HP258-3543	-	-	-	9.00	0.3543	87	131	10
HP258-3583	-	-	-	9.10	0.3583	95	139	10
HP258-3594	23/64	-	-	9.13	0.3594	95	139	10
HP258-3622	-	-	-	9.20	0.3622	95	139	10
HP258-3642	-	-	-	9.25	0.3642	95	139	10
HP258-3661	-	-	-	9.30	0.3661	95	139	10
HP258-3701	-	-	-	9.40	0.3701	95	139	10
HP258-3740	-	-	-	9.50	0.3740	95	139	10
HP258-3748	3/8	-	-	9.52	0.3748	95	139	10
HP258-3780	-	-	-	9.60	0.3780	95	139	10
HP258-3819	-	-	-	9.70	0.3819	95	139	10
HP258-3858	-	-	W	9.80	0.3858	95	139	10
HP258-3898	-	-	-	9.90	0.3898	95	139	10
HP258-3906	25/64	-	-	9.92	0.3906	95	139	10
HP258-3937	-	-	-	10.00	0.3937	95	139	10
HP258-3976	-	-	-	10.10	0.3976	106	155	12

Packed: 1 pc.
Available TiAlN coating only.

continued on next page HPC

Work Material

List No.	P					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 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
HP258	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		

○ good ◎ best

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List HP258 (Continued)

8D, Coolant-Through

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6





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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP258-4016	-	-	-	10.20	0.4016	106	155	12
HP258-4055	-	-	-	10.30	0.4055	106	155	12
HP258-4063	13/32	-	-	10.32	0.4063	106	155	12
HP258-4094	-	-	-	10.40	0.4094	106	155	12
HP258-4134	-	-	-	10.50	0.4134	106	155	12
HP258-4173	-	-	-	10.60	0.4173	106	155	12
HP258-4213	-	-	-	10.70	0.4213	106	155	12
HP258-4220	27/64	-	-	10.72	0.4220	106	155	12
HP258-4252	-	-	-	10.80	0.4252	106	155	12
HP258-4291	-	-	-	10.90	0.4291	106	155	12
HP258-4331	-	-	-	11.00	0.4331	106	155	12
HP258-4370	-	-	-	11.10	0.4370	114	163	12
HP258-4374	7/16	-	-	11.11	0.4374	114	163	12
HP258-4409	-	-	-	11.20	0.4409	114	163	12
HP258-4449	-	-	-	11.30	0.4449	114	163	12
HP258-4488	-	-	-	11.40	0.4488	114	163	12
HP258-4528	-	-	-	11.50	0.4528	114	163	12
HP258-4531	29/64	-	-	11.51	0.4531	114	163	12
HP258-4567	-	-	-	11.60	0.4567	114	163	12
HP258-4606	-	-	-	11.70	0.4606	114	163	12
HP258-4646	-	-	-	11.80	0.4646	114	163	12
HP258-4685	-	-	-	11.90	0.4685	114	163	12
HP258-4689	15/32	-	-	11.91	0.4689	114	163	12
HP258-4724	-	-	-	12.00	0.4724	114	163	12
HP258-4764	-	-	-	12.10	0.4764	133	182	14
HP258-4803	-	-	-	12.20	0.4803	133	182	14
HP258-4843	31/64	-	-	12.30	0.4843	133	182	14
HP258-4882	-	-	-	12.40	0.4882	133	182	14
HP258-4921	-	-	-	12.50	0.4921	133	182	14
HP258-4961	-	-	-	12.60	0.4961	133	182	14
HP258-5000	1/2	-	-	12.70	0.5000	133	182	14
HP258-5039	-	-	-	12.80	0.5039	133	182	14
HP258-5079	-	-	-	12.90	0.5079	133	182	14
HP258-5118	-	-	-	13.00	0.5118	133	182	14
HP258-5157	33/64	-	-	13.10	0.5157	133	182	14
HP258-5197	-	-	-	13.20	0.5197	133	182	14
HP258-5236	-	-	-	13.30	0.5236	133	182	14
HP258-5276	-	-	-	13.40	0.5276	133	182	14
HP258-5311	17/32	-	-	13.49	0.5311	133	182	14
HP258-5315	-	-	-	13.50	0.5315	133	182	14
HP258-5394	-	-	-	13.70	0.5394	133	182	14
HP258-5512	-	-	-	14.00	0.5512	133	182	14
HP258-5626	9/16	-	-	14.29	0.5626	152	204	16
HP258-5709	-	-	-	14.50	0.5709	152	204	16
HP258-5780	37/64	-	-	14.68	0.5780	152	204	16
HP258-5787	-	-	-	14.70	0.5787	152	204	16
HP258-5906	-	-	-	15.00	0.5906	152	204	16
HP258-5937	19/32	-	-	15.08	0.5937	152	204	16
HP258-6102	-	-	-	15.50	0.6102	152	204	16
HP258-6181	-	-	-	15.70	0.6181	152	204	16

Packed: 1 pc.
Available TiAlN coating only.

HPC

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List HP258 (Continued)

SPEED FEED P257 | CARBIDE | TiAlN | COOLANT THROUGH | 30° | SHRINK h6

8D, Coolant-Through

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

Packed: 1 pc.
Available TiAlN coating only.

HPC

Work Material

List No.	P					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 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
HP258	◎	◎	◎	◎	◎	○	○	○	◎		○	○	○	◎	○		

○ good ◎ best

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List 738

SPEED FEED P258 INDEX.

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
73818105	NK1010-60	Aluminum, Cast Iron AlCrN
73801300	—	L-15 Replacement Screw

Packed: 10 pcs.
Insert Radius: 0.4 mm

HYM



90°



118°

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

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

HYM



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°	5-1/8	0.984 (25mm)	1
73809200	90°	8	0.866 (22mm)	3/4
73809300	120°	8	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

HYM

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List 738 (Continued)

SPEED FEED P258 INDEX.

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	90°	6-1/2	0.315	3/8

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

HYM



90°

Holders				
EDP Number	Point Angle	Overall Length	Max. Diameter	Shank Diameter
73807000	90°	5	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

HYM

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

HYM

Work Material

List No.	P					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 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
738	◎	◎	○	○	○		○	○	◎	◎	◎			○	○		

○ good ◎ best

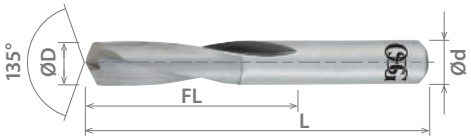
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List 215

SPEED FEED P259-260 | CARBIDE | BR | 15°

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





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
215-0394	—	—	—	1.00	0.0394	13.00	38.00	1.00
215-0433	—	—	—	1.10	0.0433	13.00	38.00	1.10
215-0465	—	56	—	1.18	0.0465	12.70	38.10	1.18
215-0469	3/64	—	—	1.19	0.0469	12.70	38.10	3/64
215-0472	—	—	—	1.20	0.0472	13.00	38.00	1.20
215-0512	—	—	—	1.30	0.0512	13.00	38.00	1.30
215-0520	—	55	—	1.32	0.0520	12.70	38.10	1.32
215-0550	—	54	—	1.40	0.0550	12.70	38.10	1.40
215-0551	—	54	—	1.40	0.0551	13.00	38.00	1.40
215-0591	—	—	—	1.50	0.0591	13.00	38.00	1.50
215-0595	—	53	—	1.51	0.0595	12.70	38.10	1.51
215-0625	1/16	—	—	1.59	0.0625	15.87	41.27	1/16
215-0630	—	—	—	1.60	0.0630	18.00	43.00	1.60
215-0635	—	52	—	1.61	0.0635	17.46	42.86	1.61
215-0669	—	51	—	1.70	0.0669	18.00	43.00	1.70
215-0670	—	51	—	1.70	0.0670	17.46	42.86	1.70
215-0700	—	50	—	1.78	0.0700	17.46	42.86	1.78
215-0709	—	—	—	1.80	0.0709	18.00	43.00	1.80
215-0730	—	49	—	1.85	0.0730	17.46	42.86	1.85
215-0748	—	—	—	1.90	0.0748	18.00	43.00	1.90
215-0760	—	48	—	1.93	0.0760	17.46	42.86	1.93
215-0781	5/64	—	—	1.98	0.0781	17.46	42.86	5/64
215-0785	—	47	—	1.99	0.0785	19.05	44.45	1.99
215-0787	—	—	—	2.00	0.0787	19.00	45.00	2.00
215-0810	—	46	—	2.06	0.0810	19.05	44.45	2.06
215-0820	—	45	—	2.08	0.0820	19.05	44.45	2.08
215-0827	—	—	—	2.10	0.0827	19.00	45.00	2.10
215-0860	—	44	—	2.18	0.0860	19.05	44.45	2.18
215-0866	—	—	—	2.20	0.0866	19.00	45.00	2.20
215-0890	—	43	—	2.26	0.0890	19.05	44.45	2.26
215-0906	—	—	—	2.30	0.0906	19.00	45.00	2.30
215-0935	—	42	—	2.37	0.0935	19.05	44.45	2.37
215-0938	3/32	—	—	2.38	0.0938	19.05	44.45	3/32
215-0945	—	—	—	2.40	0.0945	21.00	46.00	2.40
215-0960	—	41	—	2.44	0.0960	20.63	46.03	2.44
215-0980	—	40	—	2.49	0.0980	20.63	46.03	2.49
215-0984	—	—	—	2.50	0.0984	21.00	46.00	2.50
215-0995	—	39	—	2.53	0.0995	20.63	46.03	2.53
215-1015	—	38	—	2.58	0.1015	20.63	46.03	2.58
215-1024	—	—	—	2.60	0.1024	21.00	46.00	2.60
215-1040	—	37	—	2.64	0.1040	20.63	46.03	2.64
215-1063	—	—	—	2.70	0.1063	21.00	46.00	2.70
215-1065	—	36	—	2.71	0.1065	20.63	46.03	2.71
215-1094	7/64	—	—	2.78	0.1094	20.63	46.03	7/64
215-1100	—	35	—	2.79	0.1100	22.22	47.62	2.79
215-1102	—	—	—	2.80	0.1102	22.00	48.00	2.80
215-1110	—	34	—	2.82	0.1110	22.22	47.62	2.82
215-1130	—	33	—	2.87	0.1130	22.22	47.62	2.87
215-1142	—	—	—	2.90	0.1142	22.00	48.00	2.90
215-1160	—	32	—	2.95	0.1160	22.22	47.62	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.

HYE

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List 215 (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 15°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
215-1181	—	—	—	3.00	0.1181	22.00	48.00	3.00
215-1200	—	31	—	3.05	0.1200	22.22	47.62	3.05
215-1220	—	—	—	3.10	0.1220	22.00	48.00	3.10
215-1250	1/8	—	—	3.18	0.1250	22.22	47.62	1/8
215-1260	—	—	—	3.20	0.1260	24.00	52.00	3.20
215-1285	—	30	—	3.26	0.1285	23.81	49.21	3.26
215-1299	—	—	—	3.30	0.1299	24.00	52.00	3.30
215-1339	—	—	—	3.40	0.1339	24.00	52.00	3.40
215-1360	—	29	—	3.45	0.1360	23.81	49.21	3.45
215-1378	—	—	—	3.50	0.1378	24.00	52.00	3.50
215-1405	—	28	—	3.57	0.1405	23.81	49.21	3.57
215-1406	9/64	28	—	3.57	0.1406	23.81	49.21	9/64
215-1417	—	—	—	3.60	0.1417	25.00	52.00	3.60
215-1440	—	27	—	3.66	0.1440	25.40	52.38	3.66
215-1457	—	—	—	3.70	0.1457	25.00	52.00	3.70
215-1470	—	26	—	3.73	0.1470	25.40	52.38	3.73
215-1495	—	25	—	3.80	0.1495	25.40	52.38	3.80
215-1496	—	25	—	3.80	0.1496	25.00	52.00	3.80
215-1520	—	24	—	3.86	0.1520	25.40	52.38	3.86
215-1535	—	—	—	3.90	0.1535	25.00	52.00	3.90
215-1540	—	23	—	3.91	0.1540	25.40	52.38	3.91
215-1562	5/32	—	—	3.97	0.1562	25.40	52.38	5/32
215-1570	—	22	—	3.99	0.1570	26.98	53.97	3.99
215-1575	—	—	—	4.00	0.1575	27.00	53.00	4.00
215-1590	—	21	—	4.04	0.1590	26.98	53.97	4.04
215-1610	—	20	—	4.09	0.1610	26.98	53.97	4.09
215-1614	—	—	—	4.10	0.1614	27.00	53.00	4.10
215-1654	—	—	—	4.20	0.1654	27.00	53.00	4.20
215-1660	—	19	—	4.22	0.1660	26.98	53.97	4.22
215-1693	—	—	—	4.30	0.1693	27.00	53.00	4.30
215-1695	—	18	—	4.31	0.1695	26.98	53.97	4.31
215-1719	11/64	—	—	4.37	0.1719	26.98	53.97	11/64
215-1730	—	17	—	4.39	0.1730	28.57	55.56	4.39
215-1732	—	—	—	4.40	0.1732	29.00	55.00	4.40
215-1770	—	16	—	4.50	0.1770	28.57	55.56	4.50
215-1772	—	16	—	4.50	0.1772	29.00	55.00	4.50
215-1800	—	15	—	4.57	0.1800	28.57	55.56	4.57
215-1811	—	—	—	4.60	0.1811	29.00	55.00	4.60
215-1820	—	14	—	4.62	0.1820	28.57	55.56	4.62
215-1850	—	13	—	4.70	0.1850	28.57	55.56	4.70
215-1875	3/16	—	—	4.76	0.1875	28.57	55.56	3/16
215-1890	—	12	—	4.80	0.1890	30.16	57.15	4.80
215-1910	—	11	—	4.85	0.1910	30.16	57.15	4.85
215-1929	—	—	—	4.90	0.1929	30.00	57.00	4.90
215-1935	—	10	—	4.92	0.1935	30.16	57.15	4.92
215-1960	—	9	—	4.98	0.1960	30.16	57.15	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

HYE

Work Material

List No.	P					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 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
215	○	○	○	○	○		○	○	○		○	○	○	○	○		

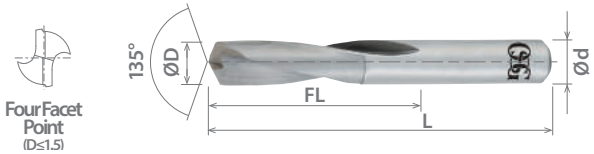
○ good ◎ best

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List 215 (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 15°

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



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
215-1968	—	—	—	5.00	0.1969	30.00	57.00	5.00
215-1990	—	8	—	5.05	0.1990	30.16	57.15	5.05
215-2008	—	—	—	5.10	0.2008	30.00	57.00	5.10
215-2010	—	7	—	5.11	0.2010	30.16	57.15	5.11
215-2031	13/64	—	—	5.16	0.2031	30.16	57.15	13/64
215-2040	—	6	—	5.18	0.2040	31.75	60.32	5.18
215-2047	—	—	—	5.20	0.2047	32.00	60.00	5.20
215-2055	—	5	—	5.22	0.2055	31.75	60.32	5.22
215-2087	—	—	—	5.30	0.2087	32.00	60.00	5.30
215-2090	—	4	—	5.31	0.2090	31.75	60.32	5.31
215-2126	—	—	—	5.40	0.2126	32.00	60.00	5.40
215-2130	—	3	—	5.41	0.2130	31.75	60.32	5.41
215-2165	—	—	—	5.50	0.2165	32.00	60.00	5.50
215-2188	7/32	—	—	5.56	0.2188	31.75	60.32	7/32
215-2205	—	—	—	5.60	0.2205	33.00	61.00	5.60
215-2210	—	2	—	5.61	0.2210	33.33	61.91	5.61
215-2244	—	—	—	5.70	0.2244	33.00	61.00	5.70
215-2280	—	1	—	5.79	0.2280	33.33	61.91	5.79
215-2283	—	—	—	5.80	0.2283	33.00	61.00	5.80
215-2323	—	—	—	5.90	0.2323	33.00	61.00	5.90
215-2340	—	—	A	5.94	0.2340	33.33	61.91	5.94
215-2344	15/64	—	—	5.95	0.2344	33.33	61.91	15/64
215-2362	—	—	—	6.00	0.2362	33.00	61.00	6.00
215-2380	—	—	B	6.05	0.2380	34.92	63.50	6.05
215-2402	—	—	—	6.10	0.2402	35.00	63.00	6.10
215-2420	—	—	C	6.15	0.2420	34.92	63.50	6.15
215-2441	—	—	—	6.20	0.2441	35.00	63.00	6.20
215-2460	—	—	D	6.25	0.2460	34.92	63.50	6.25
215-2480	—	—	—	6.30	0.2480	35.00	63.00	6.30
215-2500	1/4	—	E	6.35	0.2500	34.92	63.50	1/4
215-2520	—	—	—	6.40	0.2520	35.00	63.00	6.40
215-2559	—	—	—	6.50	0.2559	35.00	63.00	6.50
215-2570	—	—	F	6.53	0.2570	36.51	66.67	6.53
215-2598	—	—	—	6.60	0.2598	37.00	67.00	6.60
215-2610	—	—	G	6.63	0.2610	36.51	66.67	6.63
215-2638	—	—	—	6.70	0.2638	37.00	67.00	6.70
215-2656	17/64	—	—	6.75	0.2656	36.51	66.67	17/64
215-2660	—	—	H	6.76	0.2660	38.10	68.26	6.76
215-2677	—	—	—	6.80	0.2677	38.00	68.00	6.80
215-2717	—	—	I	6.90	0.2717	38.00	68.00	6.90
215-2720	—	—	I	6.91	0.2720	38.10	68.26	6.91
215-2756	—	—	—	7.00	0.2756	38.00	68.00	7.00
215-2770	—	—	J	7.04	0.2770	38.10	68.26	7.04
215-2795	—	—	—	7.10	0.2795	38.00	68.00	7.10
215-2810	—	—	K	7.14	0.2810	38.10	68.26	7.14
215-2812	9/32	—	—	7.14	0.2812	38.10	68.26	9/32
215-2835	—	—	—	7.20	0.2835	40.00	70.00	7.20
215-2874	—	—	—	7.30	0.2874	40.00	70.00	7.30
215-2900	—	—	L	7.37	0.2900	39.68	69.85	7.37
215-2913	—	—	—	7.40	0.2913	40.00	70.00	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.

HYE

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List 215 (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 15°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
215-2950	—	—	M	7.49	0.2950	39.68	69.85	7.49
215-2953	—	—	—	7.50	0.2953	40.00	70.00	7.50
215-2969	19/64	—	—	7.54	0.2969	39.68	69.85	19/64
215-2992	—	—	—	7.60	0.2992	41.00	71.00	7.60
215-3020	—	—	N	7.67	0.3020	41.27	71.43	7.67
215-3031	—	—	—	7.70	0.3031	41.00	71.00	7.70
215-3071	—	—	—	7.80	0.3071	41.00	71.00	7.80
215-3110	—	—	—	7.90	0.3110	41.00	71.00	7.90
215-3125	5/16	—	—	7.94	0.3125	41.27	71.43	5/16
215-3150	—	—	—	8.00	0.3150	41.00	71.00	8.00
215-3160	—	—	O	8.03	0.3160	42.86	74.61	8.03
215-3189	—	—	—	8.10	0.3189	43.00	75.00	8.10
215-3228	—	—	P	8.20	0.3228	43.00	75.00	8.20
215-3230	—	—	P	8.20	0.3230	42.86	74.61	8.20
215-3268	—	—	—	8.30	0.3268	43.00	75.00	8.30
215-3281	21/64	—	—	8.33	0.3281	42.86	74.61	21/64
215-3307	—	—	—	8.40	0.3307	43.00	76.00	8.40
215-3320	—	—	Q	8.43	0.3320	42.86	76.20	8.43
215-3346	—	—	—	8.50	0.3346	43.00	76.00	8.50
215-3386	—	—	—	8.60	0.3386	43.00	76.00	8.60
215-3390	—	—	R	8.61	0.3390	42.86	76.20	8.61
215-3425	—	—	—	8.70	0.3425	43.00	76.00	8.70
215-3438	11/32	—	—	8.73	0.3438	42.86	76.20	11/32
215-3465	—	—	—	8.80	0.3465	44.00	78.00	8.80
215-3480	—	—	S	8.84	0.3480	44.45	77.78	8.84
215-3504	—	—	—	8.90	0.3504	44.00	78.00	8.90
215-3543	—	—	—	9.00	0.3543	44.00	78.00	9.00
215-3580	—	—	T	9.09	0.3580	44.45	77.78	9.09
215-3583	—	—	—	9.10	0.3583	44.00	78.00	9.10
215-3594	23/64	—	—	9.13	0.3594	44.45	77.78	23/64
215-3622	—	—	—	9.20	0.3622	46.00	79.00	9.20
215-3661	—	—	—	9.30	0.3661	46.00	79.00	9.30
215-3680	—	—	U	9.35	0.3680	46.03	79.37	9.35
215-3701	—	—	—	9.40	0.3701	46.00	79.00	9.40
215-3740	—	—	—	9.50	0.3740	46.00	79.00	9.50
215-3750	3/8	—	—	9.53	0.3750	46.03	79.37	3/8
215-3770	—	—	V	9.58	0.3770	47.62	82.55	9.58
215-3780	—	—	—	9.60	0.3780	48.00	83.00	9.60
215-3819	—	—	—	9.70	0.3819	48.00	83.00	9.70
215-3858	—	—	W	9.80	0.3858	48.00	83.00	9.80
215-3860	—	—	W	9.80	0.3860	47.62	82.55	9.80
215-3898	—	—	—	9.90	0.3898	48.00	83.00	9.90
215-3906	25/64	—	—	9.92	0.3906	47.62	82.55	25/64
215-3937	—	—	—	10.00	0.3937	48.00	83.00	10.00
215-3970	—	—	X	10.08	0.3970	49.21	84.13	10.08
215-3976	—	—	—	10.10	0.3976	49.00	84.00	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

HYE

Work Material

List No.	P					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 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
215	○	○	○	○	○		○	○	○		○	○	○	○	○		

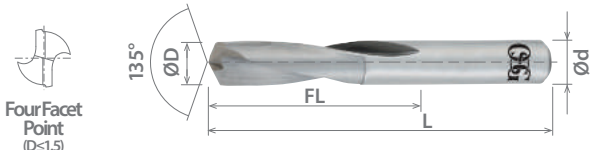
○ good ◎ best

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List 215 (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 15°

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



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
215-4016	—	—	—	10.20	0.4016	49.00	84.00	10.20
215-4040	—	—	Y	10.26	0.4040	49.21	84.13	10.26
215-4055	—	—	—	10.30	0.4055	49.00	84.00	10.30
215-4062	13/32	—	—	10.32	0.4062	49.21	84.13	13/32
215-4094	—	—	—	10.40	0.4094	51.00	86.00	10.40
215-4130	—	—	Z	10.49	0.4130	50.80	85.72	10.49
215-4134	—	—	—	10.50	0.4134	51.00	86.00	10.50
215-4173	—	—	—	10.60	0.4173	51.00	86.00	10.60
215-4213	—	—	—	10.70	0.4213	51.00	86.00	10.70
215-4219	27/64	—	—	10.72	0.4219	50.80	85.72	27/64
215-4252	—	—	—	10.80	0.4252	52.00	87.00	10.80
215-4291	—	—	—	10.90	0.4291	52.00	87.00	10.90
215-4331	—	—	—	11.00	0.4331	52.00	87.00	11.00
215-4370	—	—	—	11.10	0.4370	52.00	87.00	11.10
215-4375	7/16	—	—	11.11	0.4375	52.38	87.31	7/16
215-4409	—	—	—	11.20	0.4409	54.00	90.00	11.20
215-4449	—	—	—	11.30	0.4449	54.00	90.00	11.30
215-4488	—	—	—	11.40	0.4488	54.00	90.00	11.40
215-4528	—	—	—	11.50	0.4528	54.00	90.00	11.50
215-4531	29/64	—	—	11.51	0.4531	53.97	90.48	29/64
215-4567	—	—	—	11.60	0.4567	54.00	92.00	11.60
215-4606	—	—	—	11.70	0.4606	54.00	92.00	11.70
215-4646	—	—	—	11.80	0.4646	54.00	92.00	11.80
215-4685	—	—	—	11.90	0.4685	54.00	92.00	11.90
215-4688	15/32	—	—	11.91	0.4688	53.97	92.07	15/32
215-4724	—	—	—	12.00	0.4724	54.00	92.00	12.00
215-4844	31/64	—	—	12.30	0.4844	55.56	93.66	31/64
215-5000	1/2	—	—	12.70	0.5000	57.15	95.25	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.

HYE

Work Material

List No.	P					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 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
215	○	○	○	○	○		○	○	○		○	○	○	○	○		

○ good ◎ best

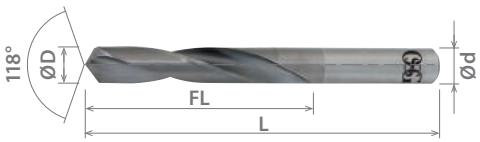
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List 220D

SPEED FEED P259-260 | CARBIDE | BR | 20°

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





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
220-0465	—	56	—	1.18	0.0465	19.05	38.10	1.18
220-0469	3/64	—	—	1.19	0.0469	19.05	38.10	3/64
220-0520	—	55	—	1.32	0.0520	19.05	38.10	1.32
220-0550	—	54	—	1.40	0.0550	19.05	38.10	1.40
220-0591	—	—	—	1.50	0.0591	19.00	38.00	1.50
220-0595	—	53	—	1.51	0.0595	19.05	38.10	1.51
220-0625	1/16	—	—	1.59	0.0625	19.05	38.10	1/16
220-0635	—	52	—	1.61	0.0635	19.05	38.10	1.61
220-0670	—	51	—	1.70	0.0670	19.05	38.10	1.70
220-0700	—	50	—	1.78	0.0700	22.22	44.45	1.78
220-0730	—	49	—	1.85	0.0730	22.22	44.45	1.85
220-0760	—	48	—	1.93	0.0760	22.22	44.45	1.93
220-0781	5/64	—	—	1.98	0.0781	22.22	44.45	5/64
220-0785	—	47	—	1.99	0.0785	22.22	44.45	1.99
220-0787	—	—	—	2.00	0.0787	22.00	44.00	2.00
220-0810	—	46	—	2.06	0.0810	22.22	44.45	2.06
220-0820	—	45	—	2.08	0.0820	22.22	44.45	2.08
220-0860	—	44	—	2.18	0.0860	25.40	50.80	2.18
220-0890	—	43	—	2.26	0.0890	25.40	50.80	2.26
220-0935	—	42	—	2.37	0.0935	25.40	50.80	2.37
220-0938	3/32	—	—	2.38	0.0938	25.40	50.80	3/32
220-0960	—	41	—	2.44	0.0960	25.40	50.80	2.44
220-0980	—	40	—	2.49	0.0980	25.40	50.80	2.49
220-0984	—	—	—	2.50	0.0984	25.00	51.00	2.50
220-0995	—	39	—	2.53	0.0995	31.75	57.15	2.53
220-1015	—	38	—	2.58	0.1015	31.75	57.15	2.58
220-1040	—	37	—	2.64	0.1040	31.75	57.15	2.64
220-1065	—	36	—	2.71	0.1065	31.75	57.15	2.71
220-1094	7/64	—	—	2.78	0.1094	31.75	57.15	7/64
220-1100	—	35	—	2.79	0.1100	31.75	57.15	2.79
220-1110	—	34	—	2.82	0.1110	31.75	57.15	2.82
220-1130	—	33	—	2.87	0.1130	31.75	57.15	2.87
220-1160	—	32	—	2.95	0.1160	31.75	57.15	2.95
220-1181	—	—	—	3.00	0.1181	32.00	57.00	3.00
220-1200	—	31	—	3.05	0.1200	31.75	57.15	3.05
220-1250	1/8	—	—	3.18	0.1250	31.75	57.15	1/8
220-1285	—	30	—	3.26	0.1285	31.75	57.15	3.26
220-1360	—	29	—	3.45	0.1360	34.92	63.50	3.45
220-1378	—	—	—	3.50	0.1378	35.00	64.00	3.50
220-1405	—	28	—	3.57	0.1405	34.92	63.50	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

HYE

Work Material

List No.	P					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 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
220D	○	○	○	○			○	○	○	○	○			○			

○ good ◎ best

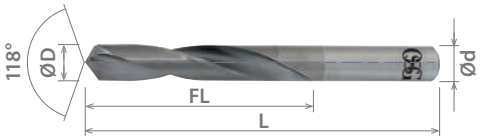
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List 220D (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 20°

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





EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
220-1406	9/64	28	—	3.57	0.1406	34.92	63.50	9/64
220-1440	—	27	—	3.66	0.1440	34.92	63.50	3.66
220-1470	—	26	—	3.73	0.1470	34.92	63.50	3.73
220-1495	—	25	—	3.80	0.1495	34.92	63.50	3.80
220-1520	—	24	—	3.86	0.1520	34.92	63.50	3.86
220-1540	—	23	—	3.91	0.1540	34.92	63.50	3.91
220-1562	5/32	—	—	3.97	0.1562	34.92	63.50	5/32
220-1570	—	22	—	3.99	0.1570	34.92	63.50	3.99
220-1575	—	—	—	4.00	0.1575	35.00	64.00	4.00
220-1590	—	21	—	4.04	0.1590	34.92	63.50	4.04
220-1610	—	20	—	4.09	0.1610	34.92	63.50	4.09
220-1660	—	19	—	4.22	0.1660	41.27	69.85	4.22
220-1695	—	18	—	4.31	0.1695	41.27	69.85	4.31
220-1719	11/64	—	—	4.37	0.1719	41.27	69.85	11/64
220-1730	—	17	—	4.39	0.1730	41.27	69.85	4.39
220-1770	—	16	—	4.50	0.1770	41.27	69.85	4.50
220-1772	—	16	—	4.50	0.1772	41.00	70.00	4.50
220-1800	—	15	—	4.57	0.1800	41.27	69.85	4.57
220-1820	—	14	—	4.62	0.1820	41.27	69.85	4.62
220-1850	—	13	—	4.70	0.1850	41.27	69.85	4.70
220-1875	3/16	—	—	4.76	0.1875	41.27	69.85	3/16
220-1890	—	12	—	4.80	0.1890	41.27	69.85	4.80
220-1910	—	11	—	4.85	0.1910	41.27	69.85	4.85
220-1935	—	10	—	4.92	0.1935	41.27	69.85	4.92
220-1960	—	9	—	4.98	0.1960	44.45	76.20	4.98
220-1968	—	—	—	5.00	0.1969	44.00	76.00	5.00
220-1990	—	8	—	5.05	0.1990	44.45	76.20	5.05
220-2010	—	7	—	5.11	0.2010	44.45	76.20	5.11
220-2031	13/64	—	—	5.16	0.2031	44.45	76.20	13/64
220-2040	—	6	—	5.18	0.2040	44.45	76.20	5.18
220-2055	—	5	—	5.22	0.2055	44.45	76.20	5.22
220-2090	—	4	—	5.31	0.2090	44.45	76.20	5.31
220-2130	—	3	—	5.41	0.2130	44.45	76.20	5.41
220-2165	—	—	—	5.50	0.2165	44.00	76.00	5.50
220-2188	7/32	—	—	5.56	0.2188	44.45	76.20	7/32
220-2210	—	2	—	5.61	0.2210	44.45	76.20	5.61
220-2280	—	1	—	5.79	0.2280	44.45	76.20	5.79
220-2340	—	—	A	5.94	0.2340	50.80	82.55	5.94
220-2344	15/64	—	—	5.95	0.2344	50.80	82.55	15/64
220-2362	—	—	—	6.00	0.2362	51.00	83.00	6.00
220-2380	—	—	B	6.05	0.2380	50.80	82.55	6.05
220-2420	—	—	C	6.15	0.2420	50.80	82.55	6.15
220-2460	—	—	D	6.25	0.2460	50.80	82.55	6.25
220-2500	1/4	—	E	6.35	0.2500	50.80	82.55	1/4
220-2559	—	—	—	6.50	0.2559	51.00	83.00	6.50
220-2570	—	—	F	6.53	0.2570	50.80	82.55	6.53
220-2610	—	—	G	6.63	0.2610	53.97	88.90	6.63
220-2656	17/64	—	—	6.75	0.2656	53.97	88.90	17/64
220-2660	—	—	H	6.76	0.2660	53.97	88.90	6.76
220-2720	—	—	I	6.91	0.2720	53.97	88.90	6.91

Packed: 1 pc.
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Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

HYE

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List 220D (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 20°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
220-2756	—	—	—	7.00	0.2756	54.00	89.00	7.00
220-2770	—	—	J	7.04	0.2770	53.97	88.90	7.04
220-2810	9/32	—	K	7.14	0.2810	53.97	88.90	9/32
220-2812	9/32	—	—	7.14	0.2812	53.97	88.90	9/32
220-2900	—	—	L	7.37	0.2900	53.97	88.90	7.37
220-2950	—	—	M	7.49	0.2950	60.32	95.25	7.49
220-2953	—	—	—	7.50	0.2953	60.00	95.00	7.50
220-2969	19/64	—	—	7.54	0.2969	60.32	95.25	19/64
220-3020	—	—	N	7.67	0.3020	60.32	95.25	7.67
220-3125	5/16	—	—	7.94	0.3125	60.32	95.25	5/16
220-3150	—	—	—	8.00	0.3150	60.00	95.00	8.00
220-3160	—	—	O	8.03	0.3160	60.32	95.25	8.03
220-3230	—	—	P	8.20	0.3230	60.32	95.25	8.20
220-3281	21/64	—	—	8.33	0.3281	63.50	101.60	21/64
220-3320	—	—	Q	8.43	0.3320	63.50	101.60	8.43
220-3346	—	—	—	8.50	0.3346	64.00	102.00	8.50
220-3390	—	—	R	8.61	0.3390	63.50	101.60	8.61
220-3438	11/32	—	—	8.73	0.3438	63.50	101.60	11/32
220-3480	—	—	S	8.84	0.3480	63.50	101.60	8.84
220-3543	—	—	—	9.00	0.3543	64.00	102.00	9.00
220-3580	—	—	T	9.09	0.3580	63.50	101.60	9.09
220-3594	23/64	—	—	9.13	0.3594	63.50	101.60	23/64
220-3680	—	—	U	9.35	0.3680	69.85	107.95	9.35
220-3740	—	—	—	9.50	0.3740	70.00	108.00	9.50
220-3750	3/8	—	—	9.53	0.3750	69.85	107.95	3/8
220-3770	—	—	V	9.58	0.3770	69.85	107.95	9.58
220-3860	—	—	W	9.80	0.3860	73.02	114.30	9.80
220-3906	25/64	—	—	9.92	0.3906	73.02	114.30	25/64
220-3937	—	—	—	10.00	0.3937	73.00	114.00	10.00
220-3970	—	—	X	10.08	0.3970	73.02	114.30	10.08
220-4040	—	—	Y	10.26	0.4040	73.02	114.30	10.26
220-4062	13/32	—	—	10.32	0.4062	73.02	114.30	13/32
220-4130	—	—	Z	10.49	0.4130	73.02	114.30	10.49
220-4134	—	—	—	10.50	0.4134	73.00	114.00	10.50
220-4219	27/64	—	—	10.72	0.4219	73.02	114.30	27/64
220-4331	—	—	—	11.00	0.4331	73.00	114.00	11.00
220-4375	7/16	—	—	11.11	0.4375	73.02	114.30	7/16
220-4528	—	—	—	11.50	0.4528	76.00	121.00	11.50
220-4531	29/64	—	—	11.51	0.4531	76.20	120.65	29/64
220-4688	15/32	—	—	11.91	0.4688	76.20	120.65	15/32
220-4724	—	—	—	12.00	0.4724	76.00	121.00	12.00
220-4844	31/64	—	—	12.30	0.4844	76.20	120.65	31/64
220-5000	1/2	—	—	12.70	0.5000	76.20	120.65	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.

HYE

Work Material

List No.	P					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 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
220D	▢	▢	▢	▢			▢	▢	▢	▢	▢			▢			

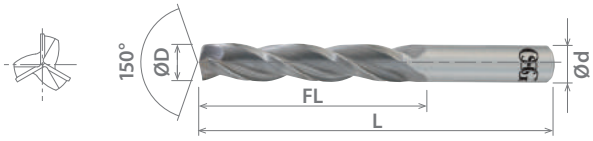
▢ good ▢ best

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List 233

CARBIDE | BR | 30°

Three Flute



Cutting Diameter Tolerance		
Size	mm	inch
3.00≤D≤19.05	+0 / -0.013	+0 / -0.0005

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
233-1181	—	—	—	3.00	0.1181	32.00	57.00	3.00
233-1250	1/8	—	—	3.18	0.1250	31.75	57.15	3.18
233-1406	9/64	28	—	3.57	0.1406	34.92	63.50	3.57
233-1562	5/32	—	—	3.97	0.1562	34.92	63.50	3.97
233-1719	11/64	—	—	4.37	0.1719	41.27	69.85	4.37
233-1875	3/16	—	—	4.76	0.1875	41.27	69.85	4.76
233-2031	13/64	—	—	5.16	0.2031	44.45	76.20	5.16
233-2188	7/32	—	—	5.56	0.2188	44.45	76.20	5.56
233-2344	15/64	—	—	5.95	0.2344	50.80	82.55	5.95
233-2362	—	—	—	6.00	0.2362	51.00	83.00	6.00
233-2500	1/4	—	E	6.35	0.2500	50.80	82.55	6.35
233-2656	17/64	—	—	6.75	0.2656	53.97	88.90	6.75
233-2812	9/32	—	—	7.14	0.2812	53.97	88.90	7.14
233-2969	19/64	—	—	7.54	0.2969	60.32	95.25	7.54
233-3125	5/16	—	—	7.94	0.3125	60.32	95.25	7.94
233-3150	—	—	—	8.00	0.3150	60.00	92.00	8.00
233-3281	21/64	—	—	8.33	0.3281	63.50	101.60	8.33
233-3438	11/32	—	—	8.73	0.3438	63.50	101.60	8.73
233-3594	23/64	—	—	9.13	0.3594	63.50	101.60	9.13
233-3750	3/8	—	—	9.53	0.3750	69.85	107.95	9.53
233-3906	25/64	—	—	9.92	0.3906	73.02	114.30	9.92
233-3937	—	—	—	10.00	0.3937	73.00	114.00	10.00
233-4062	13/32	—	—	10.32	0.4062	73.02	114.30	10.32
233-4219	27/64	—	—	10.72	0.4219	73.02	114.30	10.72
233-4375	7/16	—	—	11.11	0.4375	73.02	114.30	11.11
233-4531	29/64	—	—	11.51	0.4531	76.20	120.65	11.51
233-4688	15/32	—	—	11.91	0.4688	76.20	120.65	11.91
233-4724	—	—	—	12.00	0.4724	76.00	121.00	12.00
233-4844	31/64	—	—	12.30	0.4844	76.20	120.65	12.30
233-5000	1/2	—	—	12.70	0.5000	76.20	120.65	12.70
233-5312	17/32	—	—	13.49	0.5312	76.20	120.65	13.49
233-5512	—	—	—	14.00	0.5512	89.00	146.00	14.00
233-5625	9/16	—	—	14.29	0.5625	88.90	146.05	14.29
233-6250	5/8	—	—	15.88	0.6250	88.90	146.05	15.88
233-6299	—	—	—	16.00	0.6299	90.00	146.00	16.00
233-7500	3/4	—	—	19.05	0.7500	107.95	146.05	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.

HYE

Work Material

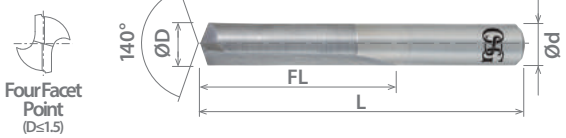
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
233	○								○								

○ good ◎ best

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List 200

SPEED FEED P259-260 | CARBIDE | BR | 0°



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

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
200-0465	—	56	—	1.18	0.0465	12.70	38.10	1.18
200-0469	3/64	—	—	1.19	0.0469	12.70	38.10	3/64
200-0520	—	55	—	1.32	0.0520	12.70	38.10	1.32
200-0550	—	54	—	1.40	0.0550	12.70	38.10	1.40
200-0591	—	—	—	1.50	0.0591	13.00	38.00	1.50
200-0595	—	53	—	1.51	0.0595	12.70	38.10	1.51
200-0625	1/16	—	—	1.59	0.0625	15.87	41.27	1/16
200-0635	—	52	—	1.61	0.0635	17.46	42.86	1.61
200-0670	—	51	—	1.70	0.0670	17.46	42.86	1.70
200-0700	—	50	—	1.78	0.0700	17.46	42.86	1.78
200-0730	—	49	—	1.85	0.0730	17.46	42.86	1.85
200-0760	—	48	—	1.93	0.0760	17.46	42.86	1.93
200-0781	5/64	—	—	1.98	0.0781	17.46	42.86	5/64
200-0785	—	47	—	1.99	0.0785	19.05	44.45	1.99
200-0787	—	—	—	2.00	0.0787	19.00	44.00	2.00
200-0810	—	46	—	2.06	0.0810	19.05	44.45	2.06
200-0820	—	45	—	2.08	0.0820	19.05	44.45	2.08
200-0860	—	44	—	2.18	0.0860	19.05	44.45	2.18
200-0890	—	43	—	2.26	0.0890	19.05	44.45	2.26
200-0935	—	42	—	2.37	0.0935	19.05	44.45	2.37
200-0938	3/32	—	—	2.38	0.0938	19.05	44.45	3/32
200-0960	—	41	—	2.44	0.0960	20.63	46.03	2.44
200-0980	—	40	—	2.49	0.0980	20.63	46.03	2.49
200-0984	—	—	—	2.50	0.0984	21.00	46.00	2.50
200-0995	—	39	—	2.53	0.0995	20.63	46.03	2.53
200-1015	—	38	—	2.58	0.1015	20.63	46.03	2.58
200-1040	—	37	—	2.64	0.1040	20.63	46.03	2.64
200-1065	—	36	—	2.71	0.1065	20.63	46.03	2.71
200-1094	7/64	—	—	2.78	0.1094	20.63	46.03	7/64
200-1100	—	35	—	2.79	0.1100	22.22	47.62	2.79
200-1110	—	34	—	2.82	0.1110	22.22	47.62	2.82
200-1130	—	33	—	2.87	0.1130	22.22	47.62	2.87
200-1160	—	32	—	2.95	0.1160	22.22	47.62	2.95
200-1181	—	—	—	3.00	0.1181	22.00	48.00	3.00
200-1200	—	31	—	3.05	0.1200	22.22	47.62	3.05
200-1250	1/8	—	—	3.18	0.1250	22.22	47.62	1/8
200-1285	—	30	—	3.26	0.1285	23.81	49.21	3.26
200-1360	—	29	—	3.45	0.1360	23.81	49.21	3.45
200-1378	—	—	—	3.50	0.1378	24.00	49.00	3.50
200-1405	—	28	—	3.57	0.1405	23.81	49.21	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

HYE

Work Material

List No.	P					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 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
200	○								○								

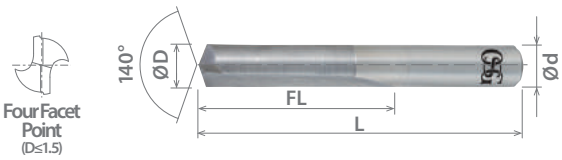
○ good ◎ best

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List 200 (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 0°

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



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
200-1406	9/64	28	—	3.57	0.1406	23.81	49.21	9/64
200-1440	—	27	—	3.66	0.1440	25.40	52.38	3.66
200-1470	—	26	—	3.73	0.1470	25.40	52.38	3.73
200-1495	—	25	—	3.80	0.1495	25.40	52.38	3.80
200-1520	—	24	—	3.86	0.1520	25.40	52.38	3.86
200-1540	—	23	—	3.91	0.1540	25.40	52.38	3.91
200-1562	5/32	—	—	3.97	0.1562	25.40	52.38	5/32
200-1570	—	22	—	3.99	0.1570	26.98	53.97	3.99
200-1575	—	—	—	4.00	0.1575	27.00	54.00	4.00
200-1590	—	21	—	4.04	0.1590	26.98	53.97	4.04
200-1610	—	20	—	4.09	0.1610	26.98	53.97	4.09
200-1660	—	19	—	4.22	0.1660	26.98	53.97	4.22
200-1695	—	18	—	4.31	0.1695	26.98	53.97	4.31
200-1719	11/64	—	—	4.37	0.1719	26.98	53.97	11/64
200-1730	—	17	—	4.39	0.1730	28.57	55.56	4.39
200-1770	—	16	—	4.50	0.1770	28.57	55.56	4.50
200-1772	—	16	—	4.50	0.1772	29.00	56.00	4.50
200-1800	—	15	—	4.57	0.1800	28.57	55.56	4.57
200-1820	—	14	—	4.62	0.1820	28.57	55.56	4.62
200-1850	—	13	—	4.70	0.1850	28.57	55.56	4.70
200-1875	3/16	—	—	4.76	0.1875	28.57	55.56	3/16
200-1890	—	12	—	4.80	0.1890	30.16	57.15	4.80
200-1910	—	11	—	4.85	0.1910	30.16	57.15	4.85
200-1935	—	10	—	4.92	0.1935	30.16	57.15	4.92
200-1960	—	9	—	4.98	0.1960	30.16	57.15	4.98
200-1968	—	—	—	5.00	0.1969	30.00	57.00	5.00
200-1990	—	8	—	5.05	0.1990	30.16	57.15	5.05
200-2010	—	7	—	5.11	0.2010	30.16	57.15	5.11
200-2031	13/64	—	—	5.16	0.2031	30.16	57.15	13/64
200-2040	—	6	—	5.18	0.2040	31.75	60.32	5.18
200-2055	—	5	—	5.22	0.2055	31.75	60.32	5.22
200-2090	—	4	—	5.31	0.2090	31.75	60.32	5.31
200-2130	—	3	—	5.41	0.2130	31.75	60.32	5.41
200-2165	—	—	—	5.50	0.2165	32.00	60.00	5.50
200-2188	7/32	—	—	5.56	0.2188	31.75	60.32	7/32
200-2210	—	2	—	5.61	0.2210	33.33	61.91	5.61
200-2280	—	1	—	5.79	0.2280	33.33	61.91	5.79
200-2340	—	—	A	5.94	0.2340	33.33	61.91	5.94
200-2344	15/64	—	—	5.95	0.2344	33.33	61.91	15/64
200-2362	—	—	—	6.00	0.2362	33.00	62.00	6.00
200-2380	—	—	B	6.05	0.2380	34.92	63.50	6.05
200-2420	—	—	C	6.15	0.2420	34.92	63.50	6.15
200-2460	—	—	D	6.25	0.2460	34.92	63.50	6.25
200-2500	1/4	—	E	6.35	0.2500	34.92	63.50	1/4
200-2559	—	—	—	6.50	0.2559	35.00	64.00	6.50
200-2570	—	—	F	6.53	0.2570	36.51	66.67	6.53
200-2610	—	—	G	6.63	0.2610	36.51	66.67	6.63
200-2656	17/64	—	—	6.75	0.2656	36.51	66.67	17/64
200-2660	—	—	H	6.76	0.2660	38.10	68.26	6.76
200-2720	—	—	I	6.91	0.2720	38.10	68.26	6.91

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Specify treatment at time of order: 05 = TiN, 08 = TiCN, 11 = TiAlN.

HYE

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List 200 (Continued)

SPEED FEED P259-260 | CARBIDE | BR | 0°

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	38.00	68.00	7.00
200-2770	—	—	J	7.04	0.2770	38.10	68.26	7.04
200-2810	9/32	—	K	7.14	0.2810	38.10	68.26	9/32
200-2812	9/32	—	—	7.14	0.2812	38.10	68.26	9/32
200-2900	—	—	L	7.37	0.2900	39.68	69.85	7.37
200-2950	—	—	M	7.49	0.2950	39.68	69.85	7.49
200-2953	—	—	—	7.50	0.2953	40.00	70.00	7.50
200-2969	19/64	—	—	7.54	0.2969	39.68	69.85	19/64
200-3020	—	—	N	7.67	0.3020	41.27	71.43	7.67
200-3125	5/16	—	—	7.94	0.3125	41.27	71.43	5/16
200-3150	—	—	—	8.00	0.3150	41.00	71.00	8.00
200-3160	—	—	O	8.03	0.3160	42.86	74.61	8.03
200-3230	—	—	P	8.20	0.3230	42.86	74.61	8.20
200-3281	21/64	—	—	8.33	0.3281	42.86	74.61	21/64
200-3320	—	—	Q	8.43	0.3320	42.86	76.20	8.43
200-3346	—	—	—	8.50	0.3346	43.00	76.00	8.50
200-3390	—	—	R	8.61	0.3390	42.86	76.20	8.61
200-3438	11/32	—	—	8.73	0.3438	42.86	76.20	11/32
200-3480	—	—	S	8.84	0.3480	44.45	77.78	8.84
200-3543	—	—	—	9.00	0.3543	44.00	78.00	9.00
200-3580	—	—	T	9.09	0.3580	44.45	77.78	9.09
200-3594	23/64	—	—	9.13	0.3594	44.45	77.78	23/64
200-3680	—	—	U	9.35	0.3680	46.03	79.37	9.35
200-3740	—	—	—	9.50	0.3740	46.00	79.00	9.50
200-3750	3/8	—	—	9.53	0.3750	46.03	79.37	3/8
200-3770	—	—	V	9.58	0.3770	47.62	82.55	9.58
200-3860	—	—	W	9.80	0.3860	47.62	82.55	9.80
200-3906	25/64	—	—	9.92	0.3906	47.62	82.55	25/64
200-3937	—	—	—	10.00	0.3937	48.00	83.00	10.00
200-3970	—	—	X	10.08	0.3970	49.21	84.13	10.08
200-4040	—	—	Y	10.26	0.4040	49.21	84.13	10.26
200-4062	13/32	—	—	10.32	0.4062	49.21	84.13	13/32
200-4130	—	—	Z	10.49	0.4130	50.80	85.72	10.49
200-4134	—	—	—	10.50	0.4134	51.00	86.00	10.50
200-4219	27/64	—	—	10.72	0.4219	50.80	85.72	27/64
200-4331	—	—	—	11.00	0.4331	52.00	87.00	11.00
200-4375	7/16	—	—	11.11	0.4375	52.38	87.31	11.11
200-4528	—	—	—	11.50	0.4528	54.00	90.00	11.50
200-4531	29/64	—	—	11.51	0.4531	53.97	90.48	29/64
200-4688	15/32	—	—	11.91	0.4688	53.97	92.07	15/32
200-4724	—	—	—	12.00	0.4724	54.00	92.00	12.00
200-4844	31/64	—	—	12.30	0.4844	55.56	93.66	31/64
200-5000	1/2	—	—	12.70	0.5000	57.15	95.25	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.

HYE

Work Material

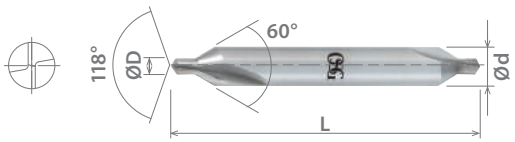
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50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

▢ good ▢ best

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List 235

CARBIDE | BR | 0°



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.

HYE

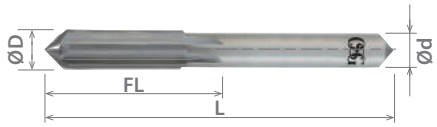
Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
235	▢	▢	▢	▢		▢	▢	▢	▢	▢	▢	▢	▢	▢			

▢ good ▣ best

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List 300D

SPEED FEED P261 | CARBIDE | BR



Cutting Diameter Tolerance (Inch)			
Size	Diameter	Shank Dia.	No. of Flutes
0.80 mm-6.45 mm	+.0025/+.0102	+.0001/+.0004	4
6.451 mm-13 mm	+.0025/+.0127	+.0001/+.0005	6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
300-0315	—	—	—	0.80	0.0315	10.00	38.00	0.70
300-0354	—	—	—	0.90	0.0354	10.00	38.00	0.80
300-0394	—	—	—	1.00	0.0394	10.00	38.00	0.80
300-0433	—	—	—	1.10	0.0433	10.00	38.00	1.00
300-0465	—	56	—	1.18	0.0465	9.53	38.10	1.04
300-0469	3/64	—	—	1.19	0.0469	9.53	38.10	1.04
300-0472	—	—	—	1.20	0.0472	10.00	38.00	1.04
300-0512	—	—	—	1.30	0.0512	10.00	38.00	1.04
300-0520	—	55	—	1.32	0.0520	9.53	38.10	1.04
300-0550	—	54	—	1.40	0.0550	9.53	38.10	1.32
300-0551	—	—	—	1.40	0.0551	10.00	38.00	1.32
300-0591	—	—	—	1.50	0.0591	10.00	38.00	1.32
300-0595	—	53	—	1.51	0.0595	9.53	38.10	1.32
300-0625	1/16	—	—	1.59	0.0625	9.53	38.10	1.32
300-0630	—	—	—	1.60	0.0630	10.00	38.00	1.32
300-0635	—	52	—	1.61	0.0635	9.53	38.10	1.32
300-0669	—	—	—	1.70	0.0669	12.00	44.00	1.59
300-0670	—	51	—	1.70	0.0670	12.70	44.45	1.59
300-0700	—	50	—	1.78	0.0700	12.70	44.45	1.59
300-0709	—	—	—	1.80	0.0709	12.00	44.00	1.59
300-0730	—	49	—	1.85	0.0730	12.70	44.45	1.59
300-0748	—	—	—	1.90	0.0748	12.00	44.00	1.59
300-0760	—	48	—	1.93	0.0760	12.70	44.45	1.59
300-0781	5/64	—	—	1.98	0.0781	12.70	44.45	1.59
300-0785	—	47	—	1.99	0.0785	12.70	44.45	1.59
300-0787	—	—	—	2.00	0.0787	12.00	44.00	1.59
300-0810	—	46	—	2.06	0.0810	12.70	50.80	1.98
300-0820	—	45	—	2.08	0.0820	12.70	50.80	1.98
300-0827	—	—	—	2.10	0.0827	12.70	50.00	1.98
300-0860	—	44	—	2.18	0.0860	12.70	50.80	1.98
300-0866	—	—	—	2.20	0.0866	12.00	50.00	1.98
300-0890	—	43	—	2.26	0.0890	12.70	50.80	1.98
300-0906	—	—	—	2.30	0.0906	12.00	50.00	1.98
300-0935	—	42	—	2.37	0.0935	12.70	50.80	1.98
300-0938	3/32	—	—	2.38	0.0938	12.70	50.80	1.98
300-0945	—	—	—	2.40	0.0945	12.00	50.00	1.98
300-0960	—	41	—	2.44	0.0960	15.87	57.15	2.38
300-0980	—	40	—	2.49	0.0980	15.87	57.15	2.38
300-0984	—	—	—	2.50	0.0984	16.00	57.00	2.38
300-0995	—	39	—	2.53	0.0995	15.87	57.15	2.38
300-1015	—	38	—	2.58	0.1015	15.87	57.15	2.38

Packed: 1 pc.

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HYR

Work Material

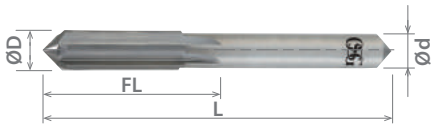
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50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

▢ good ▣ best

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List 300D (Continued)

SPEED FEED P261 | CARBIDE | BR



Cutting Diameter Tolerance (Inch)			
Size	Diameter	Shank Dia.	No. of Flutes
0.0465~0.2540	+0.0001/+0.0004	+0.000/-0.001	4
0.2541~0.5000	+0.0001/+0.0005	+0.000/-0.001	6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
300-1024	—	—	—	2.60	0.1024	16.00	57.00	2.38
300-1040	—	37	—	2.64	0.1040	15.87	57.15	2.38
300-1063	—	—	—	2.70	0.1063	16.00	57.00	2.38
300-1065	—	36	—	2.71	0.1065	15.87	57.15	2.38
300-1094	7/64	—	—	2.78	0.1094	15.87	57.15	2.38
300-1100	—	35	—	2.79	0.1100	15.87	57.15	2.38
300-1102	—	—	—	2.80	0.1102	16.00	57.00	2.38
300-1110	—	34	—	2.82	0.1110	15.87	57.15	2.38
300-1130	—	33	—	2.87	0.1130	15.87	57.15	2.38
300-1142	—	—	—	2.90	0.1142	16.00	57.00	2.78
300-1160	—	32	—	2.95	0.1160	15.87	57.15	2.78
300-1181	—	—	—	3.00	0.1181	16.00	57.00	2.78
300-1200	—	31	—	3.05	0.1200	15.87	57.15	2.78
300-1220	—	—	—	3.10	0.1220	16.00	57.00	2.78
300-1250	1/8	—	—	3.18	0.1250	15.87	57.15	2.78
300-1260	—	—	—	3.20	0.1260	16.00	57.00	2.78
300-1285	—	30	—	3.26	0.1285	15.87	57.15	2.78
300-1299	—	—	—	3.30	0.1299	19.00	64.00	2.78
300-1339	—	—	—	3.40	0.1339	19.00	64.00	2.78
300-1360	—	29	—	3.45	0.1360	19.05	63.50	3.18
300-1378	—	—	—	3.50	0.1378	19.00	64.00	3.18
300-1405	—	28	—	3.57	0.1405	19.05	63.50	3.18
300-1406	9/64	28	—	3.57	0.1406	19.05	63.50	3.18
300-1417	—	—	—	3.60	0.1417	19.00	64.00	3.57
300-1440	—	27	—	3.66	0.1440	19.05	63.50	3.18
300-1457	—	—	—	3.70	0.1457	19.00	64.00	3.57
300-1470	—	26	—	3.73	0.1470	19.05	63.50	3.57
300-1495	—	25	—	3.80	0.1495	19.05	63.50	3.57
300-1496	—	—	—	3.80	0.1496	19.00	64.00	3.57
300-1520	—	24	—	3.86	0.1520	19.05	63.50	3.57
300-1535	—	—	—	3.90	0.1535	19.00	64.00	3.57
300-1540	—	23	—	3.91	0.1540	19.05	63.50	3.57
300-1562	5/32	—	—	3.97	0.1562	19.05	63.50	3.57
300-1570	—	22	—	3.99	0.1570	19.05	63.50	3.57
300-1575	—	—	—	4.00	0.1575	19.00	64.00	3.57
300-1590	—	21	—	4.04	0.1590	19.05	63.50	3.57
300-1610	—	20	—	4.09	0.1610	22.22	63.50	3.97
300-1614	—	—	—	4.10	0.1614	22.00	70.00	3.97
300-1654	—	—	—	4.20	0.1654	22.00	70.00	3.97
300-1660	—	19	—	4.22	0.1660	22.22	69.85	3.97
300-1693	—	—	—	4.30	0.1693	22.00	70.00	3.97
300-1695	—	18	—	4.31	0.1695	22.22	69.85	3.97
300-1719	11/64	—	—	4.37	0.1719	22.22	69.85	3.97
300-1730	—	17	—	4.39	0.1730	22.22	69.85	3.97
300-1732	—	—	—	4.40	0.1732	22.00	70.00	3.97
300-1770	—	16	—	4.50	0.1770	22.22	69.85	4.37
300-1772	—	—	—	4.50	0.1772	22.00	70.00	4.37
300-1800	—	15	—	4.57	0.1800	22.22	69.85	4.37
300-1811	—	—	—	4.60	0.1811	22.00	70.00	4.37
300-1820	—	14	—	4.62	0.1820	22.22	69.85	4.37

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List 300D (Continued)

SPEED FEED P261 | CARBIDE | BR

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
300-1850	—	13	—	4.70	0.1850	22.22	69.85	4.37
300-1875	3/16	—	—	4.76	0.1875	22.22	69.85	4.37
300-1890	—	12	—	4.80	0.1890	22.22	69.85	4.37
300-1910	—	11	—	4.85	0.1910	22.22	69.85	4.76
300-1929	—	—	—	4.90	0.1929	22.00	70.00	4.76
300-1935	—	10	—	4.92	0.1935	22.22	69.85	4.76
300-1960	—	9	—	4.98	0.1960	25.40	76.20	4.76
300-1969	—	—	—	5.00	0.1969	25.00	76.00	4.76
300-1990	—	8	—	5.05	0.1990	25.40	76.20	4.76
300-2008	—	—	—	5.10	0.2008	25.00	76.00	4.76
300-2010	—	7	—	5.11	0.2010	25.40	76.20	4.76
300-2031	13/64	—	—	5.16	0.2031	25.40	76.20	4.76
300-2040	—	6	—	5.18	0.2040	25.40	76.20	4.76
300-2047	—	—	—	5.20	0.2047	25.00	76.00	4.76
300-2055	—	5	—	5.22	0.2055	25.40	76.20	4.76
300-2087	—	—	—	5.30	0.2087	25.00	76.00	4.76
300-2090	—	4	—	5.31	0.2090	25.40	76.20	4.76
300-2126	—	—	—	5.40	0.2126	25.00	76.00	4.76
300-2130	—	3	—	5.41	0.2130	25.40	76.20	4.76
300-2165	—	—	—	5.50	0.2165	25.00	76.00	4.76
300-2188	7/32	—	—	5.56	0.2188	25.40	76.20	4.76
300-2205	—	—	—	5.60	0.2205	25.00	76.00	4.76
300-2210	—	2	—	5.61	0.2210	25.40	76.20	4.76
300-2244	—	—	—	5.70	0.2244	25.00	76.00	5.56
300-2280	—	1	—	5.79	0.2280	25.40	76.20	5.56
300-2283	—	—	—	5.80	0.2283	25.00	76.00	5.56
300-2323	—	—	—	5.90	0.2323	25.00	76.00	5.56
300-2340	—	—	A	5.94	0.2340	25.40	76.20	5.56
300-2344	15/64	—	—	5.95	0.2344	25.40	76.20	5.56
300-2362	—	—	—	6.00	0.2362	25.00	76.00	5.56
300-2380	—	—	B	6.05	0.2380	25.40	76.20	5.56
300-2402	—	—	—	6.10	0.2402	25.00	76.00	5.56
300-2420	—	—	C	6.15	0.2420	25.40	76.20	5.56
300-2441	—	—	—	6.20	0.2441	25.00	76.00	5.56
300-2460	—	—	D	6.25	0.2460	25.40	76.20	5.56
300-2480	—	—	—	6.30	0.2480	25.00	76.00	5.56
300-2500	1/4	—	E	6.35	0.2500	25.40	76.20	5.56
300-2520	—	—	—	6.40	0.2520	29.00	83.00	6.35
300-2559	—	—	—	6.50	0.2559	29.00	83.00	6.35
300-2570	—	—	F	6.53	0.2570	28.57	82.55	6.35
300-2598	—	—	—	6.60	0.2598	29.00	83.00	6.35
300-2610	—	—	G	6.63	0.2610	28.57	82.55	6.35
300-2638	—	—	—	6.70	0.2638	29.00	83.00	6.35
300-2656	17/64	—	—	6.75	0.2656	28.57	82.55	6.35
300-2660	—	—	H	6.76	0.2660	28.57	82.55	6.35
300-2677	—	—	—	6.80	0.2677	29.00	83.00	6.35

Packed: 1 pc.

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HYR

Work Material

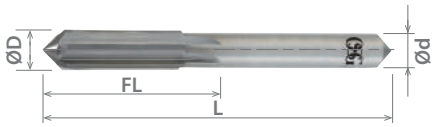
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50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

○ good ◎ best

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List 300D (Continued)

SPEED FEED P261 | CARBIDE | BR



Cutting Diameter Tolerance (Inch)			
Size	Diameter	Shank Dia.	No. of Flutes
0.0465~0.2540	+0.0001/+0.0004	+0.000/-0.001	4
0.2541~0.5000	+0.0001/+0.0005	+0.000/-0.001	6

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
300-2717	—	—	—	6.90	0.2717	29.00	83.00	6.35
300-2720	—	—	I	6.91	0.2720	28.57	82.55	6.35
300-2756	—	—	—	7.00	0.2756	29.00	83.00	6.35
300-2770	—	—	J	7.04	0.2770	28.57	82.55	6.35
300-2795	—	—	—	7.10	0.2795	29.00	83.00	6.35
300-2810	9/32	—	K	7.14	0.2810	28.57	82.55	6.35
300-2812	9/32	—	—	7.14	0.2812	28.57	82.55	6.35
300-2835	—	—	—	7.20	0.2835	29.00	83.00	6.35
300-2874	—	—	—	7.30	0.2874	29.00	83.00	7.14
300-2900	—	—	L	7.37	0.2900	28.57	82.55	7.14
300-2913	—	—	—	7.40	0.2913	29.00	83.00	7.14
300-2950	—	—	M	7.49	0.2950	28.57	82.55	7.14
300-2953	—	—	—	7.50	0.2953	29.00	83.00	7.14
300-2969	19/64	—	—	7.54	0.2969	28.57	82.55	7.14
300-2992	—	—	—	7.60	0.2992	29.00	83.00	7.14
300-3020	—	—	N	7.67	0.3020	28.57	82.55	7.14
300-3031	—	—	—	7.70	0.3031	29.00	83.00	7.14
300-3071	—	—	—	7.80	0.3071	29.00	83.00	7.14
300-3110	—	—	—	7.90	0.3110	29.00	83.00	7.14
300-3125	5/16	—	—	7.94	0.3125	28.57	82.55	7.14
300-3150	—	—	—	8.00	0.3150	29.00	83.00	7.14
300-3160	—	—	O	8.03	0.3160	28.57	82.55	7.94
300-3189	—	—	—	8.10	0.3189	32.00	89.00	7.94
300-3228	—	—	—	8.20	0.3228	32.00	89.00	7.94
300-3230	—	—	P	8.20	0.3230	31.75	88.90	7.94
300-3268	—	—	—	8.30	0.3268	32.00	89.00	7.94
300-3281	21/64	—	—	8.33	0.3281	31.75	88.90	7.94
300-3307	—	—	—	8.40	0.3307	32.00	89.00	7.94
300-3320	—	—	Q	8.43	0.3320	31.75	88.90	7.94
300-3346	—	—	—	8.50	0.3346	32.00	89.00	7.94
300-3386	—	—	—	8.60	0.3386	32.00	89.00	7.94
300-3390	—	—	R	8.61	0.3390	31.75	88.90	7.94
300-3425	—	—	—	8.70	0.3425	32.00	89.00	7.94
300-3438	11/32	—	—	8.73	0.3438	31.75	88.90	7.94
300-3465	—	—	—	8.80	0.3465	32.00	89.00	7.94
300-3480	—	—	S	8.84	0.3480	31.75	88.90	7.94
300-3504	—	—	—	8.90	0.3504	32.00	89.00	7.94
300-3543	—	—	—	9.00	0.3543	32.00	89.00	7.94
300-3580	—	—	T	9.09	0.3580	31.75	88.90	7.94
300-3583	—	—	—	9.10	0.3583	32.00	89.00	7.94
300-3594	23/64	—	—	9.13	0.3594	31.75	88.90	7.94
300-3622	—	—	—	9.20	0.3622	32.00	89.00	9.13
300-3661	—	—	—	9.30	0.3661	32.00	89.00	9.13
300-3680	—	—	U	9.35	0.3680	31.75	88.90	9.13
300-3701	—	—	—	9.40	0.3701	32.00	89.00	9.13
300-3740	—	—	—	9.50	0.3740	32.00	89.00	9.13
300-3750	3/8	—	—	9.53	0.3750	31.75	88.90	9.13
300-3770	—	—	V	9.58	0.3770	31.75	88.90	9.13
300-3780	—	—	—	9.60	0.3780	32.00	89.00	9.13
300-3819	—	—	—	9.70	0.3819	32.00	89.00	9.13

Packed: 1 pc.

HYR

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List 300D (Continued)

SPEED FEED P261 | CARBIDE | BR

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
300-3858	—	—	—	9.80	0.3858	32.00	89.00	9.13
300-3860	—	—	W	9.80	0.3860	31.75	88.90	9.13
300-3898	—	—	—	9.90	0.3898	32.00	89.00	9.53
300-3906	25/64	—	—	9.92	0.3906	31.75	88.90	9.53
300-3937	—	—	—	10.00	0.3937	32.00	89.00	9.53
300-3970	—	—	X	10.08	0.3970	31.75	88.90	9.53
300-3976	—	—	—	10.10	0.3976	32.00	89.00	9.53
300-4016	—	—	—	10.20	0.4016	32.00	89.00	9.53
300-4040	—	—	Y	10.26	0.4040	31.75	88.90	9.53
300-4055	—	—	—	10.30	0.4055	32.00	89.00	9.53
300-4062	13/32	—	—	10.32	0.4062	31.75	88.90	9.53
300-4094	—	—	—	10.40	0.4094	32.00	89.00	9.53
300-4130	—	—	Z	10.49	0.4130	31.75	88.90	9.53
300-4134	—	—	—	10.50	0.4134	32.00	89.00	9.53
300-4173	—	—	—	10.60	0.4173	35.00	95.00	9.53
300-4213	—	—	—	10.70	0.4213	35.00	95.00	9.53
300-4219	27/64	—	—	10.72	0.4219	34.92	95.25	9.53
300-4252	—	—	—	10.80	0.4252	35.00	95.00	9.53
300-4291	—	—	—	10.90	0.4291	35.00	95.00	9.53
300-4331	—	—	—	11.00	0.4331	35.00	95.00	9.53
300-4370	—	—	—	11.10	0.4370	35.00	95.00	9.53
300-4375	7/16	—	—	11.11	0.4375	34.92	95.25	9.53
300-4409	—	—	—	11.20	0.4409	35.00	95.00	9.53
300-4449	—	—	—	11.30	0.4449	35.00	95.00	9.53
300-4488	—	—	—	11.40	0.4488	35.00	95.00	9.53
300-4528	—	—	—	11.50	0.4528	35.00	95.00	9.53
300-4531	29/64	—	—	11.51	0.4531	34.92	95.25	11.11
300-4567	—	—	—	11.60	0.4567	35.00	95.00	11.11
300-4606	—	—	—	11.70	0.4606	35.00	95.00	11.11
300-4646	—	—	—	11.80	0.4646	35.00	95.00	11.11
300-4685	—	—	—	11.90	0.4685	35.00	95.00	11.11
300-4688	15/32	—	—	11.91	0.4688	34.92	95.25	11.11
300-4724	—	—	—	12.00	0.4724	38.00	102.00	11.11
300-4764	—	—	—	12.10	0.4764	38.00	102.00	11.11
300-4803	—	—	—	12.20	0.4803	38.00	102.00	11.11
300-4843	—	—	—	12.30	0.4843	38.00	102.00	11.11
300-4844	31/64	—	—	12.30	0.4844	38.10	101.60	11.11
300-4882	—	—	—	12.40	0.4882	38.00	102.00	11.11
300-4921	—	—	—	12.50	0.4921	38.00	102.00	11.11
300-4961	—	—	—	12.60	0.4961	38.00	102.00	11.11
300-5000	1/2	—	—	12.70	0.5000	38.10	101.60	11.11
300-5079	—	—	—	12.90	0.5079	38.00	102.00	11.11
300-5118	—	—	—	13.00	0.5118	38.00	102.00	11.11

Packed: 1 pc.

HYR

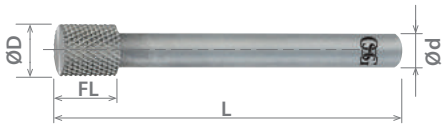
Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High			300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
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

○ good ◎ best

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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	1/2	1-1/2	1/8
750-0938	3/32	5/32	1/2	1-1/2	1/8
750-1094	7/64	3/16	1/2	1-1/2	1/8
750-1250	1/8	3/16	1/2	1-1/2	1/8
750-1406	9/64	7/32	5/8	2	3/16
750-1562	5/32	5/16	5/8	2	3/16
750-1719	11/64	1/4	5/8	2	3/16
750-1875	3/16	1/4	5/8	2	3/16
750-2031	13/64	9/32	3/4	2	1/4
750-2188	7/32	9/32	3/4	2	1/4
750-2344	15/64	5/16	3/4	2	1/4
750-2500	1/4	5/16	3/4	2	1/4
750-2812	9/32	11/32	—	2-1/2	1/4
750-3125	5/16	11/32	—	2-1/2	1/4
750-3438	11/32	3/8	—	2-1/2	1/4
750-3750	3/8	3/8	—	2-1/2	1/4

Packed: 1 pc.

HYE

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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	
750			▢	▢											▢	▢		

▢ good ▣ best

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List 101E

CARBIDE BR

Steel Shank



EDP Number	Minimum Hole Diameter	Bore Depth	Overall Length	Shank Diameter
		BD	L	d
101-0900	0.090	3/4	1-3/4	3/8
101-1200	0.120	7/8	1-7/8	3/8
101-1500	0.150	1-1/4	2-1/4	3/8
101-1800	0.180	1-1/4	2-1/4	3/8
101-2100	0.210	1-3/8	2-3/8	3/8
101-2400	0.240	1-3/8	2-3/8	3/8
101-2700	0.270	1-1/2	2-1/2	3/8
101-3000	0.300	1-1/2	2-1/2	3/8

Packed: 1 pc.

HYE

Work Material

List No.	P					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 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
101E			▢	▢										▢	▢	▢	

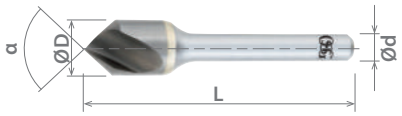
▢ good ▢ best

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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	1/8*	1-1/2	1/8	82
700-1252	1/8*	1-1/2	1/8	90
700-1875	3/16*	2	3/16	60
700-1871	3/16*	2	3/16	82
700-1872	3/16*	2	3/16	90
700-2500	1/4*	2	1/4	60
700-2501	1/4*	2	1/4	82
700-2502	1/4*	2	1/4	90
700-3750	3/8	2-9/16	1/4	60
700-3751	3/8	2-7/16	1/4	82
700-3752	3/8	2-7/16	1/4	90
700-5000	1/2	2-5/8	1/4	60
700-5001	1/2	2-5/8	1/4	82
700-5002	1/2	2-5/8	1/4	90
700-6250	5/8	2-13/16	1/4	60
700-6251	5/8	2-5/8	1/4	82
700-6252	5/8	2-5/8	1/4	90
700-6253	5/8	3-1/16	3/8	60
700-6254	5/8	2-7/8	3/8	82
700-6255	5/8	2-7/8	3/8	90
700-7500	3/4	3	3/8	60
700-7501	3/4	2-7/8	3/8	82
700-7502	3/4	2-7/8	3/8	90
700-1000	1	3-1/4	1/2	60
700-1001	1	3	1/2	82
700-1002	1	3	1/2	90

Packed: 1 pc.
*Indicates Solid Carbide. All others have hardened steel shanks.

HYE

Work Material

List No.	P					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 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
700	▢	▢		▢					▢	▢	▢						

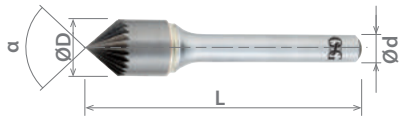
▢ good ▣ best

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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	1/4*	2	1/4	82	18
701-2502	1/4*	2	1/4	90	18
701-3750	3/8	2-3/16	1/4	60	20
701-3751	3/8	2-5/16	1/4	82	20
701-3752	3/8	2-5/16	1/4	90	20
701-5000	1/2	2-5/16	1/4	60	24
701-5001	1/2	2-1/8	1/4	82	24
701-5002	1/2	2-1/8	1/4	90	24
701-6250	5/8	3	3/8	60	30
701-6251	5/8	2-7/8	3/8	82	30
701-6252	5/8	2-7/8	3/8	90	30
701-7500	3/4	3	3/8	60	36
701-7501	3/4	2-7/8	3/8	82	36
701-7502	3/4	2-7/8	3/8	90	36
701-1000	1	3	1/2	60	46
701-1001	1	3	1/2	82	46
701-1002	1	3	1/2	90	46

Packed: 1 pc.
*Indicates Solid Carbide. All others have hardened steel shanks.

HYE

Work Material

List No.	P					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 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
701			○	○					○					○	○	○	

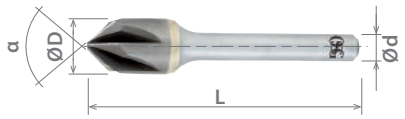
○ good ◎ best

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List 706

CARBIDE BR

Multiple 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	1/4*	2	1/4	82
706-2500-090	1/4*	2	1/4	90
706-3750-060	3/8	2-1/2	1/4	60
706-3750-082	3/8	2-3/8	1/4	82
706-3750-090	3/8	2-3/8	1/4	90
706-5000-060	1/2	2-5/8	1/4	60
706-5000-082	1/2	2-1/2	1/4	82
706-5000-090	1/2	2-1/2	1/4	90
706-6250-060	5/8	3	3/8	60
706-6250-082	5/8	2-7/8	3/8	82
706-6250-090	5/8	2-7/8	3/8	90
706-7500-060	3/4	3	3/8	60
706-7500-082	3/4	2-7/8	3/8	82
706-7500-090	3/4	2-7/8	3/8	90
706-1000-060	1	3-1/4	1/2	60
706-1000-082	1	3	1/2	82
706-1000-090	1	3	1/2	90

Packed: 1 pc.
*Indicates Solid Carbide. All others have hardened steel shanks.

HYE

Work Material

List No.	P					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 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
706	▢	▢		▢						▢	▢						

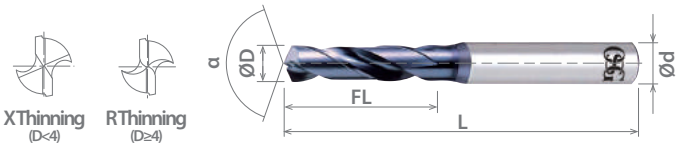
▢ good ▣ best

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List 1900

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | STUB | 30°



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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8599005	—	—	—	0.50	0.0197	3	38	3	130°
8608055	—	—	—	0.55	0.0217	3.5	38	3	130°
8608056	—	—	—	0.56	0.0220	3.5	38	3	130°
8608057	—	74	—	0.57	0.0224	3.5	38	3	130°
8599006	—	—	—	0.60	0.0236	3.5	38	3	130°
8608061	—	73	—	0.61	0.0240	4	38	3	130°
8608063	—	—	—	0.63	0.0248	4	38	4	130°
8608065	—	—	—	0.65	0.0256	4	38	3	130°
8608066	—	71	—	0.66	0.0260	4	38	3	130°
8608068	—	—	—	0.68	0.0268	4.5	38	3	130°
8608069	—	—	—	0.69	0.0272	4.5	38	3	130°
8599007	—	—	—	0.70	0.0276	4.5	38	3	130°
8608071	—	70	—	0.71	0.0280	4.5	38	3	130°
8608074	—	69	—	0.74	0.0291	4.5	38	4	130°
8608075	—	—	—	0.75	0.0295	4.5	38	3	130°
8599008	—	—	—	0.80	0.0315	5	38	3	130°
8608082	—	—	—	0.82	0.0323	5	38	4	130°
8608083	—	—	—	0.83	0.0327	5	38	5	130°
8608085	—	—	—	0.85	0.0335	5	38	3	130°
8608088	—	—	—	0.88	0.0346	5.5	38	3	130°
8608089	—	65	—	0.89	0.0350	5.5	38	3	130°
8599009	—	—	—	0.90	0.0354	5.5	38	3	130°
8608094	—	63	—	0.94	0.0370	5.5	38	3	130°
8608095	—	—	—	0.95	0.0374	5.5	38	3	130°
8608099	—	61	—	0.99	0.0390	6	38	3	130°
8599010	—	—	—	1.00	0.0394	6	38	3	130°
8608102	—	60	—	1.02	0.0402	6	38	3	130°
8608104	—	59	—	1.04	0.0409	6	38	3	130°
8608105	—	—	—	1.05	0.0413	6	38	4	130°
8608106	—	—	—	1.06	0.0417	6	38	5	130°
8608107	—	58	—	1.07	0.0421	7	39	3	130°
8608109	—	57	—	1.09	0.0429	7	39	3	130°
8608113	—	—	—	1.13	0.0445	7	39	4	130°
8608114	—	—	—	1.14	0.0449	7	39	5	130°
8608118	—	56	—	1.18	0.0465	7	39	3	130°
8608119	3/64	—	—	1.19	0.0469	8	40	3	130°
8608122	—	—	—	1.22	0.0480	8	40	3	130°
8608124	—	—	—	1.24	0.0488	8	40	3	130°
8608125	—	—	—	1.25	0.0492	8	40	3	130°
8608126	—	—	—	1.26	0.0496	8	40	3	130°

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														
	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
1900	○	◎	◎	◎	◎		○	○	◎	○	○	◎	○	◎	◎	○	

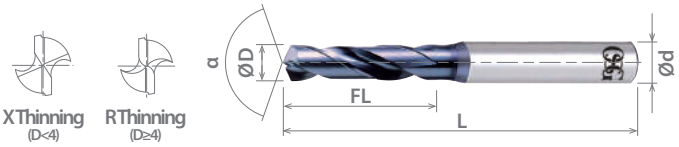
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List 1900 (Continued)

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | STUB | 30°



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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8608127	—	—	—	1.27	0.0500	8	40	3	130°
8608128	—	—	—	1.28	0.0504	8	40	3	130°
8608129	—	—	—	1.29	0.0508	8	40	3	130°
8599013	—	—	—	1.30	0.0512	8	40	3	130°
8608131	—	—	—	1.31	0.0516	8	40	3	130°
8608132	—	55	—	1.32	0.0520	8	40	3	130°
8599014	—	54	—	1.40	0.0551	9	41	3	130°
8608146	—	—	—	1.46	0.0575	9	41	3	130°
8608147	—	—	—	1.47	0.0579	9	41	3	130°
8608148	—	—	—	1.48	0.0583	9	41	3	130°
8599015	—	—	—	1.50	0.0591	9	41	3	130°
8608151	—	53	—	1.51	0.0594	10	42	3	130°
8608153	—	—	—	1.53	0.0602	10	42	3	130°
8608155	—	—	—	1.55	0.0610	10	42	3	130°
8608159	1/16	—	—	1.59	0.0626	10	42	3	130°
8608161	—	52	—	1.61	0.0634	10	42	3	130°
8608162	—	—	—	1.62	0.0638	10	42	4	130°
8608163	—	—	—	1.63	0.0642	10	42	5	130°
8608164	—	—	—	1.64	0.0646	10	42	3	130°
8608166	—	—	—	1.66	0.0654	10	42	3	130°
8608169	—	—	—	1.69	0.0665	10	42	4	130°
8599017	—	51	—	1.70	0.0669	10	42	3	130°
8608176	—	—	—	1.76	0.0693	11	43	3	130°
8608177	—	—	—	1.77	0.0697	11	43	3	130°
8608178	—	50	—	1.78	0.0701	11	43	3	130°
8599018	—	—	—	1.80	0.0709	11	43	3	130°
8608182	—	—	—	1.82	0.0717	11	43	3	130°
8608185	—	49	—	1.85	0.0728	11	43	3	130°
8608193	—	48	—	1.93	0.0760	12	44	3	130°
8608198	5/64	—	—	1.98	0.0780	12	44	3	130°
8608199	—	47	—	1.99	0.0783	12	44	3	130°
9599020	—	—	—	2.00	0.0787	12	44	3	130°
8608203	—	—	—	2.03	0.0799	12	44	3	130°
8608204	—	—	—	2.04	0.0803	12	44	4	130°
8608206	—	46	—	2.06	0.0811	12	44	3	130°
8608208	—	45	—	2.08	0.0819	12	44	3	130°
9599021	—	—	—	2.10	0.0827	12	44	3	130°
8608213	—	—	—	2.13	0.0839	13	45	3	130°
8608215	—	—	—	2.15	0.0846	13	45	3	130°
8608216	—	—	—	2.16	0.0850	13	45	3	130°
8608218	—	44	—	2.18	0.0858	13	45	3	130°
9599022	—	—	—	2.20	0.0866	13	45	3	130°
8608222	—	—	—	2.22	0.0874	13	45	3	130°
8608226	—	43	—	2.26	0.0890	13	45	3	130°
9599023	—	—	—	2.30	0.0906	13	45	3	130°
8608231	—	—	—	2.31	0.0909	13	45	4	130°
8608233	—	—	—	2.33	0.0917	13	45	3	130°
8608237	—	42	—	2.37	0.0933	14	46	3	130°
8608238	3/32	—	—	2.38	0.0937	14	46	3	130°
9599024	—	—	—	2.40	0.0945	14	46	3	130°

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EXD

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List 1900 (Continued)

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | STUB | 30°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8608244	—	41	—	2.44	0.0961	14	46	3	130°
8608246	—	—	—	2.46	0.0969	14	46	4	130°
8608249	—	40	—	2.49	0.0980	14	46	3	130°
9599025	—	—	—	2.50	0.0984	14	46	3	130°
8608253	—	39	—	2.53	0.0996	14	46	3	130°
8608258	—	38	I	2.58	0.1016	14	46	3	130°
9599026	—	—	—	2.60	0.1024	14	46	3	130°
8608264	—	37	—	2.64	0.1039	14	46	3	130°
9599027	—	—	—	2.70	0.1063	16	46	3	130°
8608271	—	36	—	2.71	0.1067	16	46	3	130°
8608278	7/64	—	—	2.78	0.1094	16	46	3	130°
8608279	—	35	—	2.79	0.1098	16	46	3	130°
9599028	—	—	—	2.80	0.1102	16	48	3	130°
8608281	—	—	—	2.81	0.1106	16	48	4	130°
8608282	—	34	—	2.82	0.1110	16	48	3	130°
8608287	—	33	—	2.87	0.1130	16	48	3	130°
9599029	—	—	—	2.90	0.1142	16	48	3	130°
8608295	—	32	—	2.95	0.1161	16	48	3	130°
9599030	—	—	—	3.00	0.1181	16	48	3	130°
8608305	—	31	P	3.05	0.1201	18	50	4	130°
9599031	—	—	—	3.10	0.1220	18	50	4	130°
8608318	1/8	—	—	3.18	0.1252	18	50	4	130°
8608319	—	—	—	3.19	0.1256	18	50	4	130°
9599032	—	—	—	3.20	0.1260	18	50	4	130°
8608326	—	30	—	3.26	0.1283	18	50	4	130°
9599033	—	—	—	3.30	0.1299	18	50	4	130°
8608336	—	—	—	3.36	0.1323	20	52	4	130°
9599034	—	—	—	3.40	0.1339	20	52	4	130°
8608345	—	29	—	3.45	0.1358	20	52	4	130°
9599035	—	—	—	3.50	0.1378	20	52	4	130°
8608352	—	—	—	3.52	0.1386	20	52	4	130°
8608357	—	28	—	3.57	0.1406	20	52	4	130°
9599036	—	—	—	3.60	0.1417	20	52	4	130°
8608366	—	27	—	3.66	0.1441	20	52	4	130°
9599037	—	—	—	3.70	0.1457	20	52	4	130°
8608373	—	26	—	3.73	0.1469	20	52	4	130°
8608377	—	—	—	3.77	0.1484	22	54	4	130°
9599038	—	25	—	3.80	0.1496	22	54	4	130°
8608386	—	24	—	3.86	0.1520	22	54	4	130°
9599039	—	—	W	3.90	0.1535	22	54	4	130°
8608391	—	23	—	3.91	0.1539	22	54	4	130°
8608397	5/32	—	—	3.97	0.1563	22	54	4	130°
8608399	—	22	—	3.99	0.1571	22	54	4	130°
9599040	—	—	—	4.00	0.1575	22	54	4	130°
8608404	—	21	—	4.04	0.1591	22	66	6	130°
8608409	—	20	—	4.09	0.1610	22	66	6	130°

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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														
	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
1900	○	◎	◎	◎	◎		○	○	◎	○	○	◎	○	◎	◎	○	

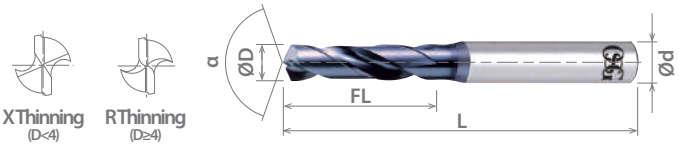
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List 1900 (Continued)

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | STUB | 30°



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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
9599041	—	—	—	4.10	0.1614	22	66	6	130°
8608415	—	—	—	4.15	0.1634	22	66	6	130°
9599042	—	—	—	4.20	0.1654	22	66	6	130°
8608422	—	19	—	4.22	0.1661	22	66	6	130°
8608427	—	—	—	4.27	0.1681	24	68	6	130°
9599043	—	—	—	4.30	0.1693	24	68	6	130°
8608431	—	18	—	4.31	0.1697	24	68	6	130°
8608437	11/64	—	—	4.37	0.1720	24	68	6	130°
8608439	—	17	—	4.39	0.1728	24	68	6	130°
9599044	—	—	—	4.40	0.1732	24	68	6	130°
8608445	—	—	—	4.45	0.1752	24	68	6	130°
9599045	—	16	—	4.50	0.1772	24	68	6	130°
8608457	—	15	—	4.57	0.1799	24	68	6	130°
9599046	—	—	—	4.60	0.1811	24	68	6	130°
8608462	—	14	—	4.62	0.1819	24	68	6	130°
8608466	—	—	—	4.66	0.1835	24	68	6	130°
9599047	—	13	—	4.70	0.1850	24	68	6	130°
8608476	3/16	—	—	4.76	0.1874	26	70	6	130°
8608479	—	—	—	4.79	0.1886	26	70	6	130°
9599048	—	12	—	4.80	0.1890	26	70	6	130°
8608485	—	11	—	4.85	0.1909	26	70	6	130°
9599049	—	—	—	4.90	0.1929	26	70	6	130°
8608491	—	—	—	4.91	0.1933	26	70	6	130°
8608498	—	9	—	4.98	0.1961	26	70	6	130°
9599050	—	—	—	5.00	0.1969	26	70	6	130°
8608505	—	8	—	5.05	0.1988	26	70	6	130°
9599051	—	—	—	5.10	0.2008	26	70	6	130°
8608511	—	7	—	5.11	0.2012	26	70	6	130°
8608515	—	—	—	5.15	0.2028	26	70	6	130°
8608516	13/64	—	—	5.16	0.2031	26	70	6	130°
8608518	—	6	—	5.18	0.2039	26	70	6	130°
9599052	—	—	—	5.20	0.2047	26	70	6	130°
8608522	—	5	—	5.22	0.2055	26	70	6	130°
8608526	—	—	—	5.26	0.2071	26	70	6	130°
9599053	—	—	—	5.30	0.2087	26	70	6	130°
8608531	—	4	—	5.31	0.2091	28	70	6	130°
9599054	—	—	—	5.40	0.2126	28	70	6	130°
8608541	—	—	—	5.41	0.2130	28	72	6	130°
8608546	—	—	—	5.46	0.2150	28	72	6	130°
9599055	—	—	—	5.50	0.2165	28	72	6	130°
8608556	7/32	—	—	5.56	0.2189	28	72	6	130°
9599056	—	—	—	5.60	0.2205	28	72	6	130°
8608561	—	2	—	5.61	0.2209	28	72	6	130°
9599057	—	—	—	5.70	0.2244	28	72	6	130°
8608579	—	1	—	5.79	0.2280	28	70	6	130°
9599058	—	—	—	5.80	0.2283	28	72	6	130°
9599059	—	—	—	5.90	0.2323	28	72	6	130°
8608595	15/64	—	—	5.95	0.2343	28	72	6	130°
9599060	—	—	—	6.00	0.2362	28	72	6	130°
9599061	—	—	—	6.10	0.2402	31	75	8	130°

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EXD

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List 1900 (Continued)

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | STUB | 30°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
9598615	—	—	—	6.15	0.2421	31	75	8	130°
9599062	—	—	—	6.20	0.2441	31	75	8	130°
9599063	—	—	—	6.30	0.2480	31	75	8	130°
8608635	1/4	—	E	6.35	0.2500	31	75	8	130°
9599064	—	—	—	6.40	0.2520	31	75	8	130°
9599065	—	—	—	6.50	0.2559	31	75	8	130°
9599066	—	—	—	6.60	0.2598	31	75	8	130°
9598665	—	—	—	6.65	0.2618	31	75	8	130°
9599067	—	—	—	6.70	0.2638	31	75	8	130°
8608675	17/64	—	—	6.75	0.2657	34	78	8	130°
9599068	—	—	—	6.80	0.2677	34	78	8	130°
9598686	—	—	—	6.86	0.2701	34	78	8	130°
9599069	—	—	I	6.90	0.2717	34	78	8	130°
9599070	—	—	—	7.00	0.2756	34	78	8	130°
9598704	—	—	—	7.04	0.2772	34	78	8	130°
9599071	—	—	—	7.10	0.2795	34	78	8	130°
8608714	9/32	—	K	7.14	0.2811	34	78	8	130°
9599072	—	—	—	7.20	0.2835	34	78	8	130°
9599073	—	—	—	7.30	0.2874	34	78	8	130°
9599074	—	—	—	7.40	0.2913	34	78	8	130°
9599075	—	—	—	7.50	0.2953	34	78	8	130°
8608754	19/64	—	—	7.54	0.2969	34	78	8	130°
9599076	—	—	—	7.60	0.2992	37	81	8	130°
9599077	—	—	—	7.70	0.3031	37	81	8	130°
9599078	—	—	—	7.80	0.3071	37	81	8	130°
9599079	—	—	—	7.90	0.3110	37	81	8	130°
8608794	5/16	—	—	7.94	0.3126	37	81	8	130°
9599080	—	—	—	8.00	0.3150	37	81	8	130°
9599081	—	—	—	8.10	0.3189	37	87	10	130°
9598815	—	—	—	8.15	0.3209	37	87	10	130°
9599082	—	—	P	8.20	0.3228	37	87	10	130°
9599083	—	—	—	8.30	0.3268	37	87	10	130°
8608833	21/64	—	—	8.33	0.3280	37	87	10	130°
9599084	—	—	—	8.40	0.3307	37	87	10	130°
9599085	—	—	—	8.50	0.3346	37	87	10	130°
9598856	—	—	—	8.56	0.3370	40	90	10	130°
9599086	—	—	—	8.60	0.3386	40	90	10	130°
9598868	—	—	—	8.68	0.3417	40	90	10	130°
9599087	—	—	—	8.70	0.3425	40	90	10	130°
8608873	11/32	—	—	8.73	0.3437	40	90	10	130°
9599088	—	—	—	8.80	0.3465	40	90	10	130°
9598886	—	—	—	8.86	0.3488	40	90	10	130°
9599089	—	—	—	8.90	0.3504	40	90	10	130°
9599090	—	—	—	9.00	0.3543	40	90	10	130°
9599091	—	—	—	9.10	0.3583	40	90	10	130°
8608913	23/64	—	—	9.13	0.3594	40	90	10	130°

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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														
	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
1900	○	◎	◎	◎	◎		○	○	◎	○	○	◎	○	◎	◎	○	

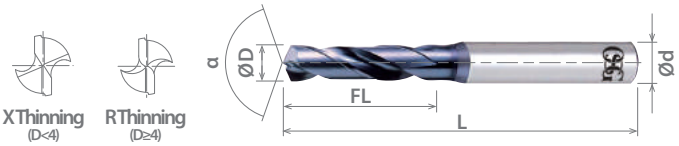
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List 1900 (Continued)

Ideal for Difficult to Machine Materials

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Cutting Diameter Tolerance (h8)		
Size	mm	inch
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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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
9599092	—	—	—	9.20	0.3622	40	90	10	130°
9599093	—	—	—	9.30	0.3661	40	90	10	130°
9599094	—	—	—	9.40	0.3701	40	90	10	130°
9599095	—	—	—	9.50	0.3740	40	90	10	130°
8608952	3/8	—	—	9.52	0.3748	40	90	10	130°
9598955	—	—	—	9.55	0.3760	43	93	10	130°
9599096	—	—	—	9.60	0.3780	43	93	10	130°
9599097	—	—	—	9.70	0.3819	43	93	10	130°
9599098	—	—	W	9.80	0.3858	43	93	10	130°
9599099	—	—	—	9.90	0.3898	43	93	10	130°
8608992	25/64	—	—	9.92	0.3906	43	93	10	130°
9599100	—	—	—	10.00	0.3937	43	93	10	130°
9599101	—	—	—	10.10	0.3976	43	100	12	130°
9599102	—	—	—	10.20	0.4016	43	100	12	130°
9599103	—	—	—	10.30	0.4055	43	100	12	130°
8609032	13/32	—	—	10.32	0.4063	73	100	12	130°
9599104	—	—	—	10.40	0.4094	43	100	12	130°
9599144	—	—	—	10.44	0.4110	43	100	12	130°
9599105	—	—	—	10.50	0.4134	43	100	12	130°
9599106	—	—	—	10.60	0.4173	43	100	12	130°
9599107	—	—	—	10.70	0.4213	47	104	12	130°
8609072	27/64	—	—	10.72	0.4220	47	104	12	130°
9599108	—	—	—	10.80	0.4252	47	104	12	130°
9599186	—	—	—	10.86	0.4276	47	104	12	130°
9599109	—	—	—	10.90	0.4291	47	104	12	130°
9599110	—	—	—	11.00	0.4331	47	104	12	130°
9599111	—	—	—	11.10	0.4370	47	104	12	130°
8609111	7/16	—	—	11.11	0.4374	47	104	12	130°
9599112	—	—	—	11.20	0.4409	47	104	12	130°
9599113	—	—	—	11.30	0.4449	47	104	12	130°
9599114	—	—	—	11.40	0.4488	47	104	12	130°
9599115	—	—	—	11.50	0.4528	47	104	12	130°
8609151	29/64	—	—	11.51	0.4531	47	104	12	130°
9599116	—	—	—	11.60	0.4567	47	104	12	130°
9599117	—	—	—	11.70	0.4606	47	104	12	130°
9599118	—	—	—	11.80	0.4646	47	104	12	130°
9599119	—	—	—	11.90	0.4685	47	104	12	130°
8609191	15/32	—	—	11.91	0.4689	47	104	12	130°
9599120	—	—	—	12.00	0.4724	51	108	12	130°
9599121	—	—	—	12.10	0.4764	51	108	12	130°
9599122	—	—	—	12.20	0.4803	51	108	12	130°
9599123	31/64	—	—	12.30	0.4843	51	108	12	130°
9599124	—	—	—	12.40	0.4882	51	108	12	130°
9599245	—	—	—	12.45	0.4902	51	108	12	130°
9599125	—	—	—	12.50	0.4921	51	108	12	130°
9599126	—	—	—	12.60	0.4961	51	108	12	130°
9599268	—	—	—	12.68	0.4992	51	108	12	130°
9599127	1/2	—	—	12.70	0.5000	51	108	12	130°
9599128	—	—	—	12.80	0.5039	51	108	12	130°
9599129	—	—	—	12.90	0.5079	51	108	12	130°

Packed: 1 pc.
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EXD

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List 1900 (Continued)

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | STUB | 30°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
9599130	—	—	—	13.00	0.5118	51	108	12	130°
9599308	—	—	—	13.08	0.5150	51	111	16	120°
8609349	17/32	—	—	13.49	0.5311	54	114	16	120°
8599135	—	—	—	13.50	0.5315	54	114	16	120°
8599136	—	—	—	13.60	0.5354	54	114	16	120°
8608954	—	—	—	13.79	0.5429	54	114	16	120°
9599387	—	—	—	13.87	0.5461	54	114	16	120°
8599140	—	—	—	14.00	0.5512	54	114	16	120°
8599142	—	—	—	14.20	0.5591	56	116	16	120°
8609429	9/16	—	—	14.29	0.5626	56	116	16	120°
8599145	—	—	—	14.50	0.5709	56	116	16	120°
8599146	—	—	—	14.60	0.5748	56	116	16	120°
8608956	—	—	—	14.61	0.5752	56	116	16	120°
9599468	—	—	—	14.68	0.5780	56	116	16	120°
8599150	—	—	—	15.00	0.5906	56	116	16	120°
8599155	—	—	—	15.50	0.6102	58	118	16	120°
8599157	—	—	—	15.70	0.6181	58	118	16	120°
8609588	5/8	—	—	15.88	0.6252	58	118	16	120°
8599160	—	—	—	16.00	0.6299	58	118	16	120°
8599165	—	—	—	16.50	0.6496	60	126	20	120°
8609667	21/32	—	—	16.67	0.6563	60	126	20	120°
8608958	—	—	—	16.76	0.6598	60	126	20	120°
9599684	—	—	—	16.84	0.6630	60	126	20	120°
8599170	—	—	—	17.00	0.6693	60	126	20	120°
8599175	—	—	—	17.50	0.6890	62	128	20	120°
8608960	—	—	—	17.63	0.6941	62	128	20	120°
8608962	—	—	—	17.68	0.6961	62	128	20	120°
8599177	—	—	—	17.70	0.6969	62	128	20	120°
8599180	—	—	—	18.00	0.7087	62	128	20	120°
8599185	—	—	—	18.50	0.7283	64	130	20	120°
8608964	—	—	—	18.64	0.7339	64	130	20	120°
8599190	—	—	—	19.00	0.7480	64	130	20	120°
8609905	3/4	—	—	19.05	0.7500	66	132	20	120°
8599195	—	—	—	19.50	0.7677	66	132	20	120°
8608966	—	—	—	19.66	0.7740	66	132	20	120°
8608968	—	—	—	19.74	0.7772	66	132	20	120°
9599976	—	—	—	19.76	0.7780	66	132	20	120°
8599200	—	—	—	20.00	0.7874	66	132	20	120°

Packed: 1 pc.
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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														
	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
1900	○	◎	◎	◎	◎		○	○	◎	○	○	◎	○	◎	◎	○	

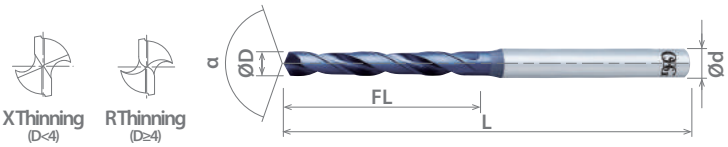
○ good ◎ best

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List 1950

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | JOBBERS | 30°



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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8612199	-	47	-	1.99	0.0785	24	56	3	130°
8612206	-	46	-	2.06	0.0810	24	56	3	130°
8612208	-	45	-	2.08	0.0820	24	56	3	130°
8612218	-	44	-	2.18	0.0860	27	59	3	130°
8612226	-	43	-	2.26	0.0890	27	59	3	130°
8612237	-	42	-	2.37	0.0935	30	62	3	130°
8612238	3/32	-	-	2.38	0.0938	30	62	3	130°
8612244	-	41	-	2.44	0.0960	30	62	3	130°
8612249	-	40	-	2.49	0.0980	30	62	3	130°
8612253	-	39	-	2.53	0.0995	30	62	3	130°
8612258	-	38	-	2.58	0.1015	30	62	3	130°
8612264	-	37	-	2.64	0.1040	30	62	3	130°
8612271	-	36	-	2.71	0.1065	33	65	3	130°
8612278	7/64	-	-	2.78	0.1094	33	65	3	130°
8612279	-	35	-	2.79	0.1100	33	65	3	130°
8612282	-	34	-	2.82	0.1110	33	65	3	130°
8612287	-	33	-	2.87	0.1130	33	65	3	130°
8612295	-	32	-	2.95	0.1160	33	65	3	130°
8612305	-	31	-	3.05	0.1200	36	68	4	130°
8612317	1/8	-	-	3.17	0.1248	36	68	4	130°
8612326	-	30	-	3.26	0.1285	36	68	4	130°
8612345	-	29	-	3.45	0.1360	39	71	4	130°
8612357	9/64	-	-	3.57	0.1406	39	71	4	130°
8612366	-	27	-	3.66	0.1440	39	71	4	130°
8612373	-	26	-	3.73	0.1470	39	71	4	130°
8612380	-	25	-	3.80	0.1495	43	75	4	130°
8612386	-	24	-	3.86	0.1520	43	75	4	130°
8612391	-	23	-	3.91	0.1540	43	75	4	130°
8612397	5/32	-	-	3.97	0.1562	43	75	4	130°
8612399	-	22	-	3.99	0.1570	43	75	4	130°
8612404	-	21	-	4.04	0.1590	43	87	6	130°
8612409	-	20	-	4.09	0.1610	43	87	6	130°
8612422	-	19	-	4.22	0.1660	43	87	6	130°
8612430	-	-	-	4.30	0.1693	47	91	6	130°
8612437	11/64	-	-	4.37	0.1719	47	91	6	130°
8612439	-	17	-	4.39	0.1730	47	91	6	130°
8612450	-	16	-	4.50	0.1770	47	91	6	130°
8612457	-	15	-	4.57	0.1800	47	91	6	130°
8612462	-	14	-	4.62	0.1820	47	91	6	130°
8612470	-	13	-	4.70	0.1850	47	91	6	130°
8612476	3/16	-	-	4.76	0.1875	52	96	6	130°
8612480	-	12	-	4.80	0.1890	52	96	6	130°
8612485	-	11	-	4.85	0.1910	52	96	6	130°
8612491	-	-	-	4.91	0.1933	52	96	6	130°
8612498	-	9	-	4.98	0.1960	52	96	6	130°
8612505	-	8	-	5.05	0.1990	52	96	6	130°
8612511	-	7	-	5.11	0.2010	52	96	6	130°
8612516	13/64	-	-	5.16	0.2031	52	96	6	130°
8612518	-	6	-	5.18	0.2040	52	96	6	130°
8612522	-	5	-	5.22	0.2055	52	96	6	130°
8612531	-	4	-	5.31	0.2090	57	101	6	130°
8612541	-	3	-	5.41	0.2130	57	101	6	130°
8612556	7/32	-	-	5.56	0.2188	57	101	6	130°

Packed: 1 pc.
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EXD

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List 1950 (Continued)

Ideal for Difficult to Machine Materials

SPEED FEED P262-263 | XPM | V | JOBBERS | 30°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8612561	-	2	-	5.61	0.2210	57	101	6	130°
8612579	-	1	-	5.79	0.2280	57	101	6	130°
8612594	-	-	A	5.94	0.2340	57	101	6	130°
8612595	15/64	-	-	5.95	0.2344	57	101	8	130°
8612604	-	-	-	6.04	0.2378	63	107	8	130°
8612615	-	-	C	6.15	0.2420	63	107	8	130°
8612625	-	-	D	6.25	0.2460	63	107	8	130°
8612635	1/4	-	E	6.35	0.2500	63	107	8	130°
8612653	-	-	F	6.53	0.2570	63	107	8	130°
8612663	-	-	G	6.63	0.2610	63	107	8	130°
8612675	17/64	-	-	6.75	0.2656	69	113	8	130°
8612690	-	-	I	6.90	0.2717	69	113	8	130°
8612703	-	-	J	7.03	0.2768	69	113	8	130°
8612714	9/32	-	-	7.14	0.2812	69	113	8	130°
8612737	-	-	L	7.37	0.2900	69	113	8	130°
8612749	-	-	M	7.49	0.2950	69	113	8	130°
8612754	19/64	-	-	7.54	0.2969	75	119	8	130°
8612767	-	-	N	7.67	0.3020	75	119	8	130°
8612794	5/16	-	-	7.94	0.3125	75	119	8	130°
8612803	-	-	O	8.03	0.3160	75	125	10	130°
8612820	-	-	P	8.20	0.3230	75	125	10	130°
8612833	21/64	-	-	8.33	0.3281	75	125	10	130°
8612843	-	-	Q	8.43	0.3320	75	125	10	130°
8612861	-	-	R	8.61	0.3390	81	131	10	130°
8612873	11/32	-	-	8.73	0.3438	81	131	10	130°
8612884	-	-	S	8.84	0.3480	81	131	10	130°
8612909	-	-	T	9.09	0.3580	81	131	10	130°
8612913	23/64	-	-	9.13	0.3594	81	131	10	130°
8612934	-	-	-	9.34	0.3677	81	131	10	130°
8612952	3/8	-	-	9.52	0.3748	87	137	10	130°
8612957	-	-	V	9.57	0.3768	87	137	10	130°
8612980	-	-	W	9.80	0.3860	87	137	10	130°
8612992	25/64	-	-	9.92	0.3906	87	137	10	130°
8613008	-	-	X	10.08	0.3970	87	144	12	130°
8613026	-	-	Y	10.26	0.4040	87	144	12	130°
8613032	13/32	-	-	10.32	0.4062	87	144	12	130°
8613049	-	-	Z	10.49	0.4130	87	144	12	130°
8613072	27/64	-	-	10.72	0.4219	94	151	12	130°
8613111	7/16	-	-	11.11	0.4375	94	151	12	130°
8613151	29/64	-	-	11.51	0.4531	94	151	12	130°
8613191	15/32	-	-	11.91	0.4688	101	158	12	130°
8613230	31/64	-	-	12.30	0.4844	101	158	12	130°
8613270	1/2	-	-	12.70	0.5000	101	158	12	130°
8613349	17/32	-	-	13.49	0.5312	106	166	16	120°
8613429	9/16	-	-	14.29	0.5625	109	169	16	120°
8613588	5/8	-	-	15.88	0.6250	115	175	16	120°
8613667	21/32	-	-	16.67	0.6563	115	181	20	120°
8613746	11/16	-	-	17.46	0.6875	118	184	20	120°

Packed: 1 pc.
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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														
	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
1950	○	◎	◎	◎	◎		○	○	◎	○	○	◎	○	◎	◎	○	

○ good ◎ best

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List 2000

Parabolic

SPEED FEED P264 | XPM | V | JOBBERS | 40°



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8593020	-	-	-	2.00	0.0787	24	56	3
8593021	-	-	-	2.10	0.0827	24	56	3
8593022	-	-	-	2.20	0.0866	27	59	3
8593023	-	-	-	2.30	0.0906	27	59	3
8593024	-	-	-	2.40	0.0945	30	62	3
8593025	-	-	-	2.50	0.0984	30	62	3
8593026	-	-	-	2.60	0.1024	30	62	3
8593027	-	-	-	2.70	0.1063	33	65	3
8593028	-	-	-	2.80	0.1102	33	65	3
8593029	-	-	-	2.90	0.1142	33	65	3
8593030	-	-	-	3.00	0.1181	33	65	3
8593031	-	-	-	3.10	0.1220	36	68	4
8593032	-	-	-	3.20	0.1260	36	68	4
8593033	-	-	-	3.30	0.1299	36	68	4
8593034	-	-	-	3.40	0.1339	39	71	4
8593035	-	-	-	3.50	0.1378	39	71	4
8593036	-	-	-	3.60	0.1417	39	71	4
8593037	-	-	-	3.70	0.1457	39	71	4
8593038	-	25	-	3.80	0.1496	43	75	4
8593039	-	-	-	3.90	0.1535	43	75	4
8593040	-	-	-	4.00	0.1575	43	75	4
8593041	-	-	-	4.10	0.1614	43	87	6
8593042	-	-	-	4.20	0.1654	43	87	6
8593043	-	-	-	4.30	0.1693	47	91	6
8593044	-	-	-	4.40	0.1732	47	91	6
8593045	-	16	-	4.50	0.1772	47	91	6
8593046	-	-	-	4.60	0.1811	47	91	6
8593047	-	13	-	4.70	0.1850	47	91	6
8593048	-	12	-	4.80	0.1890	52	96	6
8593049	-	-	-	4.90	0.1929	52	96	6
8593050	-	-	-	5.00	0.1969	52	96	6
8593051	-	-	-	5.10	0.2008	52	96	6
8593052	-	-	-	5.20	0.2047	52	96	6
8593053	-	-	-	5.30	0.2087	52	96	6
8593054	-	-	-	5.40	0.2126	57	101	6
8593055	-	-	-	5.50	0.2165	57	101	6
8593056	-	-	-	5.60	0.2205	57	101	6
8593057	-	-	-	5.70	0.2244	57	101	6
8593058	-	-	-	5.80	0.2283	57	101	6
8593059	-	-	-	5.90	0.2323	57	101	6
8593060	-	-	-	6.00	0.2362	57	101	6
8593061	-	-	-	6.10	0.2402	63	107	8
8593062	-	-	-	6.20	0.2441	63	107	8
8593063	-	-	-	6.30	0.2480	63	107	8
8593064	-	-	-	6.40	0.2520	63	107	8
8593065	-	-	-	6.50	0.2559	63	107	8
8593066	-	-	-	6.60	0.2598	63	107	8
8593067	-	-	-	6.70	0.2638	63	107	8
8593068	-	-	-	6.80	0.2677	69	113	8
8593069	-	-	I	6.90	0.2717	69	113	8
8593070	-	-	-	7.00	0.2756	69	113	8
8593071	-	-	-	7.10	0.2795	69	113	8
8593072	-	-	-	7.20	0.2835	69	113	8

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EXD

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List 2000 (Continued)

SPEED FEED P264 | XPM | V | JOBBERS | 40°

Parabolic

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8593073	-	-	-	7.30	0.2874	69	113	8
8593074	-	-	-	7.40	0.2913	69	113	8
8593075	-	-	-	7.50	0.2953	69	113	8
8593076	-	-	-	7.60	0.2992	75	119	8
8593077	-	-	-	7.70	0.3031	75	119	8
8593078	-	-	-	7.80	0.3071	75	119	8
8593079	-	-	-	7.90	0.3110	75	119	8
8593080	-	-	-	8.00	0.3150	75	119	8
8593081	-	-	-	8.10	0.3189	75	125	10
8593082	-	-	P	8.20	0.3228	75	125	10
8593083	-	-	-	8.30	0.3268	75	125	10
8593084	-	-	-	8.40	0.3307	75	125	10
8593085	-	-	-	8.50	0.3346	75	125	10
8593086	-	-	-	8.60	0.3386	81	131	10
8593087	-	-	-	8.70	0.3425	81	131	10
8593088	-	-	-	8.80	0.3465	81	131	10
8593089	-	-	-	8.90	0.3504	81	131	10
8593090	-	-	-	9.00	0.3543	81	131	10
8593091	-	-	-	9.10	0.3583	81	131	10
8593092	-	-	-	9.20	0.3622	81	131	10
8593093	-	-	-	9.30	0.3661	81	131	10
8593094	-	-	-	9.40	0.3701	81	131	10
8593095	-	-	-	9.50	0.3740	81	131	10
8593096	-	-	-	9.60	0.3780	87	137	10
8593097	-	-	-	9.70	0.3819	87	137	10
8593098	-	-	W	9.80	0.3858	87	137	10
8593099	-	-	-	9.90	0.3898	87	137	10
8593100	-	-	-	10.00	0.3937	87	137	10
8593101	-	-	-	10.10	0.3976	87	144	12
8593102	-	-	-	10.20	0.4016	87	144	12
8593103	-	-	-	10.30	0.4055	87	144	12
8593104	-	-	-	10.40	0.4094	87	144	12
8593105	-	-	-	10.50	0.4134	87	144	12
8593106	-	-	-	10.60	0.4173	87	144	12
8593107	-	-	-	10.70	0.4213	94	151	12
8593108	-	-	-	10.80	0.4252	94	151	12
8593109	-	-	-	10.90	0.4291	94	151	12
8593110	-	-	-	11.00	0.4331	94	151	12
8593111	-	-	-	11.10	0.4370	94	151	12
8593112	-	-	-	11.20	0.4409	94	151	12
8593113	-	-	-	11.30	0.4449	94	151	12
8593114	-	-	-	11.40	0.4488	94	151	12
8593115	-	-	-	11.50	0.4528	94	151	12
8593116	-	-	-	11.60	0.4567	94	151	12
8593117	-	-	-	11.70	0.4606	94	151	12
8593118	-	-	-	11.80	0.4646	94	151	12
8593119	-	-	-	11.90	0.4685	101	158	12
8593120	-	-	-	12.00	0.4724	101	158	12
8593121	-	-	-	12.10	0.4764	101	158	12

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														
	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
2000	○	○	◎	○	◎				◎	○	○	○		◎	○		

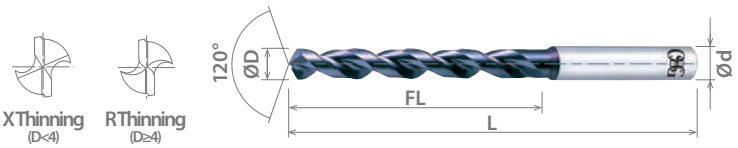
○ good ◎ best

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List 2000 (Continued)

SPEED FEED P264 | XPM | V | JOBBERS | 40°

Parabolic



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8593122	-	-	-	12.20	0.4803	101	158	12
8593123	31/64	-	-	12.30	0.4843	101	158	12
8593124	-	-	-	12.40	0.4882	101	158	12
8593125	-	-	-	12.50	0.4921	101	158	12
8593126	-	-	-	12.60	0.4961	101	158	12
8593127	1/2	-	-	12.70	0.5000	101	158	12
8593128	-	-	-	12.80	0.5039	101	158	12
8593129	-	-	-	12.90	0.5079	101	158	12
8593130	-	-	-	13.00	0.5118	101	158	12
8593135	-	-	-	13.50	0.5315	106	166	16
8593140	-	-	-	14.00	0.5512	106	166	16
8593145	-	-	-	14.50	0.5709	109	169	16
8593150	-	-	-	15.00	0.5906	109	169	16
8593155	-	-	-	15.50	0.6102	112	172	16
8593160	-	-	-	16.00	0.6299	112	172	16
8593165	-	-	-	16.50	0.6496	115	181	20
8593170	-	-	-	17.00	0.6693	115	181	20
8593175	-	-	-	17.50	0.6890	118	184	20
8593180	-	-	-	18.00	0.7087	118	184	20
8593185	-	-	-	18.50	0.7283	122	188	20
8593190	-	-	-	19.00	0.7480	122	188	20
8593195	-	-	-	19.50	0.7677	125	191	20
8593200	-	-	-	20.00	0.7874	125	191	20
8593205	-	-	-	20.50	0.8071	128	204	25
8593210	-	-	-	21.00	0.8268	128	204	25
8593215	-	-	-	21.50	0.8465	132	208	25
8593220	-	-	-	22.00	0.8661	132	208	25
8593225	-	-	-	22.50	0.8858	136	212	25
8593230	-	-	-	23.00	0.9055	136	212	25
8593235	-	-	-	23.50	0.9252	136	212	25
8593240	-	-	-	24.00	0.9449	140	216	25
8593245	-	-	-	24.50	0.9646	140	216	25
8593250	63/64	-	-	25.00	0.9843	140	216	25
8593255	-	-	-	25.50	1.0039	145	225	32
8593260	-	-	-	26.00	1.0236	145	225	32
8593265	-	-	-	26.50	1.0433	145	225	32
8593270	-	-	-	27.00	1.0630	150	230	32
8593280	-	-	-	28.00	1.1024	150	230	32
8593290	-	-	-	29.00	1.1417	155	235	32
8593300	-	-	-	30.00	1.1811	155	235	32
8593310	-	-	-	31.00	1.2205	160	240	32
8593320	-	-	-	32.00	1.2598	165	240	32

Packed: 1 pc.
Available V coating only.

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														
	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
2000	○	○	◎	◎	◎				◎	○	○	○		◎	○		

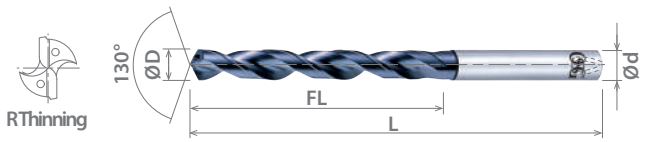
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List 1700

SPEED FEED P265 | HSS-CO | V | JOBBERS | COOLANT THROUGH | 30°

Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
17234408	15/64	-	-	5.95	0.2344	2-5/8	4-7/16	15/64
17236208	-	-	-	6.00	0.2362	2-3/4	4-9/16	6.00
17250008	1/4	-	E	6.35	0.2500	2-3/4	4-9/16	1/4
17257008	-	-	F	6.53	0.2570	2-7/8	4-11/16	6.53
17265608	17/64	-	-	6.75	0.2656	2-7/8	4-11/16	17/64
17272008	-	-	I	6.91	0.2720	2-7/8	4-11/16	6.91
17281208	9/32	-	-	7.14	0.2812	2-15/16	4-3/4	9/32
17296908	19/64	-	-	7.54	0.2969	3-1/16	4-7/8	19/64
17312508	5/16	-	-	7.94	0.3125	3-3/16	5	5/16
17315008	-	-	-	8.00	0.3150	3-3/16	5	8.00
17328108	21/64	-	-	8.33	0.3281	3-5/16	5-1/8	21/64
17343808	11/32	-	-	8.73	0.3438	3-7/16	5-1/4	11/32
17359408	23/64	-	-	9.13	0.3594	3-1/2	5-5/16	23/64
17375008	3/8	-	-	9.53	0.3750	3-5/8	5-7/16	3/8
17377008	-	-	V	9.58	0.3770	3-5/8	5-23/32	9.58
17390608	25/64	-	-	9.92	0.3906	3-3/4	5-27/32	25/64
17393708	-	-	-	10.00	0.3937	3-3/4	5-27/32	10.00
17406208	13/32	-	-	10.32	0.4062	3-7/8	5-31/32	13/32
17421908	27/64	-	-	10.72	0.4219	3-15/16	6-1/32	27/64
17437508	7/16	-	-	11.11	0.4375	4-1/16	6-5/32	7/16
17453108	29/64	-	-	11.51	0.4531	4-3/16	6-9/32	29/64
17468808	15/32	-	-	11.91	0.4688	4-5/16	6-13/32	15/32
17484408	31/64	-	-	12.30	0.4844	4-3/8	6-15/32	31/64
17500008	1/2	-	-	12.70	0.5000	4-1/2	6-19/32	1/2
17531208	17/32	-	-	13.49	0.5312	4-13/16	7-3/16	5/8
17562508	9/16	-	-	14.29	0.5625	4-13/16	7-3/16	5/8
17578108	37/64	-	-	14.68	0.5781	4-13/16	7-3/16	5/8
17593808	19/32	-	-	15.08	0.5938	5-3/16	7-9/16	5/8
17625008	5/8	-	-	15.88	0.6250	5-3/16	7-9/16	5/8
17656208	21/32	-	-	16.67	0.6563	5-3/16	7-27/32	3/4
17687508	11/16	-	-	17.46	0.6875	5-5/8	8-9/32	3/4
17718808	23/32	-	-	18.26	0.7188	5-5/8	8-9/32	3/4
17750008	3/4	-	-	19.05	0.7500	5-7/8	8-11/32	3/4
17781308	25/32	-	-	19.85	0.7813	6	8-21/32	7/8
17812508	13/16	-	-	20.64	0.8125	6-1/8	8-25/32	7/8
17843808	27/32	-	-	21.43	0.8438	6-1/8	8-25/32	7/8
17875008	7/8	-	-	22.23	0.8750	6-1/8	8-25/32	7/8
17906208	29/32	-	-	23.02	0.9062	6-1/8	9-3/16	1
17937508	15/16	-	-	23.81	0.9375	6-1/8	9-3/16	1
17968808	31/32	-	-	24.61	0.9688	6-3/8	9-7/16	1
18000008	1	-	-	25.40	1.0000	6-3/8	9-7/16	1
18031208	1-1/32	-	-	26.19	1.0312	6-1/2	9-9/16	1-1/4

Packed: 1 pc.
Available V coating only.

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OHD

Work Material

List No.	P					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 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
1700	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		

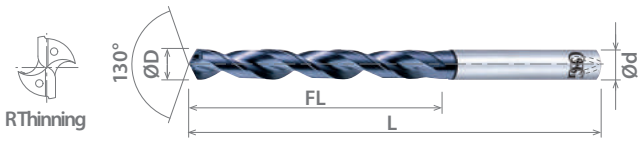
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List 1700 (Continued)

SPEED FEED P265 | HSS-CO | V | JOBBERS | COOLANT THROUGH | 30°

Coolant-Through



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
18062508	1-1/16	-	-	26.99	1.0625	6-5/8	9-11/16	1-1/4
18093808	1-3/32	-	-	27.78	1.0938	6-7/8	9-15/16	1-1/4
18125008	1-1/8	-	-	28.58	1.1250	7-1/8	10-3/16	1-1/4
18218808	1-7/32	-	-	30.96	1.2188	7-1/2	10-9/16	1-1/4
18250008	1-1/4	-	-	31.75	1.2500	7-7/8	10-15/16	1-1/4

Packed: 1 pc.
Available V coating only.

OHD

Work Material

List No.	P					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 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
1700	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		

▢ good ▢ best

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List 1750

SPEED FEED P266 | HSS-CO | WXL® | 40°

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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8622816	—	—	—	1.60	0.0630	26	75	1.6
8622818	—	—	—	1.80	0.0709	26	75	1.8
17542411	5/64	—	—	1.98	0.0780	26	75	5/64
8622820	—	—	—	2.00	0.0787	26	75	2.0
8622821	—	—	—	2.10	0.0827	33	75	2.1
8622822	—	—	—	2.20	0.0866	33	75	2.2
8622823	—	—	—	2.30	0.0906	33	75	2.3
17543111	3/32	—	—	2.38	0.0937	33	75	3/32
8622824	—	—	—	2.40	0.0945	33	75	2.4
8622825	—	—	—	2.50	0.0984	33	75	2.5
8622826	—	—	—	2.60	0.1024	40	90	2.6
8622827	—	—	—	2.70	0.1063	40	90	2.7
17543811	7/64	—	—	2.78	0.1094	40	90	7/64
8622828	—	—	—	2.80	0.1102	40	90	2.8
8622829	—	—	—	2.90	0.1142	40	90	2.9
8622830	—	—	—	3.00	0.1181	40	90	3.0
8622831	—	—	—	3.10	0.1220	45	100	3.1
17544411	1/8	—	—	3.18	0.1252	45	100	1/8
8622832	—	—	—	3.20	0.1260	45	100	3.2
8622833	—	—	—	3.30	0.1299	45	100	3.3
8622834	—	—	—	3.40	0.1339	50	100	3.4
8622835	—	—	—	3.50	0.1378	50	100	3.5
17544711	9/64	—	—	3.57	0.1406	50	100	9/64
8622836	—	—	—	3.60	0.1417	50	100	3.6
8622837	—	—	—	3.70	0.1457	50	100	3.7
8622838	—	25	—	3.80	0.1496	50	100	3.8
8622839	—	—	—	3.90	0.1535	50	100	3.9
17545311	5/32	—	—	3.97	0.1563	50	100	5/32
8622840	—	—	—	4.00	0.1575	50	100	4.0
8622841	—	—	—	4.10	0.1614	55	115	4.1
8622842	—	—	—	4.20	0.1654	55	115	4.2
8622843	—	—	—	4.30	0.1693	60	115	4.3
17545911	11/64	—	—	4.37	0.1720	60	115	11/64
8622844	—	—	—	4.40	0.1732	60	115	4.4
8622845	—	16	—	4.50	0.1772	60	115	4.5
8622846	—	—	—	4.60	0.1811	60	115	4.6
8622847	—	13	—	4.70	0.1850	60	115	4.7
17546511	3/16	—	—	4.76	0.1874	65	115	3/16
8622848	—	12	—	4.80	0.1890	65	115	4.8
8622849	—	—	—	4.90	0.1929	65	115	4.9
8622850	—	—	—	5.00	0.1969	65	115	5.0
8622851	—	—	—	5.10	0.2008	70	128	5.1

Packed: 1 pc.
Available WXL® 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														
	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
1750	◎	◎	◎	◎	◎	○	○	○	◎	○	○		○	◎	○		

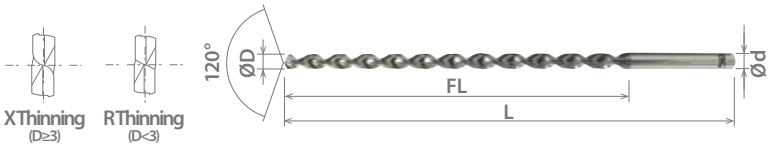
○ good ◎ best

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List 1750 (Continued)

SPEED FEED P266 | HSS-CO | WXL® | 40°

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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
17547211	13/64	—	—	5.16	0.2031	70	128	13/64
8622852	—	—	—	5.20	0.2047	70	128	5.2
8622853	—	—	—	5.30	0.2087	70	128	5.3
8622854	—	—	—	5.40	0.2126	78	128	5.4
8622855	—	—	—	5.50	0.2165	78	128	5.5
17547711	7/32	—	—	5.56	0.2189	78	128	7/32
8622856	—	—	—	5.60	0.2205	78	128	5.6
8622857	—	—	—	5.70	0.2244	78	128	5.7
8622858	—	—	—	5.80	0.2283	78	128	5.8
8622859	—	—	—	5.90	0.2323	78	128	5.9
17548111	15/64	—	—	5.95	0.2343	78	128	15/64
8622860	—	—	—	6.00	0.2362	78	128	6.0
8622861	—	—	—	6.10	0.2402	87	140	6.1
8622862	—	—	—	6.20	0.2441	87	140	6.2
8622863	—	—	—	6.30	0.2480	87	140	6.3
17548511	1/4	—	E	6.35	0.2500	87	140	1/4
8622864	—	—	—	6.40	0.2520	87	140	6.4
8622865	—	—	—	6.50	0.2559	87	140	6.5
8622866	—	—	—	6.60	0.2598	87	140	6.6
8622867	—	—	—	6.70	0.2638	87	140	6.7
17548811	17/64	—	—	6.75	0.2657	90	140	17/64
8622868	—	—	—	6.80	0.2677	90	140	6.8
8622869	—	—	I	6.90	0.2717	90	140	6.9
8622870	—	—	—	7.00	0.2756	90	140	7.0
8622871	—	—	—	7.10	0.2795	100	155	7.1
17549111	9/32	—	—	7.14	0.2812	100	155	9/32
8622872	—	—	—	7.20	0.2835	100	155	7.2
8622873	—	—	—	7.30	0.2874	100	155	7.3
8622874	—	—	—	7.40	0.2913	100	155	7.4
8622875	—	—	—	7.50	0.2953	100	155	7.5
17549411	19/64	—	—	7.54	0.2969	105	155	19/64
8622876	—	—	—	7.60	0.2992	105	155	7.6
8622877	—	—	—	7.70	0.3031	105	155	7.7
8622878	—	—	—	7.80	0.3071	105	155	7.8
8622879	—	—	—	7.90	0.3110	105	155	7.9
17549611	5/16	—	—	7.94	0.3125	105	155	5/16
8622880	—	—	—	8.00	0.3150	105	155	8.0
8622881	—	—	—	8.10	0.3189	110	165	8.1
8622882	—	—	P	8.20	0.3228	110	165	8.2
8622883	—	—	—	8.30	0.3287	110	165	8.3
17549911	21/64	—	—	8.33	0.3281	110	165	21/64
8622884	—	—	—	8.40	0.3307	110	165	8.4
8622885	—	—	—	8.50	0.3346	110	165	8.5
8622886	—	—	—	8.60	0.3386	115	165	8.6
8622887	—	—	—	8.70	0.3425	115	165	8.7
17550211	11/32	—	—	8.73	0.3438	115	165	11/32
8622888	—	—	—	8.80	0.3465	115	165	8.8
8622889	—	—	—	8.90	0.3504	115	165	8.9
8622890	—	—	—	9.00	0.3543	115	165	9.0
8622891	—	—	—	9.10	0.3583	125	190	9.1
17550511	23/64	—	—	9.13	0.3594	125	190	23/64
8622892	—	—	—	9.20	0.3622	125	190	9.2

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EXD

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List 1750 (Continued)

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10D

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

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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														
	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
1750	◎	◎	◎	◎	◎	○	○	○	◎	○	○		○	◎	○		

○ good ◎ best

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List 1760

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15D



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
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	36	80	2.0
8623021	—	—	—	2.10	0.0827	38	80	2.1
8623022	—	—	—	2.20	0.0866	40	80	2.2
8623023	—	—	—	2.30	0.0906	42	85	2.3
17503111	3/32	—	—	2.38	0.0937	44	85	3/32
8623024	—	—	—	2.40	0.0945	44	85	2.4
8623025	—	—	—	2.50	0.0984	46	85	2.5
8623026	—	—	—	2.60	0.1024	48	100	2.6
8623027	—	—	—	2.70	0.1063	50	100	2.7
17503811	7/64	—	—	2.78	0.1094	50	100	7/64
8623028	—	—	—	2.80	0.1102	50	100	2.8
8623029	—	—	—	2.90	0.1142	54	105	2.9
8623030	—	—	—	3.00	0.1181	54	105	3.0
8623031	—	—	—	3.10	0.1220	56	110	3.1
17504411	1/8	—	—	3.18	0.1250	58	110	1/8
8623032	—	—	—	3.20	0.1260	58	110	3.2
8623033	—	—	—	3.30	0.1299	60	110	3.3
8623034	—	—	—	3.40	0.1339	62	115	3.4
8623035	—	—	—	3.50	0.1378	64	115	3.5
17504711	9/64	—	—	3.57	0.1406	64	115	9/64
8623036	—	—	—	3.60	0.1417	66	115	3.6
8623037	—	—	—	3.70	0.1457	68	120	3.7
8623038	—	25	—	3.80	0.1496	70	120	3.8
8623039	—	—	—	3.90	0.1535	70	120	3.9
17505311	5/32	—	—	3.97	0.1562	72	120	5/32
8623040	—	—	—	4.00	0.1575	72	120	4.0
8623041	—	—	—	4.10	0.1614	74	135	4.1
8623042	—	—	—	4.20	0.1654	76	135	4.2
8623043	—	—	—	4.30	0.1693	78	140	4.3
17505911	11/64	—	—	4.37	0.1719	78	140	11/64
8623044	—	—	—	4.40	0.1732	80	140	4.4
8623045	—	16	—	4.50	0.1772	82	140	4.5
8623046	—	—	—	4.60	0.1811	84	145	4.6
8623047	—	13	—	4.70	0.1850	86	145	4.7
17506511	3/16	—	—	4.76	0.1875	86	145	3/16
8623048	—	12	—	4.80	0.1890	86	145	4.8
8623049	—	—	—	4.90	0.1929	88	150	4.9
8623050	—	—	—	5.00	0.1969	90	150	5.0
8623051	—	—	—	5.10	0.2008	92	150	5.1
17507211	13/64	—	—	5.16	0.2031	92	150	13/64
8623052	—	—	—	5.20	0.2047	94	155	5.2
8623053	—	—	—	5.30	0.2087	96	155	5.3
8623054	—	—	—	5.40	0.2126	98	155	5.4
8623055	—	—	—	5.50	0.2165	100	155	5.5
17507711	7/32	—	—	5.56	0.2188	100	155	7/32
8623056	—	—	—	5.60	0.2205	102	160	5.6
8623057	—	—	—	5.70	0.2244	104	165	5.7
8623058	—	—	—	5.80	0.2283	106	165	5.8
17508111	—	—	—	5.95	0.2344	108	170	15/64

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List 1760 (Continued)

15D

SPEED FEED P266 | HSS-CO | WXL® | 40°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8623060	—	—	—	6.00	0.2362	108	170	6.0
8623062	—	—	—	6.20	0.2441	112	170	6.2
8623063	—	—	—	6.30	0.2480	114	175	6.3
17508511	1/4	—	E	6.35	0.2500	114	175	1/4
8623065	—	—	—	6.50	0.2559	118	200	6.5
8623066	—	—	—	6.60	0.2598	120	200	6.6
17508811	17/64	—	—	6.75	0.2656	120	200	17/64
8623068	—	—	—	6.80	0.2677	120	200	6.8
8623069	—	—	I	6.90	0.2717	124	200	6.9
8623070	—	—	—	7.00	0.2756	126	200	7.0
8623071	—	—	—	7.10	0.2795	126	200	7.1
17509111	9/32	—	—	7.14	0.2812	130	205	9/32
8623075	—	—	—	7.50	0.2953	136	205	7.5
17509411	19/64	—	—	7.54	0.2969	136	205	19/64
17509611	5/16	—	—	7.94	0.3125	144	215	5/16
8623080	—	—	—	8.00	0.3150	144	215	8.0
8623081	—	—	—	8.10	0.3189	146	215	8.1
8623082	—	—	P	8.20	0.3228	148	220	8.2
17509911	21/64	—	—	8.33	0.3281	150	220	21/64
8623085	—	—	—	8.50	0.3346	154	225	8.5
8623086	—	—	—	8.60	0.3386	156	225	8.6
17510211	11/32	—	—	8.73	0.3438	160	230	11/32
8623088	—	—	—	8.80	0.3465	160	230	8.8
8623090	—	—	—	9.00	0.3504	162	230	9.0
17510511	23/64	—	—	9.13	0.3594	165	235	23/64
8623093	—	—	—	9.30	0.3661	168	240	9.3
8623095	—	—	—	9.50	0.3740	172	240	9.5
17510711	3/8	—	—	9.53	0.3750	172	240	3/8
8623097	—	—	—	9.70	0.3819	176	245	9.7
8623098	—	—	W	9.80	0.3858	178	245	9.8
17511011	25/64	—	—	9.92	0.3906	180	250	25/64
8623100	—	—	—	10.00	0.3937	180	250	10.0
17511311	13/32	—	—	10.32	0.4062	185	260	13/32
8623105	—	—	—	10.50	0.4134	190	270	10.5
17511511	27/64	—	—	10.72	0.4219	195	275	27/64
8623110	—	—	—	11.00	0.4331	200	280	11.0
17511611	7/16	—	—	11.11	0.4375	200	280	7/16
8623115	—	—	—	11.50	0.4528	208	290	11.5
17511711	29/64	—	—	11.51	0.4531	210	290	29/64
8623118	—	—	—	11.80	0.4646	214	295	11.8
17511811	15/32	—	—	11.91	0.4688	215	295	15/32
8623120	—	—	—	12.00	0.4724	216	300	12.0
17512011	1/2	—	—	12.70	0.5000	230	310	1/2
17525711	17/32	—	—	13.49	0.5313	243	293	17/32
17525911	9/16	—	—	14.29	0.5625	257	307	9/16
17526111	45/64	—	—	17.86	0.7031	322	372	45/64

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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														
	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
1760	◎	◎	◎	◎	◎	○	○	○	◎	○	○		○	◎	○		

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List 1770

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20D



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8623216	—	—	—	1.60	0.0630	38	85	1.6
8623218	—	—	—	1.80	0.0709	42	85	1.8
17515311	5/64	—	—	1.98	0.0780	46	85	5/64
8623220	—	—	—	2.00	0.0787	46	85	2.0
8623221	—	—	—	2.10	0.0827	50	90	2.1
8623222	—	—	—	2.20	0.0866	52	90	2.2
8623223	—	—	—	2.30	0.0906	54	95	2.3
17516011	3/32	—	—	2.38	0.0937	56	95	3/32
8623224	—	—	—	2.40	0.0945	56	95	2.4
8623225	—	—	—	2.50	0.0984	58	100	2.5
8623226	—	—	—	2.60	0.1024	60	110	2.6
8623227	—	—	—	2.70	0.1063	64	115	2.7
17516711	7/64	—	—	2.78	0.1094	66	115	7/64
8623228	—	—	—	2.80	0.1102	66	115	2.8
8623229	—	—	—	2.90	0.1142	68	120	2.9
8623230	—	—	—	3.00	0.1181	70	120	3.0
8623231	—	—	—	3.10	0.1220	72	125	3.1
17517311	1/8	—	—	3.18	0.1250	74	125	1/8
8623232	—	—	—	3.20	0.1260	74	125	3.2
8623233	—	—	—	3.30	0.1299	76	125	3.3
8623234	—	—	—	3.40	0.1339	80	130	3.4
8623235	—	—	—	3.50	0.1378	82	130	3.5
17517611	9/64	—	—	3.57	0.1406	82	130	9/64
8623237	—	—	—	3.70	0.1457	86	135	3.7
8623238	—	25	—	3.80	0.1496	88	140	3.8
17518211	5/32	—	—	3.97	0.1562	92	140	5/32
8623240	—	—	—	4.00	0.1575	92	140	4.0
8623241	—	—	—	4.10	0.1614	96	155	4.1
8623242	—	—	—	4.20	0.1654	98	155	4.2
8623243	—	—	—	4.30	0.1693	100	160	4.3
17518811	11/64	—	—	4.37	0.1719	100	160	11/64
8623245	—	16	—	4.50	0.1772	104	165	4.5
8623246	—	—	—	4.60	0.1811	106	165	4.6
17519411	3/16	—	—	4.76	0.1875	110	170	3/16
8623248	—	12	—	4.80	0.1890	112	170	4.8
8623250	—	—	—	5.00	0.1969	116	175	5.0
8623251	—	—	—	5.10	0.2008	118	180	5.1
17520111	13/64	—	—	5.16	0.2031	120	180	13/64
8623252	—	—	—	5.20	0.2047	120	180	5.2
8623255	—	—	—	5.50	0.2165	128	185	5.5
17520611	7/32	—	—	5.56	0.2188	128	185	7/32
8623257	—	—	—	5.70	0.2244	132	190	5.7
8623258	—	—	—	5.80	0.2283	134	200	5.8
17521011	15/64	—	—	5.95	0.2344	138	200	15/64
8623260	—	—	—	6.00	0.2362	138	200	6.0
17521411	1/4	—	E	6.35	0.2500	146	200	1/4
8623265	—	—	—	6.50	0.2559	150	225	6.5
17521711	17/64	—	—	6.75	0.2656	156	225	17/64
8623270	—	—	—	7.00	0.2756	162	230	7.0
17522011	9/32	—	—	7.14	0.2812	164	235	9/32
8623275	—	—	—	7.50	0.2953	174	245	7.5
17522311	19/64	—	—	7.54	0.2969	174	245	19/64

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List 1770 (Continued)

20D

SPEED FEED P266 | HSS-CO | WXL® | 40°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
17522511	5/16	—	—	7.94	0.3125	184	255	5/16
8623280	—	—	—	8.00	0.3150	184	255	8.0
8623281	—	—	—	8.10	0.3189	188	255	8.1
8623282	—	—	P	8.20	0.32283	190	260	8.2
17522811	21/64	—	—	8.33	0.3281	192	260	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	275	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	230	300	10.0
17524211	13/32	—	—	10.32	0.4062	238	300	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	350	7/16
17524611	29/64	—	—	11.51	0.4531	265	350	29/64
17524711	15/32	—	—	11.91	0.4688	274	350	15/32
8623320	—	—	—	12.00	0.4724	276	350	12.0
17524911	1/2	—	—	12.70	0.5000	292	360	1/2
17526311	17/32	—	—	13.49	0.5313	310	360	17/32
17526511	9/16	—	—	14.29	0.5625	328	378	9/16

Packed: 1 pc.
Available WXL® coating only.

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														
	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
1770	▢	▢	▢	▢	▢	○	○	○	▢	○	○		○	▢	○		

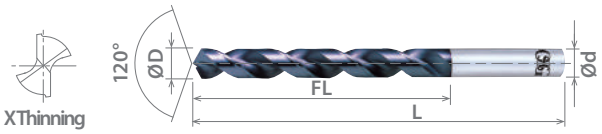
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List 1800

SPEED FEED P267 | HSSE | V | JOBBERS | 35°

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

Packed: 1 pc.
Available V coating only.

EXD

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List 1800 (Continued)

SPEED FEED P267 | HSSE | V | JOBBERS | 35°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
8594072	-	-	-	7.20	0.2835	69	109	7.2
8594073	-	-	-	7.30	0.2874	69	109	7.3
8594074	-	-	-	7.40	0.2913	69	109	7.4
8594075	-	-	-	7.50	0.2953	69	109	7.5
8594076	-	-	-	7.60	0.2992	75	117	7.6
8594077	-	-	-	7.70	0.3031	75	117	7.7
8594078	-	-	-	7.80	0.3071	75	117	7.8
8594079	-	-	-	7.90	0.3110	75	117	7.9
8594080	-	-	-	8.00	0.3150	75	117	8.0
8594081	-	-	-	8.10	0.3189	75	117	8.1
8594082	-	-	P	8.20	0.3228	75	117	8.2
8594083	-	-	-	8.30	0.3268	75	117	8.3
8594084	-	-	-	8.40	0.3307	75	117	8.4
8594085	-	-	-	8.50	0.3346	75	117	8.5
8594086	-	-	-	8.60	0.3386	81	125	8.6
8594087	-	-	-	8.70	0.3425	81	125	8.7
8594088	-	-	-	8.80	0.3465	81	125	8.8
8594089	-	-	-	8.90	0.3504	81	125	8.9
8594090	-	-	-	9.00	0.3543	81	125	9.0
8594091	-	-	-	9.10	0.3583	81	125	9.1
8594092	-	-	-	9.20	0.3622	81	125	9.2
8594093	-	-	-	9.30	0.3661	81	125	9.3
8594094	-	-	-	9.40	0.3701	81	125	9.4
8594095	-	-	-	9.50	0.3740	81	125	9.5
8594096	-	-	-	9.60	0.3780	87	133	9.6
8594097	-	-	-	9.70	0.3819	87	133	9.7
8594098	-	-	-	9.80	0.3858	87	133	9.8
8594099	-	-	W	9.90	0.3898	87	133	9.9
8594100	-	-	-	10.00	0.3937	87	133	10.0
8594101	-	-	-	10.10	0.3976	87	133	10.1
8594102	-	-	-	10.20	0.4016	87	133	10.2
8594103	-	-	-	10.30	0.4055	87	133	10.3
8594104	-	-	-	10.40	0.4094	87	133	10.4
8594105	-	-	-	10.50	0.4134	87	133	10.5
8594106	-	-	-	10.60	0.4173	87	133	10.6
8594107	-	-	-	10.70	0.4213	94	142	10.7
8594108	-	-	-	10.80	0.4252	94	142	10.8
8594109	-	-	-	10.90	0.4291	94	142	10.9
8594110	-	-	-	11.00	0.4331	94	142	11.0
8594111	-	-	-	11.10	0.4370	94	142	11.1
8594112	-	-	-	11.20	0.4409	94	142	11.2
8594113	-	-	-	11.30	0.4449	94	142	11.3
8594114	-	-	-	11.40	0.4488	94	142	11.4
8594115	-	-	-	11.50	0.4528	94	142	11.5
8594116	-	-	-	11.60	0.4567	94	142	11.6
8594117	-	-	-	11.70	0.4606	94	142	11.7
8594118	-	-	-	11.80	0.4646	94	142	11.8
8594119	-	-	-	11.90	0.4685	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	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
1800	▢	▢	▢	▢	▢			▢	▢	▢	▢						

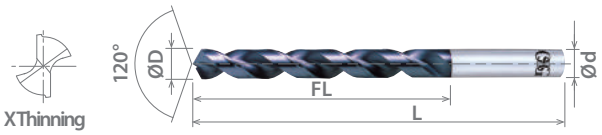
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List 1800 (Continued)

SPEED FEED P267 | HSSE | V | JOBBERS | 35°

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

Packed: 1 pc.
Available V coating only.

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														
	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
1800	○	○	○	○	○			○	○	○	○						

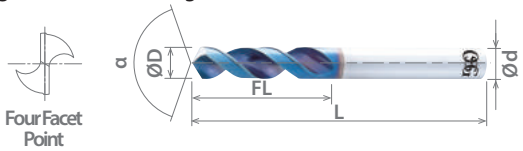
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List 1150

Designed for a Wide Range of Materials

SPEED FEED P268-269 | HSSE | WD1 | STUB | 40°



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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8650100	—	—	—	1.00	0.0394	6	38	3	140°
11507615	—	—	—	1.25	0.0492	8	40	3	140°
11509115	—	54	—	1.40	0.0550	9	41	3	140°
8650150	—	—	—	1.50	0.0591	9	41	3	140°
11511115	—	—	—	1.60	0.0630	10	42	3	140°
11511615	—	—	—	1.65	0.0650	10	42	3	140°
11512915	—	50	—	1.78	0.0700	11	43	3	140°
8650180	—	—	—	1.80	0.0709	11	43	3	140°
8650181	—	—	—	1.81	0.0713	11	43	3	140°
8650183	—	—	—	1.83	0.0720	11	43	3	140°
11513615	—	49	—	1.85	0.0730	11	43	3	140°
11514915	5/64	—	—	1.98	0.0781	12	44	3	140°
8650200	—	—	—	2.00	0.0787	12	44	3	130°
11515915	—	45	—	2.08	0.0820	12	44	3	130°
8650211	—	—	—	2.11	0.0831	12	44	3	130°
8650213	—	—	—	2.13	0.0839	13	45	3	130°
11516915	—	44	—	2.18	0.0860	13	45	3	130°
11517715	—	43	—	2.26	0.0890	13	45	3	130°
8650228	—	—	—	2.28	0.0898	13	45	3	130°
8650230	—	—	—	2.30	0.0906	13	45	3	130°
11518815	—	42	—	2.37	0.0935	14	46	3	130°
8650238	3/32	—	—	2.38	0.0937	14	46	3	130°
8650240	—	—	—	2.40	0.0945	14	46	3	130°
8650250	—	—	—	2.50	0.0984	14	46	3	130°
11520415	—	39	—	2.53	0.0995	14	46	3	130°
11520915	—	38	—	2.58	0.1015	14	46	3	130°
8650260	—	—	—	2.60	0.1024	14	46	3	130°
11521515	—	37	—	2.64	0.1040	14	46	3	130°
11522215	—	36	—	2.71	0.1065	16	48	3	130°
8650276	—	—	—	2.76	0.1087	16	48	3	130°
8650278	7/64	—	—	2.78	0.1094	16	48	3	130°
8650280	—	—	—	2.80	0.1102	16	48	3	130°
11523815	—	33	—	2.87	0.1130	16	48	3	130°
11524115	—	—	—	2.90	0.1142	16	48	3	130°
8650300	—	—	—	3.00	0.1181	16	48	3	130°
11526115	—	—	—	3.10	0.1220	18	50	4	130°
11526915	1/8	—	—	3.18	0.1250	18	50	4	130°
8650320	—	—	—	3.20	0.1260	18	50	4	130°
8650325	—	—	—	3.25	0.1280	18	50	4	130°
8650330	—	—	—	3.30	0.1299	18	50	4	130°
8650340	—	—	—	3.40	0.1339	20	52	4	130°
11529615	—	29	—	3.45	0.1360	20	52	4	130°

Packed: 1 pc.
Available WD1 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														
	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
1150	◎	◎	○	◎	◎	○	○	○	○	◎	◎	○	○	○			

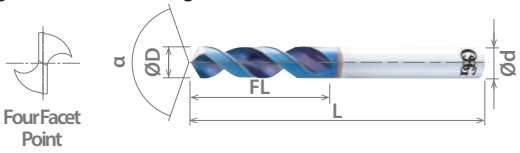
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List 1150 (Continued)

SPEED FEED P268-269 | HSSE | WD1 | STUB | 40°

Designed for a Wide Range of Materials



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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8650350	—	—	—	3.50	0.1378	20	52	4	130°
11530815	9/64	—	—	3.57	0.1406	20	52	4	130°
8650365	—	—	—	3.65	0.1437	20	52	4	130°
8650367	—	—	—	3.67	0.1445	20	52	4	130°
11533115	—	25	—	3.80	0.1495	22	54	4	130°
8650390	—	—	—	3.90	0.1535	22	54	4	130°
11534815	5/32	—	—	3.97	0.1562	22	54	4	130°
8650400	—	—	—	4.00	0.1575	22	54	4	130°
11535515	—	21	—	4.04	0.1590	22	66	6	120°
8650410	—	—	—	4.10	0.1614	22	66	6	120°
8650420	—	—	—	4.20	0.1654	22	66	6	120°
8650430	—	—	—	4.30	0.1693	24	68	6	120°
11538815	11/64	—	—	4.37	0.1719	24	68	6	120°
8650450	—	16	—	4.50	0.1772	24	68	6	120°
8650459	—	—	—	4.59	0.1807	24	68	6	120°
11541315	—	14	—	4.62	0.1820	24	68	6	120°
8650463	—	—	—	4.63	0.1823	24	68	6	120°
11542715	3/16	—	—	4.76	0.1875	26	70	6	120°
8650500	—	—	—	5.00	0.1969	26	70	6	120°
11545615	—	8	—	5.05	0.1990	26	70	6	120°
8650510	—	—	—	5.10	0.2008	26	70	6	120°
11546215	—	7	—	5.11	0.2010	26	70	6	120°
11546715	13/64	—	—	5.16	0.2031	26	70	6	120°
8650520	—	—	—	5.20	0.2047	26	70	6	120°
11549215	—	3	—	5.41	0.2130	28	72	6	120°
8650548	—	—	—	5.48	0.2157	28	72	6	120°
8650550	—	—	—	5.50	0.2165	28	72	6	120°
11550715	7/32	—	—	5.56	0.2188	28	72	6	120°
11551115	—	—	—	5.60	0.2205	28	72	6	120°
11553015	—	1	—	5.79	0.2280	28	72	6	120°
11554615	15/64	—	—	5.95	0.2344	28	72	6	120°
8650600	—	—	—	6.00	0.2362	28	72	6	120°
11555815	1/4	—	E	6.35	0.2500	31	75	8	120°
11556115	—	—	—	6.50	0.2559	31	75	8	120°
11556215	—	—	—	6.52	0.2567	31	75	8	120°
8650680	—	—	—	6.80	0.2677	34	78	8	120°
8650690	—	—	I	6.90	0.2717	34	78	8	120°
8650700	—	—	—	7.00	0.2756	34	78	8	120°
11557815	—	—	—	7.30	0.2874	34	78	8	120°
8650734	—	—	—	7.34	0.2890	34	78	8	120°
8650738	—	—	—	7.38	0.2906	34	78	8	120°
11558315	—	—	—	7.45	0.2933	34	78	8	120°
11559315	5/16	—	—	7.94	0.3125	37	81	8	120°
8650800	—	—	—	8.00	0.3150	37	81	8	120°
8650810	—	—	—	8.10	0.3188	37	87	10	120°
11559915	—	—	P	8.20	0.3230	37	87	10	120°
11560415	—	—	—	8.43	0.3319	37	87	10	120°
8650850	—	—	—	8.50	0.3346	37	87	10	120°
8650860	—	—	—	8.60	0.3386	40	90	10	120°
8650880	—	—	—	8.80	0.3465	40	90	10	120°
11561315	—	—	—	8.83	0.3476	40	90	10	120°
8650900	—	—	—	9.00	0.3543	40	90	10	120°

Packed: 1 pc.
Available WD1 coating only.

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1150 (Continued)

SPEED FEED P268-269 | HSSE | WD1 | STUB | 40°

Designed for a Wide Range of Materials

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
11561815	—	—	—	9.05	0.3563	40	90	10	120°
8650918	—	—	—	9.18	0.3614	40	90	10	120°
8650920	—	—	—	9.20	0.3622	40	90	10	120°
8650924	—	—	—	9.24	0.3638	40	90	10	120°
8650934	—	—	—	9.34	0.3677	40	90	10	120°
8650936	—	—	—	9.36	0.3685	40	90	10	120°
11563215	3/8	—	—	9.53	0.3750	40	90	10	120°
11564115	25/64	—	—	9.92	0.3906	43	93	10	120°
8651000	—	—	—	10.00	0.3937	43	93	10	120°
11564715	—	—	—	10.20	0.4016	43	100	12	120°
8651030	—	—	—	10.30	0.4055	43	100	12	120°
11565015	13/32	—	—	10.32	0.4062	43	100	12	120°
8651040	—	—	—	10.40	0.4094	43	100	12	120°
8651050	—	—	—	10.50	0.4134	43	100	12	120°
11565915	27/64	—	—	10.71	0.4219	47	104	12	120°
8651100	—	—	—	11.00	0.4331	47	104	12	120°
11566815	7/16	—	—	11.11	0.4375	47	104	12	120°
11567715	29/64	—	—	11.51	0.4531	47	104	12	120°
11568415	—	—	—	11.85	0.4665	51	108	12	120°
8651200	—	—	—	12.00	0.4724	51	108	12	120°
11568815	—	—	—	12.10	0.4764	51	108	12	120°
11569415	1/2	—	—	12.70	0.5000	51	108	12	120°

Packed: 1 pc.
Available WD1 coating only.

EXD

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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	
1150	◎	◎	○	◎	◎	○	○	○	○	◎	◎	○	○	○				

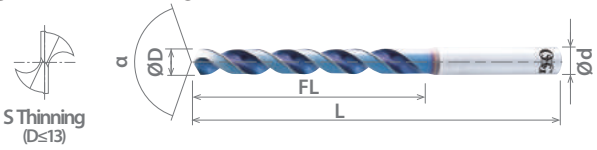
○ good ◎ best

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List 1650

Designed for a Wide Range of Materials

SPEED FEED P268-269 | HSSE | WD1 | JOBBERS | 40°



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	Overall Length	Shank Diameter	Point Angle
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8655200	—	—	—	2.00	0.0787	24	56	3	130°
16502715	—	43	—	2.26	0.0890	27	59	3	130°
8655230	—	—	—	2.30	0.0906	27	59	3	130°
16503915	3/32	—	—	2.38	0.0938	30	62	3	130°
8655250	—	—	—	2.50	0.0984	30	62	3	130°
16505915	—	38	—	2.58	0.1015	30	62	3	130°
8655260	—	—	—	2.60	0.1024	30	62	3	130°
8655280	—	—	—	2.80	0.1102	33	65	3	130°
16508815	—	33	—	2.87	0.1130	33	65	3	130°
8655300	—	—	—	3.00	0.1181	33	65	3	130°
16511915	1/8	—	—	3.18	0.1250	36	68	4	130°
8655330	—	—	—	3.30	0.1299	36	68	4	130°
8655340	—	—	—	3.40	0.1339	39	71	4	130°
16514615	—	29	—	3.45	0.1360	39	71	4	130°
8655350	—	—	—	3.50	0.1378	39	71	4	130°
16515815	9/64	—	—	3.57	0.1406	39	71	4	130°
16518115	—	25	—	3.80	0.1495	43	75	4	130°
16519815	5/32	—	—	3.97	0.1562	43	75	4	130°
8655400	—	—	—	4.00	0.1575	43	75	4	130°
16520515	—	21	—	4.04	0.1590	43	87	6	120°
8655420	—	—	—	4.20	0.1654	43	87	6	120°
8655430	—	—	—	4.30	0.1693	47	91	6	120°
8655450	—	16	—	4.50	0.1772	47	91	6	120°
16527715	3/16	—	—	4.76	0.1875	52	96	6	120°
8655500	—	—	—	5.00	0.1969	52	96	6	120°
8655510	—	—	—	5.10	0.2008	52	96	6	120°
16531215	—	7	—	5.11	0.2010	52	96	6	120°
16531715	13/64	—	—	5.16	0.2031	52	96	6	120°
8655520	—	—	—	5.20	0.2047	52	96	6	120°
16534215	—	3	—	5.41	0.2130	57	101	6	120°
8655550	—	—	—	5.50	0.2165	57	101	6	120°
16535715	7/32	—	—	5.56	0.2188	57	101	6	120°
8655600	—	—	—	6.00	0.2362	57	101	6	120°
16540815	1/4	—	E	6.35	0.2500	63	107	8	120°
8655680	—	—	—	6.80	0.2677	69	113	8	120°
8655690	—	—	I	6.90	0.2717	69	113	8	120°
8655700	—	—	—	7.00	0.2756	69	113	8	120°
16544015	5/16			7.94	0.3125	75	119	8	120°
8655800	—	—	—	8.00	0.3150	75	119	8	120°
8655850	—	—	—	8.50	0.3346	75	125	10	120°
8655860	—	—	—	8.60	0.3386	81	131	10	120°
8655880	—	—	—	8.80	0.3465	81	131	10	120°
8655900	—	—	—	9.00	0.3543	81	131	10	120°
16547315	3/8			9.53	0.3750	81	131	10	120°
8656000	—	—	—	10.00	0.3937	87	137	10	120°
8656030	—	—	—	10.30	0.4055	87	144	12	120°
8656040	—	—	—	10.40	0.4094	87	144	12	120°

Packed: 1 pc.
Available WD1 coating only.

EXD

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List 1650 (Continued)

SPEED FEED P268-269 | HSSE | WD1 | JOBBERS | 40°

Designed for a Wide Range of Materials

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

Packed: 1 pc.
Available WD1 coating only.

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														
	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
1650	◎	◎	○	◎	◎	○	○	○	○	◎	◎	○	○	○			

○ good ◎ best

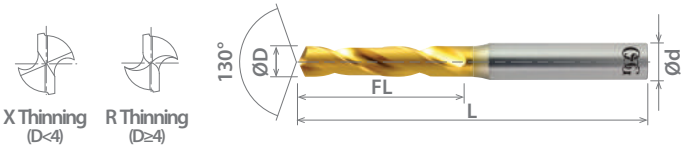
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List 1000

Ideal for General Applications

SPEED FEED P270 | HSS-CO | TiN | STUB | 25°

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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
10078505	-	47	-	1.99	0.0785	11/16	1-15/16	1/8
10081005	-	46	-	2.06	0.0810	3/4	2	1/8
10082005	-	45	-	2.08	0.0820	3/4	2	1/8
10086005	-	44	-	2.18	0.0860	3/4	2	1/8
10089005	-	43	-	2.26	0.0890	3/4	2	1/8
10093505	-	42	-	2.37	0.0935	3/4	2	1/8
10093805	3/32	-	-	2.38	0.0938	3/4	2	1/8
10096005	-	41	-	2.44	0.0960	13/16	2-1/16	1/8
10098005	-	40	-	2.49	0.0980	13/16	2-1/16	1/8
10099505	-	39	-	2.53	0.0995	13/16	2-1/4	3/16
10101505	-	38	-	2.58	0.1015	13/16	2-1/4	3/16
10104005	-	37	-	2.64	0.1040	13/16	2-1/4	3/16
10106505	-	36	-	2.71	0.1065	13/16	2-1/4	3/16
10109405	7/64	-	-	2.78	0.1094	13/16	2-1/4	3/16
10110005	-	35	-	2.79	0.1100	7/8	2-5/16	3/16
10111005	-	34	-	2.82	0.1110	7/8	2-5/16	3/16
10113005	-	33	-	2.87	0.1130	7/8	2-5/16	3/16
10116005	-	32	-	2.95	0.1160	7/8	2-5/16	3/16
10120005	-	31	-	3.05	0.1200	7/8	2-5/16	3/16
10125005	1/8	-	-	3.18	0.1250	7/8	2-5/16	3/16
10128505	-	30	-	3.26	0.1285	15/16	2-3/8	3/16
10136005	-	29	-	3.45	0.1360	15/16	2-3/8	3/16
10140505	-	28	-	3.57	0.1405	15/16	2-3/8	3/16
10140605	9/64	-	-	3.57	0.1406	15/16	2-3/8	3/16
10144005	-	27	-	3.66	0.1440	1	2-7/16	3/16
10147005	-	26	-	3.73	0.1470	1	2-7/16	3/16
10149505	-	25	-	3.80	0.1495	1	2-7/16	3/16
10152005	-	24	-	3.86	0.1520	1	2-7/16	3/16
10154005	-	23	-	3.91	0.1540	1	2-7/16	3/16
10156205	5/32	-	-	3.97	0.1562	1	2-7/16	3/16
10157005	-	22	-	3.99	0.1570	1-1/16	2-1/2	3/16
10159005	-	21	-	4.04	0.1590	1-1/16	2-1/2	3/16
10161005	-	20	-	4.09	0.1610	1-1/16	2-1/2	3/16
10166005	-	19	-	4.22	0.1660	1-1/16	2-1/2	3/16
10169505	-	18	-	4.31	0.1695	1-1/16	2-1/2	3/16
10171905	11/64	-	-	4.37	0.1719	1-1/16	2-1/2	3/16
10173005	-	17	-	4.39	0.1730	1-1/8	2-9/16	3/16
10177005	-	16	-	4.50	0.1770	1-1/8	2-9/16	3/16
10180005	-	15	-	4.57	0.1800	1-1/8	2-9/16	3/16
10182005	-	14	-	4.62	0.1820	1-1/8	2-9/16	3/16
10185005	-	13	-	4.70	0.1850	1-1/8	2-9/16	3/16
10187505	3/16	-	-	4.76	0.1875	1-1/8	2-9/16	3/16
10189005	-	12	-	4.80	0.1890	1-3/16	3	1/4
10191005	-	11	-	4.85	0.1910	1-3/16	3	1/4
10193505	-	10	-	4.92	0.1935	1-3/16	3	1/4
10196005	-	9	-	4.98	0.1960	1-3/16	3	1/4
10199005	-	8	-	5.05	0.1990	1-3/16	3	1/4

Packed: 1 pc.
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EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1000 (Continued)

Ideal for General Applications

SPEED FEED P270 | HSS-CO | TiN | STUB | 25°

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
10201005	-	7	-	5.11	0.2010	1-3/16	3	1/4
10203105	13/64	-	-	5.16	0.2031	1-3/16	3	1/4
10204005	-	6	-	5.18	0.2040	1-1/4	3-1/16	1/4
10205505	-	5	-	5.22	0.2055	1-1/4	3-1/16	1/4
10209005	-	4	-	5.31	0.2090	1-1/4	3-1/16	1/4
10213005	-	3	-	5.41	0.2130	1-1/4	3-1/16	1/4
10218805	7/32	-	-	5.56	0.2188	1-1/4	3-1/16	1/4
10221005	-	2	-	5.61	0.2210	1-5/16	3-1/8	1/4
10228005	-	1	-	5.79	0.2280	1-5/16	3-1/8	1/4
10234005	-	-	A	5.94	0.2340	1-5/16	3-1/8	1/4
10234405	15/64	-	-	5.95	0.2344	1-5/16	3-1/8	1/4
10238005	-	-	B	6.05	0.2380	1-3/8	3-3/16	1/4
10242005	-	-	C	6.15	0.2420	1-3/8	3-3/16	1/4
10246005	-	-	D	6.25	0.2460	1-3/8	3-3/16	1/4
10250005	1/4	-	E	6.35	0.2500	1-3/8	3-3/16	1/4
10257005	-	-	F	6.53	0.2570	1-7/16	3-1/4	3/8
10261005	-	-	G	6.63	0.2610	1-7/16	3-1/4	3/8
10265605	17/64	-	-	6.75	0.2656	1-7/16	3-1/4	3/8
10272005	-	-	I	6.91	0.2720	1-1/2	3-5/16	3/8
10277005	-	-	J	7.04	0.2770	1-1/2	3-5/16	3/8
10281205	9/32	-	-	7.14	0.2812	1-1/2	3-5/16	3/8
10290005	-	-	L	7.37	0.2900	1-9/16	3-3/8	3/8
10295005	-	-	M	7.49	0.2950	1-9/16	3-3/8	3/8
10296905	19/64	-	-	7.54	0.2969	1-9/16	3-3/8	3/8
10302005	-	-	N	7.67	0.3020	1-5/8	3-7/16	3/8
10312505	5/16	-	-	7.94	0.3125	1-5/8	3-7/16	3/8
10316005	-	-	O	8.03	0.3160	1-11/16	3-1/2	3/8
10323005	-	-	P	8.20	0.3230	1-11/16	3-1/2	3/8
10328105	21/64	-	-	8.33	0.3281	1-11/16	3-1/2	3/8
10332005	-	-	Q	8.43	0.3320	1-11/16	3-1/2	3/8
10339005	-	-	R	8.61	0.3390	1-11/16	3-1/2	3/8
10343805	11/32	-	-	8.73	0.3438	1-11/16	3-1/2	3/8
10348005	-	-	S	8.84	0.3480	1-3/4	3-9/16	3/8
10358005	-	-	T	9.09	0.3580	1-3/4	3-9/16	3/8
10359405	23/64	-	-	9.13	0.3594	1-3/4	3-9/16	3/8
10368005	-	-	U	9.35	0.3680	1-13/16	3-5/8	3/8
10375005	3/8	-	-	9.53	0.3750	1-13/16	3-5/8	3/8
10377005	-	-	V	9.58	0.3770	1-7/8	3-31/32	1/2
10386005	-	-	W	9.80	0.3860	1-7/8	3-31/32	1/2
10390605	25/64	-	-	9.92	0.3906	1-7/8	3-31/32	1/2
10397005	-	-	X	10.08	0.3970	1-15/16	4-1/32	1/2
10404005	-	-	Y	10.26	0.4040	1-15/16	4-1/32	1/2
10406205	13/32	-	-	10.32	0.4062	1-15/16	4-1/32	1/2

Packed: 1 pc.
Available TiN 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														
	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
1000	◎	◎	○	◎	◎			○	○		○			○	○		

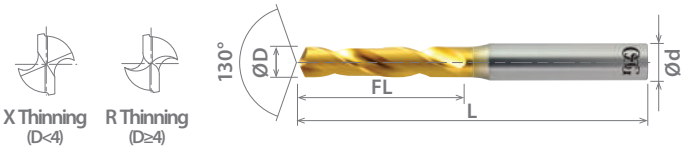
○ good ◎ best

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List 1000 (Continued)

SPEED FEED P270 | HSS-CO | TiN | STUB | 25°

Ideal for General Applications



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	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
10413005	-	-	Z	10.49	0.4130	2	4-3/32	1/2
10421905	27/64	-	-	10.72	0.4219	2	4-3/32	1/2
10437505	7/16	-	-	11.11	0.4375	2-1/16	4-5/32	1/2
10453105	29/64	-	-	11.51	0.4531	2-1/8	4-7/32	1/2
10468805	15/32	-	-	11.91	0.4688	2-1/8	4-7/32	1/2
10484405	31/64	-	-	12.30	0.4844	2-3/16	4-9/32	1/2
10500005	1/2	-	-	12.70	0.5000	2-1/4	4-11/32	1/2

Packed: 1 pc.
Available TiN coating only.

EXD

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
1000	◎	◎	○	◎	◎			○	○		○			○	○		

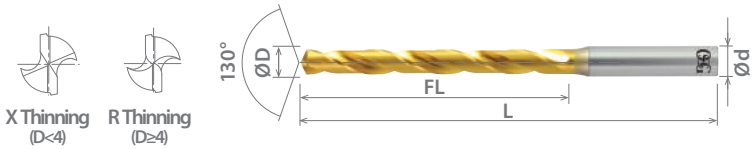
○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1500

Ideal for General Applications

SPEED FEED P270 | HSS-CO | TiN | JOBBERS | 30°



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	FL	L	d
15078505	-	47	-	1.99	0.0785	1	2-1/4	1/8
15081005	-	46	-	2.06	0.0810	1-1/8	2-3/8	1/8
15082005	-	45	-	2.08	0.0820	1-1/8	2-3/8	1/8
15086005	-	44	-	2.18	0.0860	1-1/8	2-3/8	1/8
15089005	-	43	-	2.26	0.0890	1-1/4	2-1/2	1/8
15093505	-	42	-	2.37	0.0935	1-1/4	2-1/2	1/8
15093805	3/32	-	-	2.38	0.0938	1-1/4	2-1/2	1/8
15096005	-	41	-	2.44	0.0960	1-3/8	2-5/8	1/8
15098005	-	40	-	2.49	0.0980	1-3/8	2-5/8	1/8
15099505	-	39	-	2.53	0.0995	1-3/8	2-13/16	3/16
15101505	-	38	-	2.58	0.1015	1-7/16	2-7/8	3/16
15104005	-	37	-	2.64	0.1040	1-7/16	2-7/8	3/16
15106505	-	36	-	2.71	0.1065	1-7/16	2-7/8	3/16
15109405	7/64	-	-	2.78	0.1094	1-1/2	2-15/16	3/16
15110005	-	35	-	2.79	0.1100	1-1/2	2-15/16	3/16
15111005	-	34	-	2.82	0.1110	1-1/2	2-15/16	3/16
15113005	-	33	-	2.87	0.1130	1-1/2	2-15/16	3/16
15116005	-	32	-	2.95	0.1160	1-5/8	3-1/16	3/16
15120005	-	31	-	3.05	0.1200	1-5/8	3-1/16	3/16
15125005	1/8	-	-	3.18	0.1250	1-5/8	3-1/16	3/16
15128505	-	30	-	3.26	0.1285	1-5/8	3-1/16	3/16
15136005	-	29	-	3.45	0.1360	1-3/4	3-3/16	3/16
15140505	-	28	-	3.57	0.1405	1-3/4	3-3/16	3/16
15140605	9/64	-	-	3.57	0.1406	1-3/4	3-3/16	3/16
15144005	-	27	-	3.66	0.1440	1-7/8	3-5/16	3/16
15147005	-	26	-	3.73	0.1470	1-7/8	3-5/16	3/16
15149505	-	25	-	3.80	0.1495	1-7/8	3-5/16	3/16
15152005	-	24	-	3.86	0.1520	2	3-7/16	3/16
15154005	-	23	-	3.91	0.1540	2	3-7/16	3/16
15156205	5/32	-	-	3.97	0.1562	2	3-7/16	3/16
15157005	-	22	-	3.99	0.1570	2	3-7/16	3/16
15159005	-	21	-	4.04	0.1590	2-1/8	3-9/16	3/16
15161005	-	20	-	4.09	0.1610	2-1/8	3-9/16	3/16
15166005	-	19	-	4.22	0.1660	2-1/8	3-9/16	3/16
15169505	-	18	-	4.31	0.1695	2-1/8	3-9/16	3/16
15171905	11/64	-	-	4.37	0.1719	2-1/8	3-9/16	3/16
15173005	-	17	-	4.39	0.1730	2-3/16	3-5/8	3/16
15177005	-	16	-	4.50	0.1770	2-3/16	3-5/8	3/16

Packed: 1 pc.
Available TiN 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														
	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
1500	◎	◎	○	◎	◎			○	○		○			○			

○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1500 (Continued)

Ideal for General Applications

SPEED FEED P270 | HSS-CO | TiN | JOBBERS | 30°



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

Packed: 1 pc.
Available TiN coating only.

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1500 (Continued)

SPEED FEED P270 | HSS-CO | TiN | JOBBERS | 30°

Ideal for General Applications

EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
15386005	-	-	W	9.80	0.3860	3-3/4	5-27/32	1/2
15390605	25/64	-	-	9.92	0.3906	3-3/4	5-27/32	1/2
15397005	-	-	X	10.08	0.3970	3-3/4	5-27/32	1/2
15404005	-	-	Y	10.26	0.4040	3-7/8	5-31/32	1/2
15406205	13/32	-	-	10.32	0.4062	3-7/8	5-31/32	1/2
15413005	-	-	Z	10.49	0.4130	3-7/8	5-31/32	1/2
15421905	27/64	-	-	10.72	0.4219	3-15/16	6-1/32	1/2
15437505	7/16	-	-	11.11	0.4375	4-1/16	6-5/32	1/2
15453105	29/64	-	-	11.51	0.4531	4-3/16	6-9/32	1/2
15468805	15/32	-	-	11.91	0.4688	4-5/16	6-13/32	1/2
15484405	31/64	-	-	12.30	0.4844	4-3/8	6-15/32	1/2
15500005	1/2	-	-	12.70	0.5000	4-1/2	6-19/32	1/2
15531205	17/32	-	-	13.49	0.5312	4-13/16	7-3/16	5/8
15562505	9/16	-	-	14.29	0.5625	4-13/16	7-3/16	5/8
15578105	37/64	-	-	14.68	0.5781	4-13/16	7-3/16	5/8
15593805	19/32	-	-	15.08	0.5938	5-3/16	7-27/32	3/4
15625005	5/8	-	-	15.88	0.6250	5-3/16	7-27/32	3/4
15656205	21/32	-	-	16.67	0.6563	5-3/16	7-27/32	3/4
15687505	11/16	-	-	17.46	0.6875	5-5/8	8-9/32	3/4
15718805	23/32	-	-	18.26	0.7188	5-5/8	9-9/32	7/8
15750005	3/4	-	-	19.05	0.7500	5-7/8	8-17/32	7/8

Packed: 1 pc.
Available TiN coating only.

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														
	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
1500	◎	◎	○	◎	◎			○	○		○			○			

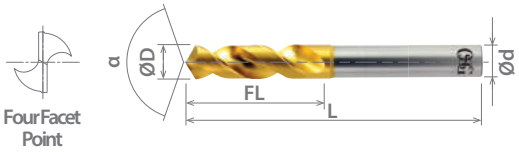
○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1100

Ideal for Stainless Steel

SPEED FEED P271 | 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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
61505	6150511	-	-	-	0.50	0.0197	3	38	3	150°
8595051	859505111	-	76	-	0.51	0.0201	3	38	3	150°
8595052	-	-	-	-	0.52	0.0205	3	38	3	150°
8595053	-	-	75	-	0.53	0.0209	3	38	3	150°
8595054	-	-	-	-	0.54	0.0213	3.5	38	3	150°
8595055	-	-	-	-	0.55	0.0217	3.5	38	3	150°
8595056	-	-	-	-	0.56	0.0220	3.5	38	3	150°
8595057	859505711	-	74	-	0.57	0.0224	3.5	38	3	150°
8595058	-	-	-	-	0.58	0.0228	3.5	38	3	150°
8595059	-	-	-	-	0.59	0.0232	3.5	38	3	150°
61506	6150611	-	-	-	0.60	0.0236	3.5	38	3	150°
8595061	-	-	73	-	0.61	0.0240	4	38	3	150°
8595062	-	-	-	-	0.62	0.0244	4	38	3	150°
8595063	-	-	-	-	0.63	0.0248	4	38	3	150°
8595064	859506411	-	72	-	0.64	0.0252	4	38	3	150°
8595065	859506511	-	-	-	0.65	0.0256	4	38	3	150°
8595066	-	-	71	-	0.66	0.0260	4	38	3	150°
8595067	-	-	-	-	0.67	0.0264	4	38	3	150°
8595068	-	-	-	-	0.68	0.0268	4.5	38	3	150°
8595069	-	-	-	-	0.69	0.0272	4.5	38	3	150°
61507	6150711	-	-	-	0.70	0.0276	4.5	38	3	150°
8595071	859507111	-	70	-	0.71	0.0280	4.5	38	3	150°
8595072	-	-	-	-	0.72	0.0283	4.5	38	3	150°
8595073	-	-	-	-	0.73	0.0287	4.5	38	3	150°
8595074	-	-	69	-	0.74	0.0291	4.5	38	3	150°
8595075	-	-	-	-	0.75	0.0295	4.5	38	3	150°
8595076	-	-	-	-	0.76	0.0299	5	38	3	150°
8595077	-	-	-	-	0.77	0.0303	5	38	3	150°
8595078	-	-	-	-	0.78	0.0307	5	38	3	150°
8595079	859507911	1/32	68	-	0.79	0.0311	5	38	3	150°
61508	-	-	-	-	0.80	0.0315	5	38	3	150°
8595081	859508111	-	67	-	0.81	0.0319	5	38	3	150°
8595082	-	-	-	-	0.82	0.0323	5	38	3	150°
8595083	-	-	-	-	0.83	0.0327	5	38	3	150°
8595084	859508411	-	66	-	0.84	0.0331	5	38	3	150°
8595085	-	-	-	-	0.85	0.0335	5	38	3	150°
8595086	-	-	-	-	0.86	0.0339	5.5	38	3	150°
8595087	-	-	-	-	0.87	0.0343	5.5	38	3	150°
8595088	-	-	-	-	0.88	0.0346	5.5	38	3	150°
8595089	-	-	65	-	0.89	0.0350	5.5	38	3	150°
61509	-	-	-	-	0.90	0.0354	5.5	38	3	150°
8595091	859509111	-	64	-	0.91	0.0358	5.5	38	3	150°
8595092	-	-	-	-	0.92	0.0362	5.5	38	3	150°
8595093	-	-	-	-	0.93	0.0366	5.5	38	3	150°
8595094	-	-	63	-	0.94	0.0370	5.5	38	3	150°
8595095	-	-	-	-	0.95	0.0374	5.5	38	3	150°

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

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595096	-	-	-	-	0.96	0.0378	6	38	3	150°
8595097	-	-	62	-	0.97	0.0382	6	38	3	150°
8595098	-	-	-	-	0.98	0.0386	6	38	3	150°
8595099	-	-	61	-	0.99	0.0390	6	38	3	150°
61510	6151011	-	-	-	1.00	0.0394	6	38	3	140°
8595101	-	-	-	-	1.01	0.0398	6	38	3	140°
8595102	859510211	-	60	-	1.02	0.0402	6	38	3	140°
8595103	859510311	-	-	-	1.03	0.0406	6	38	3	140°
8595104	-	-	59	-	1.04	0.0409	6	38	3	140°
8595105	-	-	-	-	1.05	0.0413	6	38	3	140°
8595106	-	-	-	-	1.06	0.0417	6	38	3	140°
8595107	-	-	58	-	1.07	0.0421	7	39	3	140°
8595108	-	-	-	-	1.08	0.0425	7	39	3	140°
8595109	859510911	-	57	-	1.09	0.0429	7	39	3	140°
61511	6151111	-	-	-	1.10	0.0433	7	39	3	140°
8595111	-	-	-	-	1.11	0.0437	7	39	3	140°
8595112	-	-	-	-	1.12	0.0441	7	39	3	140°
8595113	-	-	-	-	1.13	0.0445	7	39	3	140°
8595114	859511411	-	-	-	1.14	0.0449	7	39	3	140°
8595115	-	-	-	-	1.15	0.0453	7	39	3	140°
8595116	-	-	-	-	1.16	0.0457	7	39	3	140°
8595117	-	-	-	-	1.17	0.0461	7	39	3	140°
8595118	859511811	-	56	-	1.18	0.0465	7	39	3	140°
8595119	859511911	3/64	-	-	1.19	0.0469	8	40	3	140°
61512	6151211	-	-	-	1.20	0.0472	8	40	3	140°
8595121	-	-	-	-	1.21	0.0476	8	40	3	140°
8595122	859512211	-	-	-	1.22	0.0480	8	40	3	140°
8595123	-	-	-	-	1.23	0.0484	8	40	3	140°
8595124	-	-	-	-	1.24	0.0488	8	40	3	140°
8595125	859512511	-	-	-	1.25	0.0492	8	40	3	140°
8595126	-	-	-	-	1.26	0.0496	8	40	3	140°
8595127	859512711	-	-	-	1.27	0.0500	8	40	3	140°
8595128	-	-	-	-	1.28	0.0504	8	40	3	140°
8595129	-	-	-	-	1.29	0.0508	8	40	3	140°
61513	-	-	-	-	1.30	0.0512	8	40	3	140°
8595131	-	-	-	-	1.31	0.0516	8	40	3	140°
8595132	859513211	-	55	-	1.32	0.0520	8	40	3	140°
8595133	-	-	-	-	1.33	0.0524	9	41	3	140°
8595134	-	-	-	-	1.34	0.0528	9	41	3	140°
8595135	859513511	-	-	-	1.35	0.0531	9	41	3	140°
8595136	-	-	-	-	1.36	0.0535	9	41	3	140°
8595137	-	-	-	-	1.37	0.0539	9	41	3	140°
8595138	-	-	-	-	1.38	0.0543	9	41	3	140°

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														
	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
1100	◎	○				◎	◎	○		◎	◎						

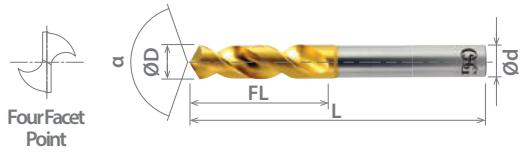
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595139	-	-	-	-	1.39	0.0547	9	41	3	140°
61514	6151411	-	54	-	1.40	0.0551	9	41	3	140°
8595141	859514111	-	-	-	1.41	0.0555	9	41	3	140°
8595142	-	-	-	-	1.42	0.0559	9	41	3	140°
8595143	-	-	-	-	1.43	0.0563	9	41	3	140°
8595144	859514411	-	-	-	1.44	0.0567	9	41	3	140°
8595145	859514511	-	-	-	1.45	0.0571	9	41	3	140°
8595146	-	-	-	-	1.46	0.0575	9	41	3	140°
8595147	-	-	-	-	1.47	0.0579	9	41	3	140°
8595148	-	-	-	-	1.48	0.0583	9	41	3	140°
8595149	-	-	-	-	1.49	0.0587	9	41	3	140°
61515	6151511	-	-	-	1.50	0.0591	9	41	3	140°
8595151	859515111	-	53	-	1.51	0.0594	10	42	3	140°
8595152	859515211	-	-	-	1.52	0.0598	10	42	3	140°
8595153	-	-	-	-	1.53	0.0602	10	42	3	140°
8595154	-	-	-	-	1.54	0.0606	10	42	3	140°
8595155	859515511	-	-	-	1.55	0.0610	10	42	3	140°
8595156	859515611	-	-	-	1.56	0.0614	10	42	3	140°
8595157	859515711	-	-	-	1.57	0.0618	10	42	3	140°
8595158	859515811	-	-	-	1.58	0.0622	10	42	3	140°
8595159	859515911	1/16	-	-	1.59	0.0626	10	42	3	140°
61516	6151611	-	-	-	1.60	0.0630	10	42	3	140°
8595161	859516111	-	52	-	1.61	0.0634	10	42	3	140°
8595162	859516211	-	-	-	1.62	0.0638	10	42	3	140°
8595163	-	-	-	-	1.63	0.0642	10	42	3	140°
8595164	-	-	-	-	1.64	0.0646	10	42	3	140°
8595165	859516511	-	-	-	1.65	0.0650	10	42	3	140°
8595166	-	-	-	-	1.66	0.0654	10	42	3	140°
8595167	-	-	-	-	1.67	0.0657	10	42	3	140°
8595168	-	-	-	-	1.68	0.0661	10	42	3	140°
8595169	-	-	-	-	1.69	0.0665	10	42	3	140°
61517	6151711	-	51	-	1.70	0.0669	10	42	3	140°
8595171	859517111	-	-	-	1.71	0.0673	11	43	3	140°
8595172	859517211	-	-	-	1.72	0.0677	11	43	3	140°
8595173	-	-	-	-	1.73	0.0681	11	43	3	140°
8595174	859517411	-	-	-	1.74	0.0685	11	43	3	140°
8595175	859517511	-	-	-	1.75	0.0689	11	43	3	140°
8595176	859517611	-	-	-	1.76	0.0693	11	43	3	140°
8595177	859517711	-	-	-	1.77	0.0697	11	43	3	140°
8595178	859517811	-	50	-	1.78	0.0701	11	43	3	140°
8595179	-	-	-	-	1.79	0.0705	11	43	3	140°
61518	6151811	-	-	-	1.80	0.0709	11	43	3	140°
8595181	-	-	-	-	1.81	0.0713	11	43	3	140°
8595182	-	-	-	-	1.82	0.0717	11	43	3	140°
8595183	-	-	-	-	1.83	0.0720	11	43	3	140°
8595184	-	-	-	-	1.84	0.0724	11	43	3	140°

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

EXD

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List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595185	859518511	-	49	-	1.85	0.0728	11	43	3	140°
8595186	-	-	-	-	1.86	0.0732	11	43	3	140°
8595187	-	-	-	-	1.87	0.0736	11	43	3	140°
8595188	-	-	-	-	1.88	0.0740	11	43	3	140°
8595189	-	-	-	-	1.89	0.0744	11	43	3	140°
61519	6151911	-	-	-	1.90	0.0748	11	43	3	140°
8595191	859519111	-	-	-	1.91	0.0752	12	44	3	140°
8595192	-	-	-	-	1.92	0.0756	12	44	3	140°
8595193	-	-	48	-	1.93	0.0760	12	44	3	140°
8595194	-	-	-	-	1.94	0.0764	12	44	3	140°
8595195	859519511	-	-	-	1.95	0.0768	12	44	3	140°
8595196	-	-	-	-	1.96	0.0772	12	44	3	140°
8595197	859519711	-	-	-	1.97	0.0776	12	44	3	140°
8595198	859519811	5/64	-	-	1.98	0.0780	12	44	3	140°
8595199	859519911	-	47	-	1.99	0.0783	12	44	3	140°
61520	6152011	-	-	-	2.00	0.0787	12	44	3	130°
8595201	-	-	-	-	2.01	0.0791	12	44	3	130°
8595202	-	-	-	-	2.02	0.0795	12	44	3	130°
8595203	-	-	-	-	2.03	0.0799	12	44	3	130°
8595204	-	-	-	-	2.04	0.0803	12	44	3	130°
8595205	859520511	-	-	-	2.05	0.0807	12	44	3	130°
8595206	-	-	46	-	2.06	0.0811	12	44	3	130°
8595207	-	-	-	-	2.07	0.0815	12	44	3	130°
8595208	859520811	-	45	-	2.08	0.0819	12	44	3	130°
8595209	-	-	-	-	2.09	0.0823	12	44	3	130°
61521	-	-	-	-	2.10	0.0827	12	44	3	130°
8595211	-	-	-	-	2.11	0.0831	12	44	3	130°
8595212	-	-	-	-	2.12	0.0835	12	44	3	130°
8595213	-	-	-	-	2.13	0.0839	13	45	3	130°
8595214	-	-	-	-	2.14	0.0843	13	45	3	130°
8595215	859521511	-	-	-	2.15	0.0846	13	45	3	130°
8595216	-	-	-	-	2.16	0.0850	13	45	3	130°
8595217	-	-	-	-	2.17	0.0854	13	45	3	130°
8595218	-	-	44	-	2.18	0.0858	13	45	3	130°
8595219	859521911	-	-	-	2.19	0.0862	13	45	3	130°
61522	6152211	-	-	-	2.20	0.0866	13	45	3	130°
8595221	-	-	-	-	2.21	0.0870	13	45	3	130°
8595222	-	-	-	-	2.22	0.0874	13	45	3	130°
8595223	-	-	-	-	2.23	0.0878	13	45	3	130°
8595224	-	-	-	-	2.24	0.0882	13	45	3	130°
8595225	859522511	-	-	-	2.25	0.0886	13	45	3	130°
8595226	859522611	-	43	-	2.26	0.0890	13	45	3	130°
8595227	-	-	-	-	2.27	0.0894	13	45	3	130°

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														
	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
1100	◎	○				◎	◎	○		◎	◎						

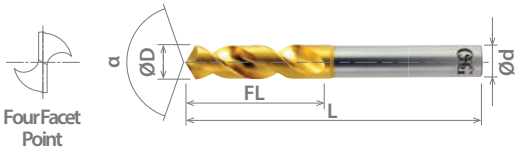
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595228	-	-	-	-	2.28	0.0898	13	45	3	130°
8595229	-	-	-	-	2.29	0.0902	13	45	3	130°
61523	6152311	-	-	-	2.30	0.0906	13	45	3	130°
8595231	-	-	-	-	2.31	0.0909	13	45	3	130°
8595232	-	-	-	-	2.32	0.0913	13	45	3	130°
8595233	-	-	-	-	2.33	0.0917	13	45	3	130°
8595234	-	-	-	-	2.34	0.0921	13	45	3	130°
8595235	-	-	-	-	2.35	0.0925	13	45	3	130°
8595236	-	-	-	-	2.36	0.0929	13	45	3	130°
8595237	859523711	-	42	-	2.37	0.0933	14	46	3	130°
8595238	859523811	3/32	-	-	2.38	0.0937	14	46	3	130°
8595239	859523911	-	-	-	2.39	0.0941	14	46	3	130°
61524	6152411	-	-	-	2.40	0.0945	14	46	3	130°
8595241	859524111	-	-	-	2.41	0.0949	14	46	3	130°
8595242	859524211	-	-	-	2.42	0.0953	14	46	3	130°
8595243	-	-	-	-	2.43	0.0957	14	46	3	130°
8595244	859524411	-	41	-	2.44	0.0961	14	46	3	130°
8595245	859524511	-	-	-	2.45	0.0965	14	46	3	130°
8595246	859524611	-	-	-	2.46	0.0969	14	46	3	130°
8595247	-	-	-	-	2.47	0.0972	14	46	3	130°
8595248	-	-	-	-	2.48	0.0976	14	46	3	130°
8595249	859524911	-	40	-	2.49	0.0980	14	46	3	130°
61525	6152511	-	-	-	2.50	0.0984	14	46	3	130°
8595251	-	-	-	-	2.51	0.0988	14	46	3	130°
8595252	859525211	-	-	-	2.52	0.0992	14	46	3	130°
8595253	859525311	-	39	-	2.53	0.0996	14	46	3	130°
8595254	-	-	-	-	2.54	0.1000	14	46	3	130°
8595255	859525511	-	-	-	2.55	0.1004	14	46	3	130°
8595256	-	-	-	-	2.56	0.1008	14	46	3	130°
8595257	-	-	-	-	2.57	0.1012	14	46	3	130°
8595258	859525811	-	38	-	2.58	0.1016	14	46	3	130°
8595259	-	-	-	-	2.59	0.1020	14	46	3	130°
61526	6152611	-	-	-	2.60	0.1024	14	46	3	130°
8595261	-	-	-	-	2.61	0.1028	14	46	3	130°
8595262	-	-	-	-	2.62	0.1031	14	46	3	130°
8595263	-	-	-	-	2.63	0.1035	14	46	3	130°
8595264	859526411	-	37	-	2.64	0.1039	14	46	3	130°
8595265	859526511	-	-	-	2.65	0.1043	14	46	3	130°
8595266	859526611	-	-	-	2.66	0.1047	16	48	3	130°
8595267	-	-	-	-	2.67	0.1051	16	48	3	130°
8595268	-	-	-	-	2.68	0.1055	16	48	3	130°
8595269	-	-	-	-	2.69	0.1059	16	48	3	130°
61527	6152711	-	-	-	2.70	0.1063	16	48	3	130°
8595271	859527111	-	36	-	2.71	0.1067	16	48	3	130°
8595272	-	-	-	-	2.72	0.1071	16	48	3	130°
8595273	-	-	-	-	2.73	0.1075	16	48	3	130°

Packed: 1 pc.
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Specify treatment at time of order: 11 = TiAlN.

EXD

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List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595274	-	-	-	-	2.74	0.1079	16	48	3	130°
8595275	-	-	-	-	2.75	0.1083	16	48	3	130°
8595276	-	-	-	-	2.76	0.1087	16	48	3	130°
8595277	-	-	-	-	2.77	0.1091	16	48	3	130°
8595278	859527811	7/64	-	-	2.78	0.1094	16	48	3	130°
8595279	859527911	-	35	-	2.79	0.1098	16	48	3	130°
61528	6152811	-	-	-	2.80	0.1102	16	48	3	130°
8595281	-	-	-	-	2.81	0.1106	16	48	3	130°
8595282	859528211	-	34	-	2.82	0.1110	16	48	3	130°
8595283	859528311	-	-	-	2.83	0.1114	16	48	3	130°
8595284	-	-	-	-	2.84	0.1118	16	48	3	130°
8595285	859528511	-	-	-	2.85	0.1122	16	48	3	130°
8595286	859528611	-	-	-	2.86	0.1126	16	48	3	130°
8595287	-	-	33	-	2.87	0.1130	16	48	3	130°
8595288	-	-	-	-	2.88	0.1134	16	48	3	130°
8595289	-	-	-	-	2.89	0.1138	16	48	3	130°
61529	6152911	-	-	-	2.90	0.1142	16	48	3	130°
8595291	-	-	-	-	2.91	0.1146	16	48	3	130°
8595292	-	-	-	-	2.92	0.1150	16	48	3	130°
8595293	-	-	-	-	2.93	0.1154	16	48	3	130°
8595294	-	-	-	-	2.94	0.1157	16	48	3	130°
8595295	859529511	-	32	-	2.95	0.1161	16	48	3	130°
8595296	-	-	-	-	2.96	0.1165	16	48	3	130°
8595297	-	-	-	-	2.97	0.1169	16	48	3	130°
8595298	-	-	-	-	2.98	0.1173	16	48	3	130°
8595299	-	-	-	-	2.99	0.1177	16	48	3	130°
61530	6153011	-	-	-	3.00	0.1181	16	48	3	130°
8595301	-	-	-	-	3.01	0.1185	18	50	4	130°
8595302	-	-	-	-	3.02	0.1189	18	50	4	130°
8595303	-	-	-	-	3.03	0.1193	18	50	4	130°
8595304	-	-	-	-	3.04	0.1197	18	50	4	130°
8595305	859530511	-	31	-	3.05	0.1201	18	50	4	130°
8595306	-	-	-	-	3.06	0.1205	18	50	4	130°
8595307	-	-	-	-	3.07	0.1209	18	50	4	130°
8595308	-	-	-	-	3.08	0.1213	18	50	4	130°
8595309	-	-	-	-	3.09	0.1217	18	50	4	130°
61531	6153111	-	-	-	3.10	0.1220	18	50	4	130°
8595311	-	-	-	-	3.11	0.1224	18	50	4	130°
8595312	-	-	-	-	3.12	0.1228	18	50	4	130°
8595313	-	-	-	-	3.13	0.1232	18	50	4	130°
8595314	-	-	-	-	3.14	0.1236	18	50	4	130°
8595315	859531511	-	-	-	3.15	0.1240	18	50	4	130°
8595316	-	-	-	-	3.16	0.1244	18	50	4	130°

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														
	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
1100	◎	○				◎	◎	○		◎	◎						

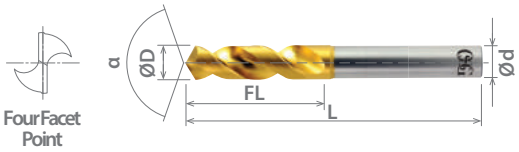
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595317	-	-	-	-	3.17	0.1248	18	50	4	130°
8595318	859531811	1/8	-	-	3.18	0.1252	18	50	4	130°
8595319	-	-	-	-	3.19	0.1256	18	50	4	130°
61532	6153211	-	-	-	3.20	0.1260	18	50	4	130°
8595321	-	-	-	-	3.21	0.1264	18	50	4	130°
8595322	859532211	-	-	-	3.22	0.1268	18	50	4	130°
8595323	-	-	-	-	3.23	0.1272	18	50	4	130°
8595324	-	-	-	-	3.24	0.1276	18	50	4	130°
8595325	859532511	-	-	-	3.25	0.1280	18	50	4	130°
8595326	859532611	-	30	-	3.26	0.1283	18	50	4	130°
8595327	859532711	-	-	-	3.27	0.1287	18	50	4	130°
8595328	-	-	-	-	3.28	0.1291	18	50	4	130°
8595329	859532911	-	-	-	3.29	0.1295	18	50	4	130°
61533	6153311	-	-	-	3.30	0.1299	18	50	4	130°
8595331	-	-	-	-	3.31	0.1303	18	50	4	130°
8595332	-	-	-	-	3.32	0.1307	18	50	4	130°
8595333	-	-	-	-	3.33	0.1311	18	50	4	130°
8595334	-	-	-	-	3.34	0.1315	18	50	4	130°
8595335	859533511	-	-	-	3.35	0.1319	18	50	4	130°
8595336	-	-	-	-	3.36	0.1323	20	52	4	130°
8595337	-	-	-	-	3.37	0.1327	20	52	4	130°
8595338	-	-	-	-	3.38	0.1331	20	52	4	130°
8595339	-	-	-	-	3.39	0.1335	20	52	4	130°
61534	6153411	-	-	-	3.40	0.1339	20	52	4	130°
8595341	-	-	-	-	3.41	0.1343	20	52	4	130°
8595342	-	-	-	-	3.42	0.1346	20	52	4	130°
8595343	-	-	-	-	3.43	0.1350	20	52	4	130°
8595344	-	-	-	-	3.44	0.1354	20	52	4	130°
8595345	859534511	-	29	-	3.45	0.1358	20	52	4	130°
8595346	859534611	-	-	-	3.46	0.1362	20	52	4	130°
8595347	859534711	-	-	-	3.47	0.1366	20	52	4	130°
8595348	-	-	-	-	3.48	0.1370	20	52	4	130°
8595349	-	-	-	-	3.49	0.1374	20	52	4	130°
61535	6153511	-	-	-	3.50	0.1378	20	52	4	130°
8595351	-	-	-	-	3.51	0.1382	20	52	4	130°
8595352	-	-	-	-	3.52	0.1386	20	52	4	130°
8595353	-	-	-	-	3.53	0.1390	20	52	4	130°
8595354	-	-	-	-	3.54	0.1394	20	52	4	130°
8595355	-	-	-	-	3.55	0.1398	20	52	4	130°
8595356	-	-	-	-	3.56	0.1402	20	52	4	130°
8595357	859535711	9/64	-	-	3.57	0.1406	20	52	4	130°
8595358	-	-	-	-	3.58	0.1409	20	52	4	130°
8595359	-	-	-	-	3.59	0.1413	20	52	4	130°
61536	-	-	-	-	3.60	0.1417	20	52	4	130°
8595361	-	-	-	-	3.61	0.1421	20	52	4	130°
8595362	-	-	-	-	3.62	0.1425	20	52	4	130°

Packed: 1 pc.
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Specify treatment at time of order: 11 = TiAlN.

EXD

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List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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

Packed: 1 pc.
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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														
	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
1100	◎	○				◎	◎	○		◎	◎						

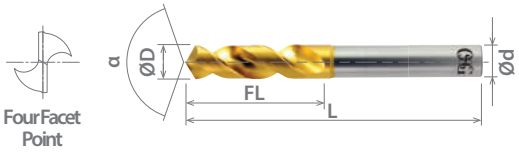
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595406	-	-	-	-	4.06	0.1598	22	66	6	120°
8595407	-	-	-	-	4.07	0.1602	22	66	6	120°
8595408	-	-	-	-	4.08	0.1606	22	66	6	120°
8595409	859540911	-	20	-	4.09	0.1610	22	66	6	120°
61541	6154111	-	-	-	4.10	0.1614	22	66	6	120°
8595411	-	-	-	-	4.11	0.1618	22	66	6	120°
8595412	-	-	-	-	4.12	0.1622	22	66	6	120°
8595413	-	-	-	-	4.13	0.1626	22	66	6	120°
8595414	-	-	-	-	4.14	0.1630	22	66	6	120°
8595415	859541511	-	-	-	4.15	0.1634	22	66	6	120°
8595416	-	-	-	-	4.16	0.1638	22	66	6	120°
8595417	859541711	-	-	-	4.17	0.1642	22	66	6	120°
8595418	-	-	-	-	4.18	0.1646	22	66	6	120°
8595419	-	-	-	-	4.19	0.1650	22	66	6	120°
61542	6154211	-	-	-	4.20	0.1654	22	66	6	120°
8595421	-	-	-	-	4.21	0.1657	22	66	6	120°
8595422	859542211	-	19	-	4.22	0.1661	22	66	6	120°
8595423	-	-	-	-	4.23	0.1665	22	66	6	120°
8595424	-	-	-	-	4.24	0.1669	22	66	6	120°
8595425	-	-	-	-	4.25	0.1673	22	66	6	120°
8595426	-	-	-	-	4.26	0.1677	24	68	6	120°
8595427	-	-	-	-	4.27	0.1681	24	68	6	120°
8595428	-	-	-	-	4.28	0.1685	24	68	6	120°
8595429	-	-	-	-	4.29	0.1689	24	68	6	120°
61543	6154311	-	-	-	4.30	0.1693	24	68	6	120°
8595431	-	-	18	-	4.31	0.1697	24	68	6	120°
8595432	-	-	-	-	4.32	0.1701	24	68	6	120°
8595433	859543311	-	-	-	4.33	0.1705	24	68	6	120°
8595434	-	-	-	-	4.34	0.1709	24	68	6	120°
8595435	-	-	-	-	4.35	0.1713	24	68	6	120°
8595436	-	-	-	-	4.36	0.1717	24	68	6	120°
8595437	859543711	11/64	-	-	4.37	0.1720	24	68	6	120°
8595438	-	-	-	-	4.38	0.1724	24	68	6	120°
8595439	-	-	17	-	4.39	0.1728	24	68	6	120°
61544	6154411	-	-	-	4.40	0.1732	24	68	6	120°
8595441	859544111	-	-	-	4.41	0.1736	24	68	6	120°
8595442	-	-	-	-	4.42	0.1740	24	68	6	120°
8595443	-	-	-	-	4.43	0.1744	24	68	6	120°
8595444	-	-	-	-	4.44	0.1748	24	68	6	120°
8595445	859544511	-	-	-	4.45	0.1752	24	68	6	120°
8595446	-	-	-	-	4.46	0.1756	24	68	6	120°
8595447	-	-	-	-	4.47	0.1760	24	68	6	120°
8595448	-	-	-	-	4.48	0.1764	24	68	6	120°
8595449	-	-	-	-	4.49	0.1768	24	68	6	120°
61545	6154511	-	16	-	4.50	0.1772	24	68	6	120°
8595451	-	-	-	-	4.51	0.1776	24	68	6	120°

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Specify treatment at time of order: 11 = TiAlN.

EXD

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List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595452	-	-	-	-	4.52	0.1780	24	68	6	120°
8595453	-	-	-	-	4.53	0.1783	24	68	6	120°
8595454	-	-	-	-	4.54	0.1787	24	68	6	120°
8595455	-	-	-	-	4.55	0.1791	24	68	6	120°
8595456	-	-	-	-	4.56	0.1795	24	68	6	120°
8595457	859545711	-	15	-	4.57	0.1799	24	68	6	120°
8595458	-	-	-	-	4.58	0.1803	24	68	6	120°
8595459	-	-	-	-	4.59	0.1807	24	68	6	120°
61546	6154611	-	-	-	4.60	0.1811	24	68	6	120°
8595461	-	-	-	-	4.61	0.1815	24	68	6	120°
8595462	859546211	-	14	-	4.62	0.1819	24	68	6	120°
8595463	-	-	-	-	4.63	0.1823	24	68	6	120°
8595464	-	-	-	-	4.64	0.1827	24	68	6	120°
8595465	-	-	-	-	4.65	0.1831	24	68	6	120°
8595466	-	-	-	-	4.66	0.1835	24	68	6	120°
8595467	-	-	-	-	4.67	0.1839	24	68	6	120°
8595468	-	-	-	-	4.68	0.1843	24	68	6	120°
8595469	-	-	-	-	4.69	0.1846	24	68	6	120°
61547	6154711	-	13	-	4.70	0.1850	24	68	6	120°
8595471	-	-	-	-	4.71	0.1854	24	68	6	120°
8595472	-	-	-	-	4.72	0.1858	24	68	6	120°
8595473	-	-	-	-	4.73	0.1862	24	68	6	120°
8595474	-	-	-	-	4.74	0.1866	24	68	6	120°
8595475	859547511	-	-	-	4.75	0.1870	24	68	6	120°
8595476	859547611	3/16	-	-	4.76	0.1874	26	70	6	120°
8595477	-	-	-	-	4.77	0.1878	26	70	6	120°
8595478	-	-	-	-	4.78	0.1882	26	70	6	120°
8595479	-	-	-	-	4.79	0.1886	26	70	6	120°
61548	6154811	-	12	-	4.80	0.1890	26	70	6	120°
8595481	-	-	-	-	4.81	0.1894	26	70	6	120°
8595482	-	-	-	-	4.82	0.1898	26	70	6	120°
8595483	-	-	-	-	4.83	0.1902	26	70	6	120°
8595484	-	-	-	-	4.84	0.1906	26	70	6	120°
8595485	-	-	-	-	4.85	0.1909	26	70	6	120°
8595486	859548611	-	11	-	4.86	0.1913	26	70	6	120°
8595487	859548711	-	-	-	4.87	0.1917	26	70	6	120°
8595488	859548811	-	-	-	4.88	0.1921	26	70	6	120°
8595489	-	-	-	-	4.89	0.1925	26	70	6	120°
61549	6154911	-	-	-	4.90	0.1929	26	70	6	120°
8595491	-	-	-	-	4.91	0.1933	26	70	6	120°
8595492	-	-	10	-	4.92	0.1937	26	70	6	120°
8595493	-	-	-	-	4.93	0.1941	26	70	6	120°
8595494	-	-	-	-	4.94	0.1945	26	70	6	120°

Packed: 1 pc.
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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														
	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
1100	◎	○				◎	◎	○		◎	◎						

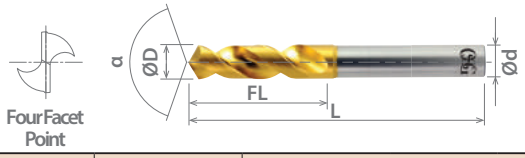
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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

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														
	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
1100	◎	○				◎	◎	○		◎	◎						

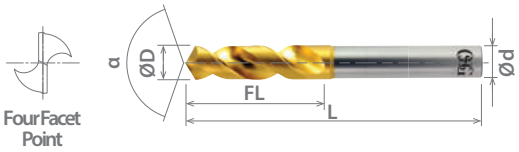
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595585	-	-	-	-	5.85	0.2303	28	72	6	120°
8595586	-	-	-	-	5.86	0.2307	28	72	6	120°
8595587	-	-	-	-	5.87	0.2311	28	72	6	120°
8595588	-	-	-	-	5.88	0.2315	28	72	6	120°
8595589	-	-	-	-	5.89	0.2319	28	72	6	120°
61559	6155911	-	-	-	5.90	0.2323	28	72	6	120°
8595591	-	-	-	-	5.91	0.2327	28	72	6	120°
8595592	-	-	-	-	5.92	0.2331	28	72	6	120°
8595593	-	-	-	-	5.93	0.2335	28	72	6	120°
8595594	-	-	-	A	5.94	0.2339	28	72	6	120°
8595595	859559511	15/64	-	-	5.95	0.2343	28	72	6	120°
8595596	-	-	-	-	5.96	0.2346	28	72	6	120°
8595597	859559711	-	-	-	5.97	0.2350	28	72	6	120°
8595598	-	-	-	-	5.98	0.2354	28	72	6	120°
8595599	-	-	-	-	5.99	0.2358	28	72	6	120°
61560	6156011	-	-	-	6.01	0.2362	28	72	6	120°
8595605	-	-	-	B	6.05	0.2382	31	75	8	120°
61561	6156111	-	-	-	6.10	0.2402	31	75	8	120°
8595615	-	-	-	C	6.15	0.2421	31	75	8	120°
61562	-	-	-	-	6.20	0.2441	31	75	8	120°
8595625	-	-	-	D	6.25	0.2461	31	75	8	120°
61563	6156311	-	-	-	6.30	0.2480	31	75	8	120°
8595635	859563511	1/4	-	E	6.35	0.2500	31	75	8	120°
61564	6156411	-	-	-	6.40	0.2520	31	75	8	120°
8595645	-	-	-	-	6.45	0.2539	31	75	8	120°
61565	6156511	-	-	-	6.50	0.2559	31	75	8	120°
8595655	859565511	-	-	-	6.55	0.2579	31	75	8	120°
61566	6156611	-	-	-	6.60	0.2598	31	75	8	120°
8595665	-	-	-	-	6.65	0.2618	31	75	8	120°
61567	6156711	-	-	-	6.70	0.2638	31	75	8	120°
8595675	859567511	17/64	-	-	6.75	0.2657	34	78	8	120°
61568	6156811	-	-	-	6.80	0.2677	34	78	8	120°
8595685	859568511	-	-	-	6.85	0.2697	34	78	8	120°
61569	6156911	-	-	I	6.90	0.2717	34	78	8	120°
8595695	-	-	-	-	6.95	0.2736	34	78	8	120°
61570	6157011	-	-	-	7.00	0.2756	34	78	8	120°
8595705	-	-	-	-	7.05	0.2776	34	78	8	120°
61571	6157111	-	-	-	7.10	0.2795	34	78	8	120°
8595715	859571511	-	-	-	7.15	0.2815	34	78	8	120°
61572	6157211	-	-	-	7.20	0.2835	34	78	8	120°
8595725	-	-	-	-	7.25	0.2854	34	78	8	120°
61573	6157311	-	-	-	7.30	0.2874	34	78	8	120°
8595735	-	-	-	-	7.35	0.2894	34	78	8	120°
61574	6157411	-	-	-	7.40	0.2913	34	78	8	120°
8595745	-	-	-	-	7.45	0.2933	34	78	8	120°
61575	6157511	-	-	-	7.50	0.2953	34	78	8	120°

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

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8595755	859575511	-	-	-	7.55	0.2972	37	81	8	120°
61576	-	-	-	-	7.60	0.2992	37	81	8	120°
8595765	859576511	-	-	-	7.65	0.3012	37	81	8	120°
61577	6157711	-	-	-	7.70	0.3031	37	81	8	120°
8595775	859577511	-	-	-	7.75	0.3051	37	81	8	120°
61578	-	-	-	-	7.80	0.3071	37	81	8	120°
8595785	-	-	-	-	7.85	0.3091	37	81	8	120°
61579	6157911	-	-	-	7.90	0.3110	37	81	8	120°
8595795	859579511	-	-	-	7.95	0.3130	37	81	8	120°
61580	6158011	-	-	-	8.00	0.3150	37	81	8	120°
8595805	-	-	-	-	8.05	0.3169	37	87	10	120°
61581	6158111	-	-	-	8.10	0.3189	37	87	10	120°
8595815	-	-	-	-	8.15	0.3209	37	87	10	120°
61582	6158211	-	-	P	8.20	0.3228	37	87	10	120°
8595825	-	-	-	-	8.25	0.3248	37	87	10	120°
61583	6158311	-	-	-	8.30	0.3268	37	87	10	120°
8595835	859583511	-	-	-	8.35	0.3287	37	87	10	120°
61584	-	-	-	-	8.40	0.3307	37	87	10	120°
8595845	-	-	-	-	8.45	0.3327	37	87	10	120°
61585	6158511	-	-	-	8.50	0.3346	37	87	10	120°
8595855	-	-	-	-	8.55	0.3366	40	90	10	120°
61586	6158611	-	-	-	8.60	0.3386	40	90	10	120°
8595865	-	-	-	-	8.65	0.3406	40	90	10	120°
61587	-	-	-	-	8.70	0.3425	40	90	10	120°
8595875	859587511	-	-	-	8.75	0.3445	40	90	10	120°
61588	6158811	-	-	-	8.80	0.3465	40	90	10	120°
8595885	-	-	-	-	8.85	0.3484	40	90	10	120°
61589	-	-	-	-	8.90	0.3504	40	90	10	120°
8595895	-	-	-	-	8.95	0.3524	40	90	10	120°
61590	6159011	-	-	-	9.00	0.3543	40	90	10	120°
8595905	-	-	-	-	9.05	0.3563	40	90	10	120°
61591	-	-	-	-	9.10	0.3583	40	90	10	120°
8595915	-	-	-	-	9.15	0.3602	40	90	10	120°
61592	-	-	-	-	9.20	0.3622	40	90	10	120°
8595925	-	-	-	-	9.25	0.3642	40	90	10	120°
61593	-	-	-	-	9.30	0.3661	40	90	10	120°
8595935	-	-	-	U	9.35	0.3681	40	90	10	120°
61594	-	-	-	-	9.40	0.3701	40	90	10	120°
8595945	-	-	-	-	9.45	0.3720	40	90	10	120°
61595	6159511	-	-	-	9.50	0.3740	40	90	10	120°
8595955	-	-	-	-	9.55	0.3760	43	93	10	120°
61596	6159611	-	-	-	9.60	0.3780	43	93	10	120°
8595965	859596511	-	-	-	9.65	0.3799	43	93	10	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

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														
	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
1100	◎	○				◎	◎	○		◎	◎						

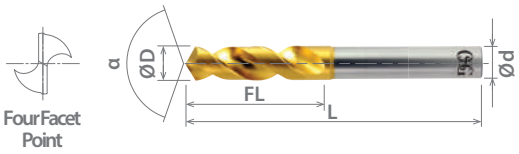
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
61597	-	-	-	-	9.70	0.3819	43	93	10	120°
8595975	-	-	-	-	9.75	0.3839	43	93	10	120°
61598	6159811	-	-	W	9.80	0.3858	43	93	10	120°
8595985	-	-	-	-	9.85	0.3878	43	93	10	120°
61599	6159911	-	-	-	9.90	0.3898	43	93	10	120°
8595995	-	-	-	-	9.95	0.3917	43	93	10	120°
61600	6160011	-	-	-	10.00	0.3937	43	93	10	120°
8596005	-	-	-	-	10.05	0.3957	43	100	12	120°
61601	-	-	-	-	10.10	0.3976	43	100	12	120°
8596015	859601511	-	-	-	10.15	0.3996	43	100	12	120°
61602	6160211	-	-	-	10.20	0.4016	43	100	12	120°
8596025	-	-	-	-	10.25	0.4035	43	100	12	120°
61603	6160311	-	-	-	10.30	0.4055	43	100	12	120°
8596035	859603511	-	-	-	10.35	0.4075	43	100	12	120°
61604	-	-	-	-	10.40	0.4094	43	100	12	120°
8596045	-	-	-	-	10.45	0.4114	43	100	12	120°
61605	6160511	-	-	-	10.50	0.4134	43	100	12	120°
8596055	-	-	-	-	10.55	0.4154	43	100	12	120°
61606	-	-	-	-	10.60	0.4173	43	100	12	120°
8596065	-	-	-	-	10.65	0.4193	47	104	12	120°
61607	6160711	-	-	-	10.70	0.4213	47	104	12	120°
8596075	-	-	-	-	1075	0.4232	47	104	12	120°
61608	-	-	-	-	10.80	0.4252	47	104	12	120°
8596085	-	-	-	-	10.85	0.4272	47	104	12	120°
61609	-	-	-	-	10.90	0.4291	47	104	12	120°
8596095	-	-	-	-	10.95	0.4311	47	104	12	120°
61610	6161011	-	-	-	11.00	0.4331	47	104	12	120°
8596105	-	-	-	-	11.05	0.4350	47	104	12	120°
61611	6161111	-	-	-	11.10	0.4370	47	104	12	120°
8596115	-	-	-	-	11.15	0.4390	47	104	12	120°
61612	-	-	-	-	11.20	0.4409	47	104	12	120°
8596125	-	-	-	-	11.25	0.4429	47	104	12	120°
61613	-	-	-	-	11.30	0.4449	47	104	12	120°
8596135	-	-	-	-	11.35	0.4469	47	104	12	120°
61614	-	-	-	-	11.40	0.4488	47	104	12	120°
8596145	-	-	-	-	11.45	0.4508	47	104	12	120°
61615	6161511	-	-	-	11.50	0.4528	47	104	12	120°
8596155	-	-	-	-	11.55	0.4547	47	104	12	120°
61616	-	-	-	-	11.60	0.4567	47	104	12	120°
8596165	-	-	-	-	11.65	0.4587	47	104	12	120°
61617	-	-	-	-	11.70	0.4606	47	104	12	120°
8596175	-	-	-	-	11.75	0.4626	47	104	12	120°
61618	-	-	-	-	11.80	0.4646	47	104	12	120°
8596185	-	-	-	-	11.85	0.4665	51	108	12	120°
61619	-	-	-	-	11.90	0.4685	51	108	12	120°
8596195	-	-	-	-	11.95	0.4705	51	108	12	120°

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

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
61620	6162011	-	-	-	12.00	0.4724	51	108	12	120°
61621	-	-	-	-	12.10	0.4764	51	108	12	120°
61622	-	-	-	-	12.20	0.4803	51	108	12	120°
61623	6162311	31/64	-	-	12.30	0.4843	51	108	12	120°
61624	6162411	-	-	-	12.40	0.4882	51	108	12	120°
61625	6162511	-	-	-	12.50	0.4921	51	108	12	120°
61626	6162611	-	-	-	12.60	0.4961	51	108	12	120°
61627	6162711	1/2	-	-	12.70	0.5000	51	108	12	120°
61628	6162811	-	-	-	12.80	0.5039	51	108	12	120°
61629	6162911	-	-	-	12.90	0.5079	51	108	12	120°
61630	6163011	-	-	-	13.00	0.5118	51	108	12	120°
61631	6163111	33/64	-	-	13.10	0.5157	51	111	16	120°
61632	-	-	-	-	13.20	0.5197	51	111	16	120°
61633	-	-	-	-	13.30	0.5236	54	114	16	120°
61634	-	-	-	-	13.40	0.5276	54	114	16	120°
61635	6163511	-	-	-	13.50	0.5315	54	114	16	120°
61636	-	-	-	-	13.60	0.5354	54	114	16	120°
61637	-	-	-	-	13.70	0.5394	54	114	16	120°
61638	-	-	-	-	13.80	0.5433	54	114	16	120°
61639	-	-	-	-	13.90	0.5472	54	114	16	120°
61640	6164011	-	-	-	14.00	0.5512	54	114	16	120°
61641	6164111	-	-	-	14.10	0.5551	56	116	16	120°
61642	-	-	-	-	14.20	0.5591	56	116	16	120°
61643	6164311	-	-	-	14.30	0.5630	56	116	16	120°
61644	-	-	-	-	14.40	0.5669	56	116	16	120°
61645	6164511	-	-	-	14.50	0.5709	56	116	16	120°
61646	-	-	-	-	14.60	0.5748	56	116	16	120°
61647	-	-	-	-	14.70	0.5787	56	116	16	120°
61648	-	-	-	-	14.80	0.5827	56	116	16	120°
61649	-	-	-	-	14.90	0.5866	56	116	16	120°
61650	6165011	-	-	-	15.00	0.5906	56	116	16	120°
61651	-	-	-	-	15.10	0.5945	58	118	16	120°
61652	-	-	-	-	15.20	0.5984	58	118	16	120°
61653	6165311	-	-	-	15.30	0.6024	58	118	16	120°
61654	-	-	-	-	15.40	0.6063	58	118	16	120°
61655	-	-	-	-	15.50	0.6102	58	118	16	120°
61656	-	-	-	-	15.60	0.6142	58	118	16	120°
61657	-	-	-	-	15.70	0.6181	58	118	16	120°
61658	-	-	-	-	15.80	0.6220	58	118	16	120°
61659	6165911	-	-	-	15.90	0.6260	58	118	16	120°
61660	6166011	-	-	-	16.00	0.6299	58	118	16	120°
61661	6166111	-	-	-	16.10	0.6339	60	126	20	120°
61662	-	-	-	-	16.20	0.6378	60	126	20	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

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														
	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
1100	◎	○				◎	◎	○		◎	◎						

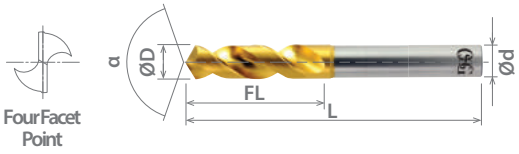
○ good ◎ best

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List 1100 (Continued)

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
61663	-	-	-	-	16.30	0.6417	60	126	20	120°
61664	-	-	-	-	16.40	0.6457	60	126	20	120°
61665	6166511	-	-	-	16.50	0.6496	60	126	20	120°
61666	-	-	-	-	16.60	0.6535	60	126	20	120°
61667	6166711	-	-	-	16.70	0.6575	60	126	20	120°
61668	-	-	-	-	16.80	0.6614	60	126	20	120°
61669	-	-	-	-	16.90	0.6654	60	126	20	120°
61670	-	-	-	-	17.00	0.6693	60	126	20	120°
61671	6167111	-	-	-	17.10	0.6732	62	128	20	120°
61672	6167211	-	-	-	17.20	0.6772	60	128	20	120°
61673	-	-	-	-	17.30	0.6811	60	128	20	120°
61674	-	-	-	-	17.40	0.6850	60	128	20	120°
61675	-	-	-	-	17.50	0.6890	60	128	20	120°
61676	-	-	-	-	17.60	0.6929	60	128	20	120°
61677	6167711	-	-	-	17.70	0.6969	60	128	20	120°
61678	-	-	-	-	17.80	0.7008	60	128	20	120°
61679	-	-	-	-	17.90	0.7047	60	128	20	120°
61680	6168011	-	-	-	18.00	0.7087	60	128	20	120°
61681	-	-	-	-	18.10	0.7126	64	130	20	120°
61682	-	-	-	-	18.20	0.7165	64	130	20	120°
61683	-	-	-	-	18.30	0.7205	64	130	20	120°
61684	-	-	-	-	18.40	0.7244	64	130	20	120°
61685	-	-	-	-	18.50	0.7283	64	130	20	120°
61686	-	-	-	-	18.60	0.7323	64	130	20	120°
61687	-	-	-	-	18.70	0.7362	64	130	20	120°
61688	-	-	-	-	18.80	0.7402	64	130	20	120°
61689	-	-	-	-	18.90	0.7441	64	130	20	120°
61690	-	-	-	-	19.00	0.7480	64	130	20	120°
61691	6169111	-	-	-	19.10	0.7520	66	132	20	120°
61692	-	-	-	-	19.20	0.7559	66	132	20	120°
61693	-	-	-	-	19.30	0.7598	66	132	20	120°
61694	-	-	-	-	19.40	0.7638	66	132	20	120°
61695	-	-	-	-	19.50	0.7677	66	132	20	120°
61696	-	-	-	-	19.60	0.7717	66	132	20	120°
61697	-	-	-	-	19.70	0.7756	66	132	20	120°
61698	-	-	-	-	19.80	0.7795	66	132	20	120°
61699	-	-	-	-	19.90	0.7835	66	132	20	120°
61700	-	-	-	-	20.00	0.7874	66	132	20	120°
61705	-	-	-	-	20.50	0.8071	68	144	25	120°
61710	6171011	-	-	-	21.00	0.8268	68	144	25	120°
61715	6171511	-	-	-	21.50	0.8465	70	146	25	120°
61720	-	-	-	-	22.00	0.8661	70	146	25	120°
61725	-	-	-	-	22.50	0.8858	72	148	25	120°
61730	6173011	-	-	-	23.00	0.9055	72	148	25	120°
61735	-	-	-	-	23.50	0.9252	72	148	25	120°
61740	-	-	-	-	24.00	0.9449	75	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 = TiAlN.

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1100 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | STUB | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
61745	-	-	-	-	24.50	0.9646	75	151	25	120°
61750	-	63/64	-	-	25.00	0.9843	75	151	25	120°
61755	-	-	-	-	25.50	1.0039	78	158	32	120°
61760	-	-	-	-	26.00	1.0236	78	158	32	120°
61765	-	-	-	-	26.50	1.0433	78	158	32	120°
61770	-	-	-	-	27.00	1.0630	81	161	32	120°
61775	-	-	-	-	27.50	1.0827	81	161	32	120°
61780	-	-	-	-	28.00	1.1024	81	161	32	120°
61785	-	-	-	-	28.50	1.1220	84	164	32	120°
61790	-	-	-	-	29.00	1.1417	84	164	32	120°
61795	-	-	-	-	29.50	1.1614	84	164	32	120°
61800	-	-	-	-	30.00	1.1811	84	164	32	120°
61805	-	-	-	-	30.50	1.2008	87	167	32	120°
61810	-	-	-	-	31.00	1.2205	87	167	32	120°
61815	-	-	-	-	31.50	1.2402	87	167	32	120°
61820	-	-	-	-	32.00	1.2598	90	170	32	120°

Packed: 1 pc.
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Specify treatment at time of order: 11 = TiAlN.

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														
	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
1100	◎	○				◎	◎	○		◎	◎						

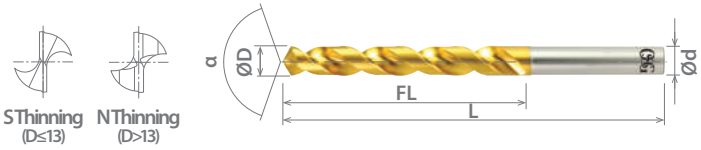
○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1600

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°



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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
62520	6252011	-	-	-	2.00	0.0787	24	56	3	130°
8597201	-	-	-	-	2.01	0.0791	24	56	3	130°
8597202	-	-	-	-	2.02	0.0795	24	56	3	130°
8597203	-	-	-	-	2.03	0.0799	24	56	3	130°
8597204	859720411	-	-	-	2.04	0.0803	24	56	3	130°
8597205	-	-	-	-	2.05	0.0807	24	56	3	130°
8597206	-	-	46	-	2.06	0.0811	24	56	3	130°
8597207	-	-	-	-	2.07	0.0815	24	56	3	130°
8597208	859720811	-	45	-	2.08	0.0819	24	56	3	130°
8597209	-	-	-	-	2.09	0.0823	24	56	3	130°
62521	-	-	-	-	2.10	0.0827	24	56	3	130°
8597211	-	-	-	-	2.11	0.0831	24	56	3	130°
8597212	-	-	-	-	2.12	0.0835	24	56	3	130°
8597213	-	-	-	-	2.13	0.0839	27	59	3	130°
8597214	-	-	-	-	2.14	0.0843	27	59	3	130°
8597215	-	-	-	-	2.15	0.0846	27	59	3	130°
8597216	-	-	-	-	2.16	0.0850	27	59	3	130°
8597217	-	-	-	-	2.17	0.0854	27	59	3	130°
8597218	859721811	-	44	-	2.18	0.0858	27	59	3	130°
8597219	-	-	-	-	2.19	0.0862	27	59	3	130°
62522	6252211	-	-	-	2.20	0.0866	27	59	3	130°
8597221	-	-	-	-	2.21	0.0870	27	59	3	130°
8597222	-	-	-	-	2.22	0.0874	27	59	3	130°
8597223	-	-	-	-	2.23	0.0878	27	59	3	130°
8597224	-	-	-	-	2.24	0.0882	27	59	3	130°
8597225	-	-	-	-	2.25	0.0886	27	59	3	130°
8597226	859722611	-	43	-	2.26	0.0890	27	59	3	130°
8597227	-	-	-	-	2.27	0.0894	27	59	3	130°
8597228	859722811	-	-	-	2.28	0.0898	27	59	3	130°
8597229	-	-	-	-	2.29	0.0902	27	59	3	130°
62523	-	-	-	-	2.30	0.0906	27	59	3	130°
8597231	-	-	-	-	2.31	0.0909	27	59	3	130°
8597232	-	-	-	-	2.32	0.0913	27	59	3	130°
8597233	-	-	-	-	2.33	0.0917	27	59	3	130°
8597234	-	-	-	-	2.34	0.0921	27	59	3	130°
8597235	-	-	-	-	2.35	0.0925	27	59	3	130°
8597236	-	-	-	-	2.36	0.0929	27	59	3	130°
8597237	-	-	42	-	2.37	0.0933	30	62	3	130°
8597238	859723811	3/32	-	-	2.38	0.0937	30	62	3	130°
8597239	-	-	-	-	2.39	0.0941	30	62	3	130°
62524	6252411	-	-	-	2.40	0.0945	30	62	3	130°
8597241	-	-	-	-	2.41	0.0949	30	62	3	130°
8597242	-	-	-	-	2.42	0.0953	30	62	3	130°
8597243	-	-	-	-	2.43	0.0957	30	62	3	130°
8597244	-	-	41	-	2.44	0.0961	30	62	3	130°
8597245	-	-	-	-	2.45	0.0965	30	62	3	130°

Packed: 1 pc.
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EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1600 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8597246	-	-	-	-	2.46	0.0969	30	62	3	130°
8597247	-	-	-	-	2.47	0.0972	30	62	3	130°
8597248	-	-	-	-	2.48	0.0976	30	62	3	130°
8597249	-	-	40	-	2.49	0.0980	30	62	3	130°
62525	6252511	-	-	-	2.50	0.0984	30	62	3	130°
8597251	-	-	-	-	2.51	0.0988	30	62	3	130°
8597252	-	-	-	-	2.52	0.0992	30	62	3	130°
8597253	-	-	39	-	2.53	0.0996	30	62	3	130°
8597254	-	-	-	-	2.54	0.1000	30	62	3	130°
8597255	859725511	-	-	-	2.55	0.1004	30	62	3	130°
8597256	-	-	-	-	2.56	0.1008	30	62	3	130°
8597257	-	-	-	-	2.57	0.1012	30	62	3	130°
8597258	859725811	-	38	-	2.58	0.1016	30	62	3	130°
8597259	-	-	-	-	2.59	0.1020	30	62	3	130°
62526	-	-	-	-	2.60	0.1024	30	62	3	130°
8597261	-	-	-	-	2.61	0.1028	30	62	3	130°
8597262	-	-	-	-	2.62	0.1031	30	62	3	130°
8597263	-	-	-	-	2.63	0.1035	30	62	3	130°
8597264	-	-	37	-	2.64	0.1039	30	62	3	130°
8597265	-	-	-	-	2.65	0.1043	30	62	3	130°
8597266	-	-	-	-	2.66	0.1047	33	65	3	130°
8597267	-	-	-	-	2.67	0.1051	33	65	3	130°
8597268	-	-	-	-	2.68	0.1055	33	65	3	130°
8597269	-	-	-	-	2.69	0.1059	33	65	3	130°
62527	-	-	-	-	2.70	0.1063	33	65	3	130°
8597271	-	-	36	-	2.71	0.1067	33	65	3	130°
8597272	-	-	-	-	2.72	0.1071	33	65	3	130°
8597273	-	-	-	-	2.73	0.1075	33	65	3	130°
8597274	-	-	-	-	2.74	0.1079	33	65	3	130°
8597275	-	-	-	-	2.75	0.1083	33	65	3	130°
8597276	-	-	-	-	2.76	0.1087	33	65	3	130°
8597277	-	-	-	-	2.77	0.1091	33	65	3	130°
8597278	859727811	7/64	-	-	2.78	0.1094	33	65	3	130°
8597279	859727911	-	35	-	2.79	0.1098	33	65	3	130°
62528	-	-	-	-	2.80	0.1102	33	65	3	130°
8597281	859728111	-	-	-	2.81	0.1106	33	65	3	130°
8597282	-	-	34	-	2.82	0.1110	33	65	3	130°
8597283	-	-	-	-	2.83	0.1114	33	65	3	130°
8597284	-	-	-	-	2.84	0.1118	33	65	3	130°
8597285	-	-	-	-	2.85	0.1122	33	65	3	130°
8597286	859728611	-	-	-	2.86	0.1126	33	65	3	130°
8597287	-	-	33	-	2.87	0.1130	33	65	3	130°
8597288	-	-	-	-	2.88	0.1134	33	65	3	130°

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														
	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
1600	◎	○				◎	◎	○		◎	◎						

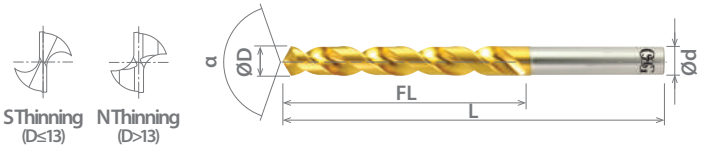
○ good ◎ best

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List 1600

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°



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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8597289	-	-	-	-	2.89	0.1138	33	65	3	130°
62529	6252911	-	-	-	2.90	0.1142	33	65	3	130°
8597291	-	-	-	-	2.91	0.1146	33	65	3	130°
8597292	-	-	-	-	2.92	0.1150	33	65	3	130°
8597293	-	-	-	-	2.93	0.1154	33	65	3	130°
8597294	859729411	-		-	2.94	0.1157	33	65	3	130°
8597295	-	-	32	-	2.95	0.1161	33	65	3	130°
8597296	-	-	-	-	2.96	0.1165	33	65	3	130°
8597297	-	-	-	-	2.97	0.1169	33	65	3	130°
8597298	-	-	-	-	2.98	0.1173	33	65	3	130°
8597299	-	-	-	-	2.99	0.1177	33	65	3	130°
62530	6253011	-	-	-	3.00	0.1181	33	65	3	130°
8597301	-	-	-	-	3.01	0.1185	36	68	4	130°
8597302	-	-	-	-	3.02	0.1189	36	68	4	130°
8597303	-	-	-	-	3.03	0.1193	36	68	4	130°
8597304	859730411	-	-	-	3.04	0.1197	36	68	4	130°
8597305	859730511	-	31	-	3.05	0.1201	36	68	4	130°
8597306	-	-	-	-	3.06	0.1205	36	68	4	130°
8597307	-	-	-	-	3.07	0.1209	36	68	4	130°
8597308	-	-	-	-	3.08	0.1213	36	68	4	130°
8597309	-	-	-	-	3.09	0.1217	36	68	4	130°
62531	6253111	-	-	-	3.10	0.1220	36	68	4	130°
8597311	-	-	-	-	3.11	0.1224	36	68	4	130°
8597312	-	-	-	-	3.12	0.1228	36	68	4	130°
8597313	-	-	-	-	3.13	0.1232	36	68	4	130°
8597314	-	-	-	-	3.14	0.1236	36	68	4	130°
8597315	-	-	-	-	3.15	0.1240	36	68	4	130°
8597316	-	-	-	-	3.16	0.1244	36	68	4	130°
8597317	-	-	-	-	3.17	0.1248	36	68	4	130°
8597318	859731811	1/8	-	-	3.18	0.1252	36	68	4	130°
8597319	-	-	-	-	3.19	0.1256	36	68	4	130°
62532	6253211	-	-	-	3.20	0.1260	36	68	4	130°
8597321	-	-	-	-	3.21	0.1264	36	68	4	130°
8597322	-	-	-	-	3.22	0.1268	36	68	4	130°
8597323	-	-	-	-	3.23	0.1272	36	68	4	130°
8597324	-	-	-	-	3.24	0.1276	36	68	4	130°
8597325	-	-	-	-	3.25	0.1280	36	68	4	130°
8597326	-	-	30	-	3.26	0.1283	36	68	4	130°
8597327	-	-	-	-	3.27	0.1287	36	68	4	130°
8597328	-	-	-	-	3.28	0.1291	36	68	4	130°
8597329	-	-	-	-	3.29	0.1295	36	68	4	130°
62533	6253311	-	-	-	3.30	0.1299	36	68	4	130°
8597331	-	-	-	-	3.31	0.1303	36	68	4	130°
8597332	-	-	-	-	3.32	0.1307	36	68	4	130°
8597333	-	-	-	-	3.33	0.1311	36	68	4	130°
8597334	-	-	-	-	3.34	0.1315	36	68	4	130°

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

EXD

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List 1600 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8597335	-	-	-	-	3.35	0.1319	36	68	4	130°
8597336	-	-	-	-	3.36	0.1323	39	71	4	130°
8597337	-	-	-	-	3.37	0.1327	39	71	4	130°
8597338	-	-	-	-	3.38	0.1331	39	71	4	130°
8597339	-	-	-	-	3.39	0.1335	39	71	4	130°
62534	-	-	-	-	3.40	0.1339	39	71	4	130°
8597341	-	-	-	-	3.41	0.1343	39	71	4	130°
8597342	-	-	-	-	3.42	0.1346	39	71	4	130°
8597343	-	-	-	-	3.43	0.1350	39	71	4	130°
8597344	-	-	-	-	3.44	0.1354	39	71	4	130°
8597345	859734511	-	29	-	3.45	0.1358	39	71	4	130°
8597346	-	-	-	-	3.46	0.1362	39	71	4	130°
8597347	-	-	-	-	3.47	0.1366	39	71	4	130°
8597348	-	-	-	-	3.48	0.1370	39	71	4	130°
8597349	-	-	-	-	3.49	0.1374	39	71	4	130°
62535	6253511	-	-	-	3.50	0.1378	39	71	4	130°
8597351	-	-	-	-	3.51	0.1382	39	71	4	130°
8597352	-	-	-	-	3.52	0.1386	39	71	4	130°
8597353	-	-	-	-	3.53	0.1390	39	71	4	130°
8597354	-	-	-	-	3.54	0.1394	39	71	4	130°
8597355	-	-	-	-	3.55	0.1398	39	71	4	130°
8597356	-	-	-	-	3.56	0.1402	39	71	4	130°
8597357	859735711	9/64	-	-	3.57	0.1406	39	71	4	130°
8597358	859735811	-	-	-	3.58	0.1409	39	71	4	130°
8597359	-	-	-	-	3.59	0.1413	39	71	4	130°
62536	-	-	-	-	3.60	0.1417	39	71	4	130°
8597361	-	-	-	-	3.61	0.1421	39	71	4	130°
8597362	-	-	-	-	3.62	0.1425	39	71	4	130°
8597363	-	-	-	-	3.63	0.1429	39	71	4	130°
8597364	-	-	-	-	3.64	0.1433	39	71	4	130°
8597365	-	-	-	-	3.65	0.1437	39	71	4	130°
8597366	-	-	27	-	3.66	0.1441	39	71	4	130°
8597367	-	-	-	-	3.67	0.1445	39	71	4	130°
8597368	-	-	-	-	3.68	0.1449	39	71	4	130°
8597369	-	-	-	-	3.69	0.1453	39	71	4	130°
62537	6253711	-	-	-	3.70	0.1457	39	71	4	130°
8597371	-	-	-	-	3.71	0.1461	39	71	4	130°
8597372	-	-	-	-	3.72	0.1465	39	71	4	130°
8597373	-	-	26	-	3.73	0.1469	39	71	4	130°
8597374	-	-	-	-	3.74	0.1472	39	71	4	130°
8597375	-	-	-	-	3.75	0.1476	39	71	4	130°
8597376	-	-	-	-	3.76	0.1480	43	75	4	130°
8597377	-	-	-	-	3.77	0.1484	43	75	4	130°

Packed: 1 pc.
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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														
	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
1600	◎	○				◎	◎	○		◎	◎						

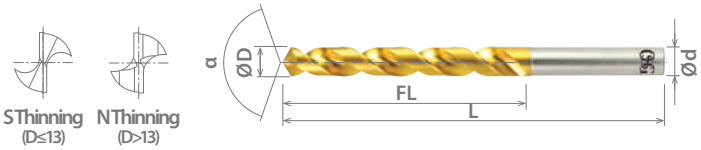
○ good ◎ best

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List 1600

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°



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

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EXD

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List 1600 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°

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

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														
	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
1600	◎	○				◎	◎	○		◎	◎						

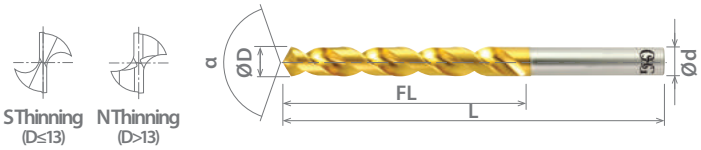
○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1600

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°



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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8597467	-	-	-	-	4.67	0.1839	47	91	6	120°
8597468	-	-	-	-	4.68	0.1843	47	91	6	120°
8597469	-	-	-	-	4.69	0.1846	47	91	6	120°
62547	-	-	13	-	4.70	0.1850	47	91	6	120°
8597471	-	-	-	-	4.71	0.1854	47	91	6	120°
8597472	-	-	-	-	4.72	0.1858	47	91	6	120°
8597473	-	-	-	-	4.73	0.1862	47	91	6	120°
8597474	-	-	-	-	4.74	0.1866	47	91	6	120°
8597475	859747511	-	-	-	4.75	0.1870	47	91	6	120°
8597476	859747611	3/16	-	-	4.76	0.1874	52	96	6	120°
8597477	-	-	-	-	4.77	0.1878	52	96	6	120°
8597478	-	-	-	-	4.78	0.1882	52	96	6	120°
8597479	-	-	-	-	4.79	0.1886	52	96	6	120°
62548	6254811	-	12	-	4.80	0.1890	52	96	6	120°
8597481	-	-	-	-	4.81	0.1894	52	96	6	120°
8597482	-	-	-	-	4.82	0.1898	52	96	6	120°
8597483	-	-	-	-	4.83	0.1902	52	96	6	120°
8597484	-	-	-	-	4.84	0.1906	52	96	6	120°
8597485	859748511	-	-	-	4.85	0.1909	52	96	6	120°
8597486	-	-	11	-	4.86	0.1913	52	96	6	120°
8597487	-	-	-	-	4.87	0.1917	52	96	6	120°
8597488	-	-	-	-	4.88	0.1921	52	96	6	120°
8597489	-	-	-	-	4.89	0.1925	52	96	6	120°
62549	-	-	-	-	4.90	0.1929	52	96	6	120°
8597491	-	-	-	-	4.91	0.1933	52	96	6	120°
8597492	-	-	10	-	4.92	0.1937	52	96	6	120°
8597493	-	-	-	-	4.93	0.1941	52	96	6	120°
8597494	-	-	-	-	4.94	0.1945	52	96	6	120°
8597495	-	-	-	-	4.95	0.1949	52	96	6	120°
8597496	-	-	-	-	4.96	0.1953	52	96	6	120°
8597497	-	-	-	-	4.97	0.1957	52	96	6	120°
8597498	859749811	-	9	-	4.98	0.1961	52	96	6	120°
8597499	-	-	-	-	4.99	0.1965	52	96	6	120°
62550	-	-	-	-	5.00	0.1969	52	96	6	120°
8597501	-	-	-	-	5.01	0.1972	52	96	6	120°
8597502	859750211	-	-	-	5.02	0.1976	52	96	6	120°
8597503	-	-	-	-	5.03	0.1980	52	96	6	120°
8597504	-	-	-	-	5.04	0.1984	52	96	6	120°
8597505	-	-	8	-	5.05	0.1988	52	96	6	120°
8597506	-	-	-	-	5.06	0.1992	52	96	6	120°
8597507	-	-	-	-	5.07	0.1996	52	96	6	120°
8597508	-	-	-	-	5.08	0.2000	52	96	6	120°
8597509	-	-	-	-	5.09	0.2004	52	96	6	120°
62551	-	-	-	-	5.10	0.2008	52	96	6	120°
8597511	859751111	-	7	-	5.11	0.2012	52	96	6	120°
8597512	-	-	-	-	5.12	0.2016	52	96	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.

EXD

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 1600 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8597513	-	-	-	-	5.13	0.2020	52	96	6	120°
8597514	-	-	-	-	5.14	0.2024	52	96	6	120°
8597515	-	-	-	-	5.15	0.2028	52	96	6	120°
8597516	859751611	13/64	-	-	5.16	0.2031	52	96	6	120°
8597517	-	-	-	-	5.17	0.2035	52	96	6	120°
8597518	-	-	6	-	5.18	0.2039	52	96	6	120°
8597519	-	-	-	-	5.19	0.2043	52	96	6	120°
62552	6255211	-	-	-	5.20	0.2047	52	96	6	120°
8597521	-	-	-	-	5.21	0.2051	52	96	6	120°
8597522	-	-	5	-	5.22	0.2055	52	96	6	120°
8597523	-	-	-	-	5.23	0.2059	52	96	6	120°
8597524	-	-	-	-	5.24	0.2063	52	96	6	120°
8597525	-	-	-	-	5.25	0.2067	52	96	6	120°
8597526	-	-	-	-	5.26	0.2071	52	96	6	120°
8597527	-	-	-	-	5.27	0.2075	52	96	6	120°
8597528	-	-	-	-	5.28	0.2079	52	96	6	120°
8597529	-	-	-	-	5.29	0.2083	52	96	6	120°
62553	-	-	-	-	5.30	0.2087	52	96	6	120°
8597531	859753111	-	4	-	5.31	0.2091	57	101	6	120°
8597532	-	-	-	-	5.32	0.2094	57	101	6	120°
8597533	-	-	-	-	5.33	0.2098	57	101	6	120°
8597534	-	-	-	-	5.34	0.2102	57	101	6	120°
8597535	-	-	-	-	5.35	0.2106	57	101	6	120°
8597536	-	-	-	-	5.36	0.2110	57	101	6	120°
8597537	-	-	-	-	5.37	0.2114	57	101	6	120°
8597538	-	-	-	-	5.38	0.2118	57	101	6	120°
8597539	-	-	-	-	5.39	0.2122	57	101	6	120°
62554	-	-	-	-	5.40	0.2126	57	101	6	120°
8597541	-	-	3	-	5.41	0.2130	57	101	6	120°
8597542	-	-	-	-	5.42	0.2134	57	101	6	120°
8597543	-	-	-	-	5.43	0.2138	57	101	6	120°
8597544	-	-	-	-	5.44	0.2142	57	101	6	120°
8597545	-	-	-	-	5.45	0.2146	57	101	6	120°
8597546	-	-	-	-	5.46	0.2150	57	101	6	120°
8597547	859754711	-	-	-	5.47	0.2154	57	101	6	120°
8597548	-	-	-	-	5.48	0.2157	57	101	6	120°
8597549	-	-	-	-	5.49	0.2161	57	101	6	120°
62555	6255511	-	-	-	5.50	0.2165	57	101	6	120°
8597551	-	-	-	-	5.51	0.2169	57	101	6	120°
8597552	-	-	-	-	5.52	0.2173	57	101	6	120°
8597553	-	-	-	-	5.53	0.2177	57	101	6	120°
8597554	-	-	-	-	5.54	0.2181	57	101	6	120°
8597555	-	-	-	-	5.55	0.2185	57	101	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

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														
	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
1600	◎	○				◎	◎	○		◎	◎						

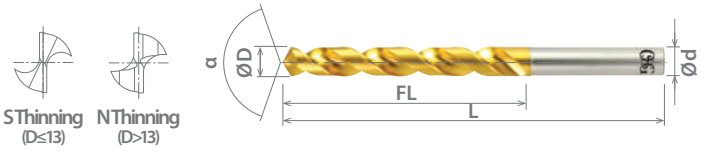
○ good ◎ best

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List 1600

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°



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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8597556	-	7/32	-	-	5.56	0.2189	57	101	6	120°
8597557	-	-	-	-	5.57	0.2193	57	101	6	120°
8597558	-	-	-	-	5.58	0.2197	57	101	6	120°
8597559	-	-	-	-	5.59	0.2201	57	101	6	120°
62556	-	-	-	-	5.60	0.2205	57	101	6	120°
8597561	859756111	-	2	-	5.61	0.2209	57	101	6	120°
8597562	-	-	-	-	5.62	0.2213	57	101	6	120°
8597563	-	-	-	-	5.63	0.2217	57	101	6	120°
8597564	-	-	-	-	5.64	0.2220	57	101	6	120°
8597565	-	-	-	-	5.65	0.2224	57	101	6	120°
8597566	-	-	-	-	5.66	0.2228	57	101	6	120°
8597567	-	-	-	-	5.67	0.2232	57	101	6	120°
8597568	-	-	-	-	5.68	0.2236	57	101	6	120°
8597569	-	-	-	-	5.69	0.2240	57	101	6	120°
62557	-	-	-	-	5.70	0.2244	57	101	6	120°
8597571	-	-	-	-	5.71	0.2248	57	101	6	120°
8597572	-	-	-	-	5.72	0.2252	57	101	6	120°
8597573	-	-	-	-	5.73	0.2256	57	101	6	120°
8597574	-	-	-	-	5.74	0.2260	57	101	6	120°
8597575	-	-	-	-	5.75	0.2264	57	101	6	120°
8597576	-	-	-	-	5.76	0.2268	57	101	6	120°
8597577	-	-	-	-	5.77	0.2272	57	101	6	120°
8597578	-	-	-	-	5.78	0.2276	57	101	6	120°
8597579	-	-	1	-	5.79	0.2280	57	101	6	120°
62558	-	-	-	-	5.80	0.2283	57	101	6	120°
8597581	-	-	-	-	5.81	0.2287	57	101	6	120°
8597582	-	-	-	-	5.82	0.2291	57	101	6	120°
8597583	-	-	-	-	5.83	0.2295	57	101	6	120°
8597584	-	-	-	-	5.84	0.2299	57	101	6	120°
8597585	-	-	-	-	5.85	0.2303	57	101	6	120°
8597586	-	-	-	-	5.86	0.2307	57	101	6	120°
8597587	-	-	-	-	5.87	0.2311	57	101	6	120°
8597588	-	-	-	-	5.88	0.2315	57	101	6	120°
8597589	-	-	-	-	5.89	0.2319	57	101	6	120°
62559	-	-	-	-	5.90	0.2323	57	101	6	120°
8597591	-	-	-	-	5.91	0.2327	57	101	6	120°
8597592	-	-	-	-	5.92	0.2331	57	101	6	120°
8597593	-	-	-	-	5.93	0.2335	57	101	6	120°
8597594	-	-	-	A	5.94	0.2339	57	101	6	120°
8597595	859759511	15/64	-	-	5.95	0.2343	57	101	6	120°
8597596	-	-	-	-	5.96	0.2346	57	101	6	120°
8597597	-	-	-	-	5.97	0.2350	57	101	6	120°
8597598	-	-	-	-	5.98	0.2354	57	101	6	120°
8597599	-	-	-	-	5.99	0.2358	57	101	6	120°
62560	-	-	-	-	6.00	0.2362	57	101	6	120°
8597605	-	-	-	B	6.05	0.2382	63	107	8	120°

Packed: 1 pc.
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Specify treatment at time of order: 11 = TiAlN.

EXD

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List 1600 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
62561	6256111	-	-	-	6.10	0.2402	63	107	8	120°
8597615	-	-	-	C	6.15	0.2421	63	107	8	120°
62562	-	-	-	-	6.20	0.2441	63	107	8	120°
8597625	-	-	-	D	6.25	0.2461	63	107	8	120°
62563	-	-	-	-	6.30	0.2480	63	107	8	120°
8597635	859763511	1/4	-	E	6.35	0.2500	63	107	8	120°
62564	-	-	-	-	6.40	0.2520	63	107	8	120°
8597645	-	-	-	-	6.45	0.2539	63	107	8	120°
62565	6256511	-	-	-	6.50	0.2559	63	107	8	120°
8597655	-	-	-	-	6.55	0.2579	63	107	8	120°
62566	6256611	-	-	-	6.60	0.2598	63	107	8	120°
8597665	-	-	-	-	6.65	0.2618	63	107	8	120°
62567	-	-	-	-	6.70	0.2638	63	107	8	120°
8597675	859767511	17/64	-	-	6.75	0.2657	69	113	8	120°
62568	6256811	-	-	-	6.80	0.2677	69	113	8	120°
8597685	-	-	-	-	6.85	0.2697	69	113	8	120°
62569	-	-	-	I	6.90	0.2717	69	113	8	120°
8597695	-	-	-	-	6.95	0.2736	69	113	8	120°
62570	6257011	-	-	-	7.00	0.2756	69	113	8	120°
8597705	-	-	-	-	7.05	0.2776	69	113	8	120°
62571	-	-	-	-	7.10	0.2795	69	113	8	120°
8597715	-	-	-	-	7.15	0.2815	69	113	8	120°
62572	-	-	-	-	7.20	0.2835	69	113	8	120°
8597725	859772511	-	-	-	7.25	0.2854	69	113	8	120°
62573	-	-	-	-	7.30	0.2874	69	113	8	120°
8597735	-	-	-	-	7.35	0.2894	69	113	8	120°
62574	6257411	-	-	-	7.40	0.2913	69	113	8	120°
8597745	-	-	-	-	7.45	0.2933	69	113	8	120°
62575	-	-	-	-	7.50	0.2953	69	113	8	120°
8597755	-	-	-	-	7.55	0.2972	75	119	8	120°
62576	-	-	-	-	7.60	0.2992	75	119	8	120°
8597765	-	-	-	-	7.65	0.3012	75	119	8	120°
62577	6257711	-	-	-	7.70	0.3031	75	119	8	120°
8597775	-	-	-	-	7.75	0.3051	75	119	8	120°
62578	-	-	-	-	7.80	0.3071	75	119	8	120°
8597785	-	-	-	-	7.85	0.3091	75	119	8	120°
62579	6257911	-	-	-	7.90	0.3110	75	119	8	120°
8597795	-	-	-	-	7.95	0.3130	75	119	8	120°
62580	-	-	-	-	8.00	0.3150	75	119	8	120°
8597805	-	-	-	-	8.05	0.3169	75	125	10	120°
62581	-	-	-	-	8.10	0.3189	75	125	10	120°
8597815	-	-	-	-	8.15	0.3209	75	125	10	120°
62582	-	-	-	P	8.20	0.3228	75	125	10	120°

Packed: 1 pc.
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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														
	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
1600	◎	○				◎	◎	○		◎	◎						

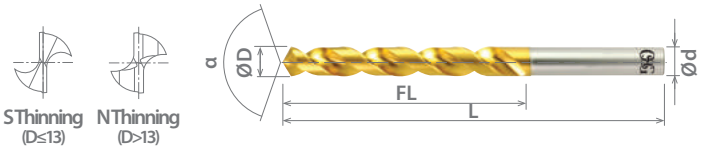
○ good ◎ best

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List 1600

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°



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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8597825	-	-	-	-	8.25	0.3248	75	125	10	120°
62583	-	-	-	-	8.30	0.3268	75	125	10	120°
8597835	-	-	-	-	8.35	0.3287	75	125	10	120°
62584	-	-	-	-	8.40	0.3307	75	125	10	120°
8597845	-	-	-	-	8.45	0.3327	75	125	10	120°
62585	6258511	-	-	-	8.50	0.3346	75	125	10	120°
8597855	-	-	-	-	8.55	0.3366	81	131	10	120°
62586	6258611	-	-	-	8.60	0.3386	81	131	10	120°
8597865	-	-	-	-	8.65	0.3406	81	131	10	120°
62587	-	-	-	-	8.70	0.3425	81	131	10	120°
8597875	-	-	-	-	8.75	0.3445	81	131	10	120°
62588	-	-	-	-	8.80	0.3465	81	131	10	120°
8597885	-	-	-	-	8.85	0.3484	81	131	10	120°
62589	-	-	-	-	8.90	0.3504	81	131	10	120°
8597895	-	-	-	-	8.95	0.3524	81	131	10	120°
62590	-	-	-	-	9.00	0.3543	81	131	10	120°
8597905	-	-	-	-	9.05	0.3563	81	131	10	120°
62591	6259111	-	-	-	9.10	0.3583	81	131	10	120°
8597915	-	-	-	-	9.15	0.3602	81	131	10	120°
62592	6259211	-	-	-	9.20	0.3622	81	131	10	120°
8597925	859792511	-	-	-	9.25	0.3642	81	131	10	120°
62593	-	-	-	-	9.30	0.3661	81	131	10	120°
8597935	859793511	-	-	U	9.35	0.3681	81	131	10	120°
62594	-	-	-	-	9.40	0.3701	81	131	10	120°
8597945	-	-	-	-	9.45	0.3720	81	131	10	120°
62595	6259511	-	-	-	9.50	0.3740	81	131	10	120°
8597955	-	-	-	-	9.55	0.3760	87	137	10	120°
62596	-	-	-	-	9.60	0.3780	87	137	10	120°
8597965	-	-	-	-	9.65	0.3799	87	137	10	120°
62597	-	-	-	-	9.70	0.3819	87	137	10	120°
8597975	-	-	-	-	9.75	0.3839	87	137	10	120°
62598	6259811	-	-	W	9.80	0.3858	87	137	10	120°
8597985	-	-	-	-	9.85	0.3878	87	137	10	120°
62599	-	-	-	-	9.90	0.3898	87	137	10	120°
8597995	-	-	-	-	9.95	0.3917	87	137	10	120°
62600	-	-	-	-	10.00	0.3937	87	137	10	120°
8598005	-	-	-	-	10.05	0.3957	87	144	12	120°
62601	-	-	-	-	10.10	0.3976	87	144	12	120°
8598015	-	-	-	-	10.15	0.3996	87	144	12	120°
62602	6260211	-	-	-	10.20	0.4016	87	144	12	120°
8598025	-	-	-	-	10.25	0.4035	87	144	12	120°
62603	-	-	-	-	10.30	0.4055	87	144	12	120°
8598035	-	-	-	-	10.35	0.4075	87	144	12	120°
62604	-	-	-	-	10.40	0.4094	87	144	12	120°
8598045	-	-	-	-	10.45	0.4114	87	144	12	120°
62605	-	-	-	-	10.50	0.4134	87	144	12	120°

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

EXD

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List 1600 (Continued)

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°

TiN EDP Number	TiAlN EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
8598055	-	-	-	-	10.55	0.4154	87	144	12	120°
62606	-	-	-	-	10.60	0.4173	87	144	12	120°
8598065	-	-	-	-	10.65	0.4193	94	151	12	120°
62607	6260711	-	-	-	10.70	0.4213	94	151	12	120°
8598075	-	-	-	-	10.75	0.4232	94	151	12	120°
62608	-	-	-	-	10.80	0.4252	94	151	12	120°
8598085	-	-	-	-	10.85	0.4272	94	151	12	120°
62609	6260911	-	-	-	10.90	0.4291	94	151	12	120°
8598095	-	-	-	-	10.95	0.4311	94	151	12	120°
62610	6261011	-	-	-	11.00	0.4331	94	151	12	120°
8598105	-	-	-	-	11.05	0.4350	94	151	12	120°
62611	6261111	-	-	-	11.10	0.4370	94	151	12	120°
8598115	-	-	-	-	11.15	0.4390	94	151	12	120°
62612	-	-	-	-	11.20	0.4409	94	151	12	120°
8598125	-	-	-	-	11.25	0.4429	94	151	12	120°
62613	-	-	-	-	11.30	0.4449	94	151	12	120°
8598135	-	-	-	-	11.35	0.4469	94	151	12	120°
62614	-	-	-	-	11.40	0.4488	94	151	12	120°
8598145	-	-	-	-	11.45	0.4508	94	151	12	120°
62615	-	-	-	-	11.50	0.4528	94	151	12	120°
8598155	-	-	-	-	11.55	0.4547	94	151	12	120°
62616	-	-	-	-	11.60	0.4567	94	151	12	120°
8598165	-	-	-	-	11.65	0.4587	94	151	12	120°
62617	-	-	-	-	11.70	0.4606	94	151	12	120°
8598175	-	-	-	-	11.75	0.4626	94	151	12	120°
62618	-	-	-	-	11.80	0.4646	94	151	12	120°
8598185	-	-	-	-	11.85	0.4665	101	158	12	120°
62619	-	-	-	-	11.90	0.4685	101	158	12	120°
8598195	-	-	-	-	11.95	0.4705	101	158	12	120°
62620	-	-	-	-	12.00	0.4724	101	158	12	120°
62621	-	-	-	-	12.10	0.4764	101	158	12	120°
62622	-	-	-	-	12.20	0.4803	101	158	12	120°
62623	6262311	31/64	-	-	12.30	0.4843	101	158	12	120°
62624	6262411	-	-	-	12.40	0.4882	101	158	12	120°
62625	-	-	-	-	12.50	0.4921	101	158	12	120°
62626	6262611	-	-	-	12.60	0.4961	101	158	12	120°
62627	6262711	1/2	-	-	12.70	0.5000	101	158	12	120°
62628	-	-	-	-	12.80	0.5039	101	158	12	120°
62629	-	-	-	-	12.90	0.5079	101	158	12	120°
62630	-	-	-	-	13.00	0.5118	101	158	12	120°
62635	-	-	-	-	13.50	0.5315	106	166	16	120°
62640	-	-	-	-	14.00	0.5512	106	166	16	120°
62641	-	-	-	-	14.10	0.5551	109	169	16	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

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														
	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
1600	◎	○				◎	◎	○		◎	◎						

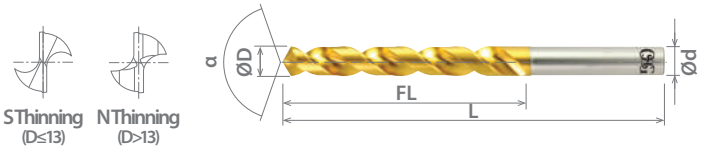
○ good ◎ best

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List 1600

Ideal for Stainless Steel

SPEED FEED P271 | HSSE | TiN | TiAlN | JOBBERS | 40°



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	Overall Length	Shank Diameter	Point Angle
		Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d	α
62645	-	-	-	-	14.50	0.5709	109	169	16	120°
62650	6265011	-	-	-	15.00	0.5906	109	169	16	120°
62655	-	-	-	-	15.50	0.6102	112	172	16	120°
62656	-	-	-	-	15.60	0.6142	112	172	16	120°
62660	-	-	-	-	16.00	0.6299	112	172	16	120°
62665	-	-	-	-	16.50	0.6496	115	181	20	120°
62670	-	-	-	-	17.00	0.6693	115	181	20	120°
62675	-	-	-	-	17.50	0.6890	118	184	20	120°
62676	-	-	-	-	17.60	0.6929	118	184	20	120°
62680	-	-	-	-	18.00	0.7087	118	184	20	120°
62685	-	-	-	-	18.50	0.7283	122	188	20	120°
62690	-	-	-	-	19.00	0.7480	122	188	20	120°
62695	-	-	-	-	18.50	0.7677	125	191	20	120°
62696	-	-	-	-	19.60	0.7717	125	191	20	120°
62700	-	-	-	-	20.00	0.7874	125	191	20	120°
62705	-	-	-	-	20.50	0.8071	128	204	25	120°
62710	-	-	-	-	21.00	0.8268	128	204	25	120°
62715	-	-	-	-	21.50	0.8465	132	208	25	120°
62720	-	-	-	-	22.00	0.8661	132	208	25	120°
62725	-	-	-	-	22.50	0.8858	136	212	25	120°
62730	6273011	-	-	-	23.00	0.9055	136	212	25	120°
62735	-	-	-	-	23.50	0.9252	136	212	25	120°
62740	-	-	-	-	24.00	0.9449	140	216	25	120°
62745	-	-	-	-	24.50	0.9646	140	216	25	120°
62750	-	63/64	-	-	25.00	0.9843	140	216	25	120°
62755	-	-	-	-	25.50	1.0039	145	225	32	120°
62760	-	-	-	-	26.00	1.0236	145	225	32	120°
62765	-	-	-	-	26.50	1.0433	145	225	32	120°
62770	-	-	-	-	27.00	1.0630	150	230	32	120°
62780	-	-	-	-	28.00	1.1024	150	230	32	120°
62790	-	-	-	-	29.00	1.1417	155	235	32	120°
62800	-	-	-	-	30.00	1.1811	155	235	32	120°
62810	-	-	-	-	31.00	1.2205	160	240	32	120°
62820	-	-	-	-	32.00	1.2598	165	245	32	120°

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

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
	1010 1018	1035 1045	1065	4140 4340													
1600	◎	○				◎	◎	○		◎	◎						

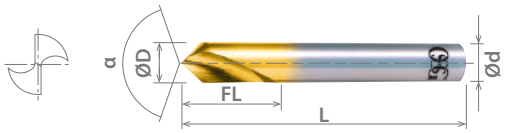
○ good ◎ best

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List 1200

SPEED FEED P272 | HSS | BR | TiN | STUB | 20°

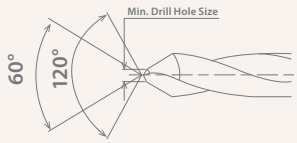
TiN-NC-LDS, 60°, 90° & 120° Spot Drills



EDP Number		Diameter					Min Drill Hole Size	Point Angle	Flute Length	Overall Length	Shank Diameter
Bright	TiN	Fractional Size	Wire Gage	Letter Size	mm	Inch		α	FL	L	d
-	63703	-	-	-	3	0.1181	1.5	60°	11	48	3
62903	63603	-	-	-			1.1	90°	11	48	3
62923	63653	-	-	-			-	120°	11	48	3
-	63704	-	-	-	4	0.1575	1.7	60°	15	54	4
62904	63604	-	-	-			1.3	90°	15	54	4
62924	63654	-	-	-			-	120°	15	54	4
-	63706	-	-	-	6	0.2362	1.9	60°	20	72	6
62906	63606	-	-	-			1.5	90°	20	72	6
62926	63656	-	-	-			-	120°	20	72	6
-	63708	-	-	-	8	0.3150	1.9	60°	26	81	8
62908	63608	-	-	-			1.6	90°	26	81	8
62928	63658	-	-	-			-	120°	26	81	8
-	63710	-	-	-	10	0.3937	2.1	60°	30	93	10
62910	63610	-	-	-				90°	30	93	10
62930	63660	-	-	-			-	120°	30	93	10
-	63712	-	-	-	12	0.4724	2.1	60°	36	108	12
62912	63612	-	-	-				90°	36	108	12
62932	63662	-	-	-			-	120°	36	108	12
62916	63616	-	-	-	16	0.6299	3	90°	41	118	16
62936	-	-	-	-			-	120°	41	118	16
62918	63618	-	-	-	20	0.7874	3	90°	53	132	20
62938	-	-	-	-			-	120°	53	132	20
62920	63620	-	-	-	25	0.9843	3	90°	60	151	25
62940	-	-	-	-			-	120°	60	151	25

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

EXD



The EX-SPOT (LS-NC-LDS) 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

	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
1200	◎	◎	◎	○	○	○	○	○		○	○			○			

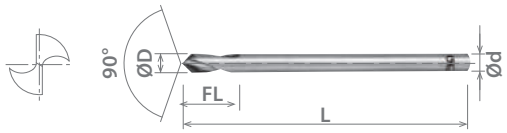
○ good ◎ best

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List 1250

SPEED FEED P272 | HSS | BR | STUB | 20°

LS-NC-LDS, Long Shank, 90° Spot Drill



EDP Number	Diameter					Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
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	150	8
63510	-	-	-	10	0.3937	30	200	10
63512	-	-	-	12	0.4724	36	200	12
63516	-	-	-	16	0.6299	41	250	16
63518	-	-	-	20	0.7874	53	250	20
63520	-	-	-	25	0.9843	60	250	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

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														
	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
1250	◎	◎	◎	○	○				○	○	○						

○ good ◎ best

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DRILLING
Technical



Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 5600-EXOPRO® Mega Muscle®: 3D
List 5610-EXOPRO® Mega Muscle®: 5D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 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					
				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

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List 5950Ni-EXOPRO® WHO-Ni: 3D
List 5955Ni-EXOPRO® WHO-Ni: 5D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 1010, 1050, 12L14		Alloy Steels 4140, 4130		Cast Iron		Ductile Cast Iron		Ni-Base Material, Inconel	
										38-43 HRC	
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					
		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

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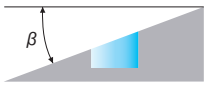
List 5700-EXOCARB® ADF: 2D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 1010, 1050, 12L14		Alloy Steels 4140, 4130		Cast Iron		Ductile Cast Iron		Aluminum	
Hardness				28-35 HRC							
Drilling Speed		200-330 SFM		100-300 SFM		200-400 SFM		165-260 SFM		265-650 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										
2	–	12,700	0.0004-0.002	9,550	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	1,450	0.004-0.016	1,050	0.004-0.016	2,250	0.004-0.024

General Drilling Operations

Work Material		Aluminum Alloy		Hardened Steel-Pre Hardened Steel		Plastic Mold Steel	
Hardness				Up to 50 HRC		Up to 40 HRC	
Drilling Speed		265-650 SFM		65-100 SFM		65-130 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed 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:

1. 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.
2. When using non-water soluble oil or water-emulsifiable (over 20 times dilution), reduce cutting speed by 30%.
3. Use a rigid and precise machine and holder.
4. Please minimize tool hang over as much as possible during machining.
5. Adjust the rotational speed and the feed rate in accordance with conditions such as the machining shape, machine rigidity, or work holding.
6. Please set up the drill so that the runout of the cutting edge is under 0.01 mm.
7. 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 20-40%.
8. Please use step drilling in pilot holes to improve cutting chip separation.
9. 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).

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List 5400-EXOCARB® WD: 2D
List 5410-EXOCARB® WD: 4D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 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		210-315 SFM		210-315 SFM		100-185 SFM		80-145 SFM		65-100 SFM		50-90 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	–	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							
						26-30 HRC		30-34 HRC		34-43 HRC		43-48 HRC	
Drilling Speed		210-315 SFM		156-265 SFM		155-235 SFM		100-160 SFM		100-130 SFM		65-95 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	–	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

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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. Resharpening 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.

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List 5180-EXOCARB® LDS

General Drilling Operations

Work Material	Carbon Steels, Mild Steel 1010, 1050, 12L14		Alloy Steels 4140, 4130		Cast Iron		Aluminum Alloy Casting		Special Alloy Steels, Hardened Steels			
									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.

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List 5200-EXOCARB® WDO-SUS: 3D
List 5210-EXOCARB® WDO-SUS: 5D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 1010, 1050, 12L14		Alloy Steels 4140, 4130		300 Series Austenitic Stainless Steel				400 Series Ferritic Stainless Steel Martensitic Stainless Steel			
						≤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												
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
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 Stainles Steel				15-5 17-4 Precipitation Stainless Steel		Ductile Cast Iron/ Cast Iron		Cast Aluminum		Titanium Alloy	
		≤ 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												
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
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

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List 5500-EXOCARB® WDO: 3D
List 5510-EXOCARB® WDO: 5D
List 5520-EXOCARB® WDO: 8D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 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 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	–	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	0.006-0.009	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 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	–	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	0.07-0.012	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

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List 5530-EXOCARB® WDO: 10D
List 5535-EXOCARB® WDO: 15D
List 5540-EXOCARB® WDO: 20D
List 5550-EXOCARB® WDO: 30D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 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 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	–	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

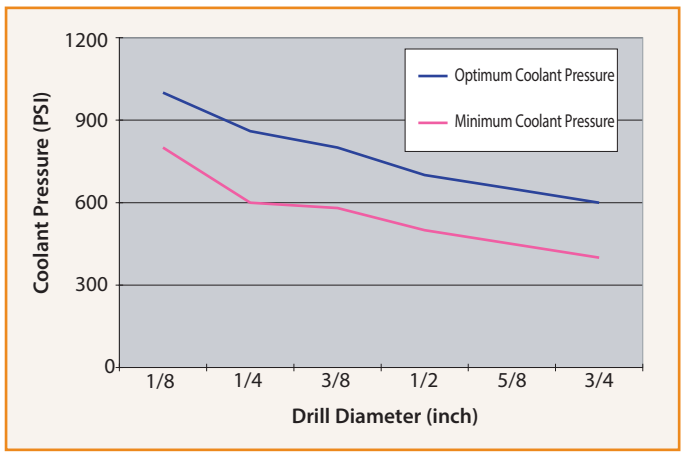
Work Material		Cast Iron		Ductile Cast Iron		Special Alloy Steels, Hardened Steels							
						26-30 HRC		30-34 HRC		34-43 HRC		43-48 HRC	
Drilling Speed		260-395 SFM		195-330 SFM		195-295 SFM		130-200 SFM		130-160 SFM		82-115 SFM	
Drill Dia.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch												
2	–	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

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List 5275-EXOCARB® MAX-OIL-AL: 15D-30D

Work Material	Aluminum Alloy Casting A2025, A5052		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



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List 5310-EXOCARB® MAX-MINI FHL-GDTS

Work Material	Hardened Steel, Pre-Hardened Steels			H13			D2, 440 Stainless Steel		
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 0.002 mm.
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.

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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, Aluminum Alloys		
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 0.002mm.
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.

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List 5330-EXOCARB® MAX-MINI WX-MS

General Drilling Operations

Work Material	Carbon Steel 1010, 1050		Alloy Steel 4140, 4130		Special Alloy Steels, Hardened Steels		Copper, Copper Alloys C1020, S2600	
Drilling Speed	65-260 SFM		65-180 SFM		100-260 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	0.0001	25,000	0.00008
0.3	20,000	0.00012	20,000	0.00012	20,000	0.0003	20,000	0.0001
0.5	15,000	0.0003	14,000	0.0003	15,000	0.0006	15,000	0.0003
1	12,000	0.0008	11,000	0.0008	12,000	0.0012	12,000	0.0004
1.5	10,000	0.0008-0.0016	8,400	0.0008-0.0016	10,000	0.0012-0.0031	10,000	0.0005-0.0012
2	8,000	0.0012-0.0019	6,500	0.0012-0.0019	8,000	0.0016-0.0040	8,000	0.0006-0.0016
3	5,500	0.0016-0.0028	4,500	0.0016-0.0028	6,500	0.0024-0.0059	6,500	0.0009-0.0024
4	4,000	0.0024-0.0040	3,200	0.0024-0.0040	5,000	0.0031-0.0079	5,000	0.0012-0.0031
5	3,200	0.0027-0.0047	2,600	0.0027-0.0047	4,000	0.0040-0.0098	4,000	0.0016-0.0040

General Drilling Operations

Work Material	Aluminum 6061, 7075		Aluminum Alloys	
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 0.002 mm.
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.

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List 5340-EXOCARB® MAX-MINI MRS

General Drilling Operations

Work Material	Carbon Steel 1015, 1050		Alloy Steel 4140, 4130		Austenitic Stainless Steels 304, 316		Martensitic Stainless Steels 420, 440		Ferritic Stainless Steels 430, 430F	
Drilling Speed	65-260 SFM		65-180 SFM		50-130 SFM		65-165 SFM		65-165 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	22,300	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	11,150	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	7,440	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	5,580	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	4,460	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	3,720	0.0012-0.0035

General Drilling Operations

Work Material	Precipitation Hardened Stainless Steels 17-4, 15-5		Aluminum 6061, 7075		Aluminum Alloys		Copper, Copper Alloys C1020, S2600		Special Alloy Steels, Hardened Steels	
Drilling Speed	50-130 SFM		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	Speed RPM	Feed IPR
0.5	17,465	0.0002-0.0006	15,000	0.0006	15,000	0.0003	13,000	0.0003	13,000	0.0003
1	8,730	0.0004-0.0012	12,000	0.0012	12,000	0.0004	6,400	0.0004	10,000	0.0008
1.5	5,820	0.0006-0.0018	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	4,365	0.0008-0.0024	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	3,500	0.0009-0.0030	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	2,900	0.0012-0.0035	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 0.002 mm.
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.

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List HP243-HY-PRO® CARB: 3D
List HP245-HY-PRO® CARB: 5D

General Drilling Operations

Work Material		Carbon Steels, Mild Steel 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.		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												
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	0.001-0.002
–	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		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.		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												
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	0.0005-0.001
–	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

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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

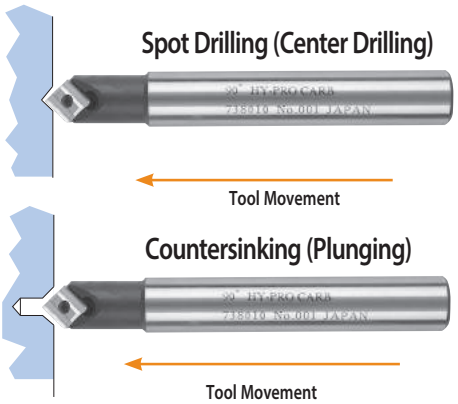
Work Material		Carbon Steels, Mild Steel 1010, 1050, 12L14		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Ductile Cast Iron		Aluminum Alloy	
Drilling Speed		310-455 SFM		265-380 SFM		145-220 SFM		285-420 SFM		215-350 SFM		260-450 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
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

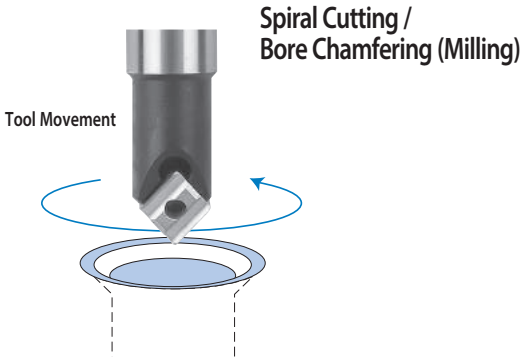
General Drilling Operations

Work Material		Cast Aluminum		Copper		Special Alloy Steels, Hardened Steels							
						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	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
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

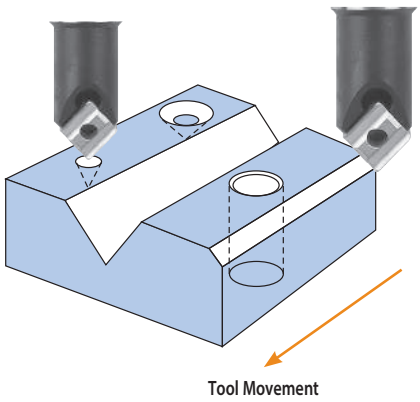
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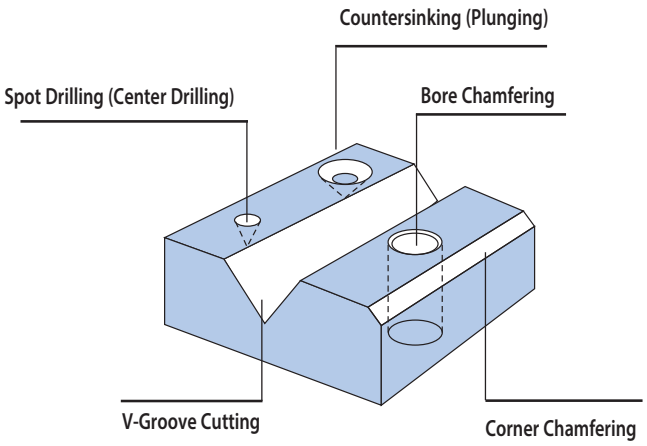
List 738





"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

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List 215, 220D & 200

General Drilling Operations

Work Material		Mild Steels, Carbon Steels		Alloy Tool Steels, Tool Steels Up to 30 HRC		Cast Iron		Aluminum	
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 30-38 HRC		Hardened Steels, Prehardened Steels 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

continued on next page

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List 215, 220D & 200 (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.		Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
mm	Inch								
3	–	6,800	0.0017-0.0022	6,800	0.0017-0.0022	5,200	0.0017-0.0022	520	0.0008-0.0013
–	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.

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.

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List 300D

General Drilling Operations

Work Material		Mild Steels, Carbon Steels		Alloy Tool Steels, Tool Steels Up to 30 HRC		Cast Iron		Aluminum	
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 30-38 HRC		Hardened Steels, Prehardened Steels 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

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List 1900 - VPH GDS
List 1950 - VPH GDR

General Drilling Operations

Work Material		Low Carbon Steel 1010, 1018		Carbon Steel 1045, 1050		Alloy Steel 4140, 4330		Special Alloy Steel D2, H13		Cast Iron	
Drilling Speed		125-160 SFM		80-120 SFM		80-100 SFM		30-50 SFM		130-200 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										
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

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Work Material		High Heat Material						Hardened Steel					
		Ti Alloy Ti-6Al-4V		Fe Base Material Incoloy901, 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
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
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

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List 2000 - VP® GDR

General Drilling Operations

Work Material		Low Carbon Steel 1010, 1018		Carbon Steel 1045, 1050		Alloy Steel 4140, 4330		Special Alloy Steel D2, H13		Cast Iron		Aluminum Alloy Casting	
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

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List 1700 - V-HO GDR: Coolant-Through

General Drilling Operations

Work Material	Low Carbon Steel 1010, 1018		Carbon Steel 1045, 1050		Special Alloy Steel D2, H13		Die Steel H13 (20 HRC)		Cast Iron		Aluminum Alloy Casting	
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.

Principal Problems & Solutions for VP® Drills

Specific Problems	Causes	Solution
Outer corners break down	Too fast cutting speed, Poor lubrication	Reduce RPM, Improve coolant flow
Chipping	Too high feed rate (IPR), Relief Angle too high	Reduce feed rate (IPR), Adjust relief angle of regrind
Rough Surface Finish	Too high feed rate (IPR), Time to regrind	Reduce feed rate (IPR), Regrind
Rifling Mark	Too high feed rate (IPR), Relief Angle too high	Reduce feed rate (IPR), Adjust relief angle of regrind
Over-sized holes	Uneven lip height, Poor spindle or holder	Inspect lip height, Check run-out of drill on spindle.

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List 1750 - HELIOS®:10D
List 1760 - HELIOS®:15D
List 1770 - HELIOS®:20D

General Drilling Operations

Work Material		Carbon Steel Mild Steel 1010, 1050, 12L14		Special Alloy Steel 4140, 4130		Tool Steels Die Steels D2, H13, P20, S7		Stainless Steel 300, 400, PH	
Drilling Speed		65-80 SFM		60-75 SFM		40-55 SFM		20-45 SFM	
Drill Dia.		Speed	Feed	Speed	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR	RPM	IPR
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	Feed	Speed	Feed	Speed	Feed
mm	Inch	RPM	IPR	RPM	IPR	RPM	IPR
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.

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List 1800 - V-Select

General Drilling Operations

Work Material	Low Carbon Steel 1010, 1018		Carbon Steels Alloy Steels		Special Alloy Steels 4140, 4340		Special Alloy Steels D2, H13		Cast Iron		Aluminum Alloy Casting	
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

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List 1150 - NEXUS GDS
List 1650 - NEXUS GDR

General Drilling Operations

Work Material		Low Carbon Steels Mild Steels 1010, 1018		Medium Carbon Steels Alloy Steels 1035, 1045		Alloy Steels 4140, 4130		Special Alloy Steels D2, H13		Stainless Steel			
										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	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	–	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	0.001-0.002
–	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

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Work Material		Stainless Steel						Cast Iron		Aluminum Alloy A5052, 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.		Speed	Feed	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	RPM	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

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List 1000 - EX-GOLD®: Stub
List 1500 - EX-GOLD®: Jobbers

General Drilling Operations

Work Material		Low Carbon Steels 1010, 1018		Carbon Steels Alloy Steels 1035, 1045		Special Alloy Steels 4140, 4340		Special Alloy Steels D2, H13		Cast Iron		Aluminum Alloy Casting	
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.

Principal Problems & Solutions for EX-GOLD® Drills

Specific Problems	Causes	Solution
Outer corners break down	Too fast cutting speed, Poor lubrication	Reduce RPM, Improve coolant flow
Chipping	Too high feed rate (IPR), Relief Angle too high	Reduce feed rate (IPR), Adjust relief angle of regrind
Rough Surface Finish	Too high feed rate (IPR), Time to regrind	Reduce feed rate (IPR), Regrind
Rifling Mark	Too high feed rate (IPR), Relief Angle too high	Reduce feed rate (IPR), Adjust relief angle of regrind
Over-sized holes	Uneven lip height, Poor spindle or holder	Inspect lip height, Check run-out of drill on spindle.

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List 1100 - EX-SUS-GOLD
List 1600 - EX-SUS-GOLD

General Drilling Operations

Work Material		Low Carbon Steels Mild Steels 1010, 1018		Stainless Steels								Aluminum A5052, 7075		Aluminum Alloy Casting		Copper Copper Alloy	
				Ausenitic 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	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	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	-0.001
–	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

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List 1200 - EX-SPOT TiN-NC-LDS
List 1250 - EX-SPOT LS-NC-LDS

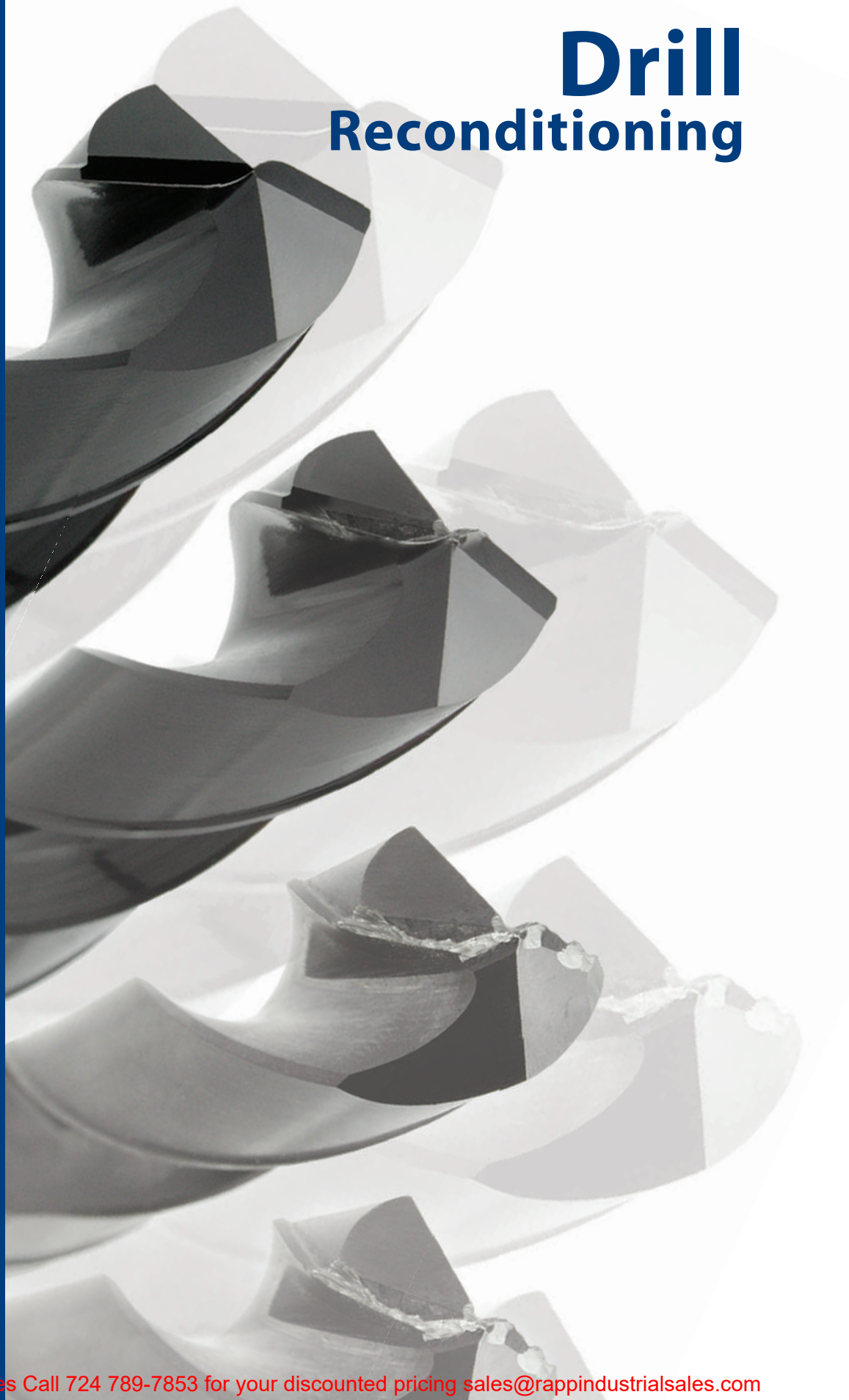
General Drilling Operations

Work Material	Carbon Steels, Mild Steel 1010, 1050		Alloy Steels 4140, 4130		Stainless Steels 300SS, 400SS, 17-4PH		Cast Iron		Aluminum Alloy Casting		Special Alloy Steels, Hardened Steels			
											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.

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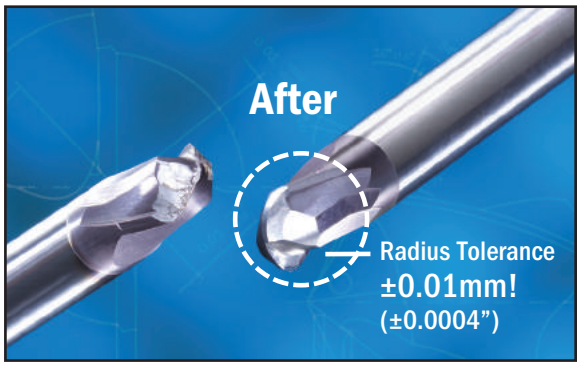
Drill
Reconditioning

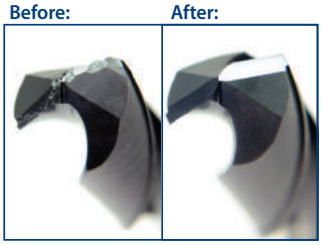


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OSG Tool Reconditioning

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.

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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.



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THREADING

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.





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THREADING

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Featured Threading Products

	EXOPRO® XPF		EXOPRO® WHR-Ni				EXOPRO® CC-SUS		EXOPRO® Ti		EXOTAP® DC	
	P308-324		P353-355		P408-409		P350-352		P406-407		P457-464	
												
Inch/Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
Size Range	No. 0 - 1-3/4"	M1 - M45	No. 2 - 1″	M2.5 - M24	No. 2 - 1″	M2.5 - M24	No. 2 - 1″	M2 - M24	No. 2 - 1/2″	M2.5 - M.12	1/4″ - 1″	M6 - M24
Type	Form Tap		Spiral Flute		Spiral Point		Spiral Flute		Spiral Point		Straight Flute	
Number of Flutes	Fluteless		2, 3 & 4	3 & 4	2, 3 & 4	3 & 4	2, 3 & 4	2, 3 & 4	3		3, 4 & 5	
Solid/Coolant-Through	Solid & Coolant-Through		Solid				Solid		Solid		Solid & Coolant-Through	
Overall Length	DIN & Long Shank		DIN				DIN		ANSI		ANSI & DIN	
Limit/Tolerance	H		H	D	H	D	H	D	H	D	H	D
Substrate	HSS-CO		VC-10				HSSE		VC-10		VC-10	
Coating	V		HR				TiN		V		V	
Chamfer Length	Bottom, Modified Bottom & Plug		Modified Bottom & Plug				Modified Bottom		Plug			

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)							

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EXOTAP® A-TAP®				EXOTAP® VC-10 Series (VC-10Ti, VC-10Ni, VC-10)				EXOTAP® VA-3				EXOTAP® VCX		EXOCARB® VX	
P364-374		P416-421		P356-363		P410-415		P375-379		P422-424		P455		P484-485	
															
Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
No. 0 - 1,3/4"	M1 - M45	No. 2 - 1″	M1.4 - M24	No. 2 - 1″	M3 - M12	No. 2 - 1″	M3 - M12	No. 2 - 1″	M3 - M18	No. 2 - 1″	M3 - M18	No. 6 - 1/2″	M3 - M12	No. 4 - 1/2″	M2.6 - M20
Spiral Flute		Spiral Point		Spiral Flute		Spiral Point		Spiral Flute		Spiral Point		Straight Flute		Straight Flute	
2, 3 & 4				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 & Coolant-Through				Solid				Solid				Solid		Solid	
DIN & Long Shank				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				HSSE				XPM		Carbide	
V				S/O & V				S/O, TiN, & V				V		V	
Bottom & Modified Bottom		Plug		Bottom & Modified Bottom		Plug		Bottom & Modified Bottom		Plug		Modified Bottom		Modified Bottom	

✖		○		
✖		○		
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	○		✖	✖

For OSG's complete tap offering please refer to the Application Guide on pages 281 or the Illustrated Index starting on page 282.

✖ 1st Choice ✖ 2nd Choice ○ Recommended

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	Work Material	Material Designation	Material Condition	Hardness	
				BHN	HRC
P	Low Carbon Steel	1010, 1018	Normalized	~190	~10
P	Medium Carbon Steel	1035, 1045	Normalized	~208	~15
P	High Carbon Steel	1065, 1095	Normalized	~253	~25
P	Alloy Steel	4140, 4340, 8620	Normalized	253~301	25~32
P		4140, 4340, 8620	Hardened	327~390	35~42
M	Stainless Steel	300 Series / 400 Series	Annealed	~253	~25
M		300 Series / 400 Series	Hardened	327~390	35~42
M		17-4, 15-5, A286	Annealed	~253	~25
M		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	
N	Die Cast Aluminum	356AL, 390AL	As Cast	~150	
S	Nickel Based Alloy	Inconel 718, 625	Annealed	253~301	25~32
S		Inconel 718	Hardened	327~390	35~42
S		Hastelloy, Waspaloy	Normalized		25~40
S		Kovar	Normalized		25~40
S	Titanium Alloy	6Al4V	Annealed	253~301	25~32
S		6Al4V, 6AL6V	Hardened	327~390	35~42
H	Tool Steel	D2, H13, P20, S7	Annealed	190~253	10~25
H		H13	Hardened	327~450	35~48
H		D2, A2	Hardened		48~55
H		D2, A2	Hardened		55~70

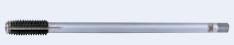


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Form Taps				Cut Taps									Pipe Taps
325-345	313-324	308-312	347-349	See Index	See Index	364-369 372-374	370-371	416-417 420-421	418-419	392	484-485	See Index	518-526
EXOTAP® NRT & HY-PRO® NRT	EXOPRO® XPF	EXOPRO® XPF-OIL *Coolant-Through*	Carbide	General	General *Coolant-Through*	EXOTAP® A-TAP® SFT	EXOTAP® A-TAP® SFT *Coolant-Through*	EXOTAP® A-TAP® POT	EXOTAP® A-TAP® POT *Coolant-Through*	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 EXOCARB® Thread Mills please refer to page 565-567.
For conversions to RPM please refer to page 536.

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page	
Thread Mills									
41200		EXOCARB® Mini	Inch	Carbide	WXS® SS	No. 0 - No. 8	Miniature, Helical Flute	300	567
41300		EXOCARB® Mini	Metric	Carbide	WXS® SS	M1 - M5	Miniature, Helical Flute	301	567
41000	 NEW SIZES	EXOCARB®	Inch	Carbide	EXO®	No. 10 - 1"	Helical Flute	302-303	566
41100		EXOCARB®	Metric	Carbide	EXO®	M6 - M24	Helical Flute	304	566
41050	 NEW!	EXOCARB® Oil	Inch	Carbide	EXO®	¼ - 1"	Coolant-Through, Long Length, Helical Flute	305	566
41150		EXOCARB® Oil	Metric	Carbide	EXO®	M6 - M24	Coolant-Through, Long Length, Helical Flute	306	566
42000		EXOCARB® Pipe	Inch	Carbide	EXO®	$^{1}/_{16}$ - 2 ½	NPT, Helical Flute	307	566
42001		EXOCARB® Pipe	Inch	Carbide	EXO®	$^{1}/_{16}$ - 2 ½	NPTF, Helical Flute	307	566
Forming Taps									
16050	 NEW SIZES	EXOPRO® XPF-OIL	Inch	HSS-Co	V	¼ - 1 ¾	Coolant-Through, DIN OAL	308-309	
16150	 NEW SIZES	EXOPRO® XPF-OIL	Metric	HSS-Co	V	M6 - M45	Coolant-Through, DIN OAL	310-312	
16250	 NEW SIZES	EXOPRO® XPF	Inch	HSS-Co	V	No. 0 - 1 ¾	DIN OAL	313-316	
16350	 NEW SIZES	EXOPRO® XPF	Metric	HSS-Co	V	M1 - M45	DIN OAL	317-320	
16255	 NEW!	EXOPRO® XPF-LS	Inch	HSS-Co	V	No. 5 - 1"	Long Shank	321-322	
16355	 NEW!	EXOPRO® XPF-LS	Metric	HSS-Co	V	M3 - M20	Long Shank	323-324	
14050		EXOTAP® NRT®	Inch	VC-10	V	No. 0 - $^{3}/_{8}$		325-327	
14150		EXOTAP® NRT®	Metric	VC-10	V	M1.6 - M12		328-329	
14001		HY-PRO® NRT®	Inch	HSS-CO	TiCN, TiN, Bright, S/O	No. 0 - ¾		330-342	
14101		HY-PRO® NRT®	Metric	HSS-CO	TiCN, TiN, Bright, S/O	M1.6 - M12		343-345	
285		HY-PRO® SEVEN	Inch	HSS	TiCN, TiN, Bright	No. 0 - ½		346	
286		HY-PRO® SEVEN	Metric	HSS	TiCN, TiN, Bright	M3 - M12		346	
14153		EXOCARB®	Metric	Carbide	Bright	M6 - M10	Carbide Inlaid, DIN/DIN	347	
369		EXOCARB®	Metric	Carbide	Bright	M3 - M12	JIS	348	
357		EXOCARB®	Metric	Carbide	Bright	M6 - M12	JIS, Long Shank	349	

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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														
	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

Thread Mills

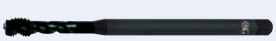
41200	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	○
41300	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	○
41000	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	○
41100	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	
41050	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
41150	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
42000	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	
42001	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	

Forming Taps

16050	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
16150	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
16250	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
16350	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
16255	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
16355	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
14050	◎	◎	◎	◎	◎	◎	◎	○		◎	◎			○			
14150	◎	◎	◎	◎	◎	◎	◎	○		◎	◎			○			
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
14101	◎	◎	◎	○	○	○	○	○		◎	◎			○			
285	◎	○								◎	◎						
286	◎	○								◎	◎						
14153										◎	◎						
369										◎	◎						
357										◎	◎						

○ good ◎ best

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Spiral Fluted Taps								
16450		EXOPRO®CC-SUS	Inch	HSSE	TiN	No. 2- 1"	Variable Helix, DIN OAL	350-351
16455		EXOPRO®CC-SUS	Metric	HSSE	TiN	M2 - M24	Variable Helix, DIN OAL	352
335Ni		EXOPRO® WHR-Ni	Inch	VC10	HR	No. 2 - 1"	DIN OAL	353-354
336Ni		EXOPRO® WHR-Ni	Metric	VC10	HR	M2.5 - M24	DIN OAL	355
313Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1"		356
345Ti		EXOTAP® VC-10 Ti	Metric	VC-10	V	M2.5 - M12		357
313Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V, S/O	No. 2 - 1"		358-359
345Ni		EXOTAP® VC-10 Ni	Metric	VC-10	S/O	M2.5 - M12		360
313		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - ¾"		361-362
345		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12		363
16505		EXOTAP® A-TAP®	Inch	VC-10	V	No. 4 - 2"	Variable Helix, DIN OAL	364-366
16500		EXOTAP® A-TAP®	Metric	VC-10	V	M1.4 - M45	Variable Helix, DIN OAL	367-369
16545		EXOTAP® A-TAP® OIL	Inch	VC-10	V	¼ - 2"	Variable Helix, Coolant-Through, DIN OAL	370
16540		EXOTAP® A-TAP® OIL	Metric	VC-10	V	M6 - M56	Variable Helix, Coolant-Through, DIN OAL	371
16525		EXOTAP® A-TAP® LS	Inch	VC-10	V	No. 6 - 1"	Variable Helix, Long Shank	372
16520		EXOTAP® A-TAP® LS	Metric	VC-10	V	M3 - M24	Variable Helix, Long Shank	373-374
303		EXOTAP VA-3®	Inch	HSSE	V, TiN, S/O	No. 2 - 1"		375-377
343		EXOTAP VA-3®	Metric	HSSE	V, TiN, S/O	M3 - M18		378
398		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - $^{5}/_{8}$"	Long Shank	379
220		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - 2"	DIN OAL	380
229		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	DIN OAL	381
230		HY-PRO® DIN	Inch	HSSE	TiN	¼ - 1"	Coolant-Through, DIN OAL	382
239		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Coolant-Through, DIN OAL	382

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Spiral Fluted Taps

List No.	P					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 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
16450	○	○	○	◎		◎	◎	○									
16455	○	○	○	◎		◎	◎	○									
335Ni								○				◎				○	
336Ni								○				◎				○	
313Ti				○				○				◎	◎	○	○		
345Ti				○				○				◎	◎	○	○		
313Ni								○				◎	○	○	○		
345Ni								○				◎	○	○	○		
313				◎	○		○	◎				○	○	◎	○		
345				◎	○		○	◎				○	○	◎	○		
16505	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16500	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16545	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16540	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16525	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16520	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
303	◎	○	○			◎	◎	○									
343	◎	○	○			◎	◎	○									
398	◎	○	○			◎	◎	○									
220	○	○	◎	◎	○	○	○	○	○					○			
229	○	○	◎	◎	○	○	○	○	○					○			
230	○	○	◎	◎	◎	○	○	○	○	○	○			○			
239	○	○	◎	◎	◎	○	○	○	○	○	○			○			

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Spiral Fluted Taps								
13013		HY-PRO® ALLOY	Inch	HSSE	V	¼ - ¾"	Coolant-Through, DIN OAL	383
13113		HY-PRO® ALLOY	Metric	HSSE	V	M6 - M20	Coolant-Through, DIN OAL	383
13014		HY-PRO® HXL	Inch	HSSE	S/O	½ - 2 ½"	DIN OAL	384
13024		HY-PRO® HXL-OIL	Inch	HSSE	S/O	½ - 2 ½"	Coolant-Through, DIN OAL	385
13015		HY-PRO® VXL	Inch	HSSE	S/O	½ - 2 ½"	DIN OAL	386
13025		HY-PRO® VXL-OIL	Inch	HSSE	S/O	½ - 2 ½"	Coolant-Through, DIN OAL	387
13116		HY-PRO® HXL-W	Metric	HSSE	S/O	M16 - M42	DIN OAL	388
13126		HY-PRO® HXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Coolant-Through, DIN OAL	389
13117		HY-PRO® VXL-W	Metric	HSSE	S/O	M16 - M42	DIN OAL	390
13127		HY-PRO® VXL-W-OIL	Metric	HSSE	S/O	M16 - M42	Coolant-Through, DIN OAL	391
13058		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - ½"	Synchronized	392
13158		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Synchronized	392
295		HY-PRO® AL	Inch	HSSE	Bright	No. 4 - $^{3}/_{8}$"		393
296		HY-PRO® AL	Metric	HSSE	Bright	M3 - M10		393
13019		HY-PRO® AL-DIN	Inch	HSSE	N	No. 2 - $^{7}/_{16}$"	DIN OAL	394
13119		HY-PRO® AL-DIN	Metric	HSSE	N	M3 - M12	DIN OAL	394
290		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 ½"		395-397
299		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30		398
297		HY-PRO® SEVEN	Inch	HSS	TiN, S/O, Bright	No. 3 - ½"		399
298		HY-PRO® SEVEN	Metric	HSS	TiN, S/O, Bright	M3 - M12		399
107		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 3 - ¾"		400
143		GENERAL PURPOSE	Metric	HSS	TiCN, TiN, S/O, Bright	M3 - M12		401
13020		GENERAL PURPOSE	Inch	HSSE	S/O	No. 6 - $^{5}/_{8}$"		402

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Spiral Fluted Taps

List No.	P					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 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
13013			○	◎	○				○		○			○	○		
13113			○	◎	○				○		○			○	○		
13014	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13024	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13015	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13025	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13116	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13126	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13117	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13127	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
13058										◎	◎						
13158										◎	◎						
295										◎	◎						
296										◎	◎						
13019										◎	◎						
13119										◎	◎						
290	○	◎	◎	◎	○	○	○	○	○					○			
299	○	◎	◎	◎	○	○	○	○	○					○			
297	◎	◎								○	○						
298	◎	◎								○	○						
107	○	○	○						○	○	○						
143	○	○	○						○	○	○						
13020	○	○	○						○	○	○						

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Spiral Fluted Taps								
123		GENERAL PURPOSE	Metric	HSSE	Bright	M3 - M24	JIS	403
918		GENERAL PURPOSE	Inch	HSS	Bright	No. 4 - 5/8"	Long Shank	404
389		EXOCARB®	Metric	Carbide	Bright	M3 - M12	JIS	405
Spiral Pointed Taps								
13063		EXOPRO® Ti	Inch	VC-10	V	No. 2 - ½"	RHC/LHS	406
13163		EXOPRO® Ti	Metric	VC-10	V	M2.5 - M12	RHC/LHS	407
337Ni		EXOPRO® WHR-Ni	Inch	VC-10	HR	No. 2 - 1"	DIN OAL	408
338Ni		EXOPRO® WHR-Ni	Metric	VC-10	HR	M2.5 - M24	DIN OAL	409
312Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - 1"		410
344Ti		EXOTAP® VC-10 Ti	Metric	VC-10	V	M3 - M12		411
312Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V, S/O	No. 2 - 1"		412
344Ni		EXOTAP® VC-10 Ni	Metric	VC-10	V, S/O	M2.5 - M12		413
312		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - ¾"		414
344		EXOTAP® VC-10	Metric	VC-10	V, S/O	M3 - M12		415
16515	 NEW SIZES	EXOTAP® A-TAP®	Inch	VC-10	V	No. 2 - 1"	DIN OAL	416
16510	 NEW SIZES	EXOTAP® A-TAP®	Metric	VC-10	V	M1.4 - M24	DIN OAL	417
16555	 NEW!	EXOTAP® A-TAP® OIL	Inch	VC-10	V	¼ - 1"	Coolant-Through, DIN OAL	418
16550	 NEW!	EXOTAP® A-TAP® OIL	Metric	VC-10	V	M6 - M24	Coolant-Through, DIN OAL	419
16535	 NEW!	EXOTAP® A-TAP® LS	Inch	VC-10	V	No. 6 - 1"	Long Shank	420
16530	 NEW!	EXOTAP® A-TAP® LS	Metric	VC-10	V	M3 - M24	Long Shank	421
300		EXOTAP VA-3®	Inch	HSSE	V, TiN, S/O	No. 2 - 1"		422
342		EXOTAP VA-3®	Metric	HSSE	V, TiN, S/O	M3 - M18		423
397		EXOTAP VA-3®	Inch	HSSE	S/O	No. 4 - 5/8"	Long Shank	424

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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														
	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
Spiral Fluted Taps																	
123	○	○	○						○	○	○						
918	○	○	○						○	○	○						
389									◎	◎	◎						
Spiral Pointed Taps																	
13063				○				○					◎	○			
13163				○				○					◎	○			
337Ni								○				◎				○	
338Ni								○				◎				○	
312Ti				○				○				◎	◎	○	○		
344Ti				○				○				◎	◎	○	○		
312Ni								○				◎	○	○	○		
344Ni								○				◎	○	○	○		
312				◎	○		○	◎				○	○	◎	○		
344				◎	○		○	◎				○	○	◎	○		
16515	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16510	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16555	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16550	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16535	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
16530	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
300	◎	○	○			◎	◎	○									
342	◎	○	○			◎	◎	○									
397	◎	○	○			◎	◎	○									

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Spiral Pointed Taps								
320		EXOTIN	Inch	HSSE	TiN	No. 4 - ¾"		425
250		HY-PRO® DIN	Inch	HSSE	S/O	No. 4 - ¾"	DIN OAL	426
259		HY-PRO® DIN	Metric	HSSE	S/O	M3 - M20	DIN OAL	427
260		HY-PRO® DIN	Inch	HSSE	TiN	¼ - 1"	Coolant-Through, DIN OAL	428
269		HY-PRO® DIN	Metric	HSSE	TiN	M6 - M20	Coolant-Through, DIN OAL	429
11015		HY-PRO® AERO-F	Inch	HSS-Co	TiN	No. 4 - 1"		430-432
11115		HY-PRO® AERO-F	Metric	HSS-Co	TiN	M3 - M14		433-434
13118		HY-PRO® RXL-W	Metric	HSSE	V	M16 - M42	DIN OAL & Extended OAL, For Through Holes, LHS	435
13059		HY-PRO® SYNCHRO AL	Inch	HSSE	V	No. 6 - ½"	Synchronized, RHC/LHS	436
13159		HY-PRO® SYNCHRO AL	Metric	HSSE	V	M3 - M12	Synchronized, RHC/LHS	436
11016		HY-PRO®AL-DIN	Inch	HSSE	N	No. 2 - ½"	DIN OAL	437
11116		HY-PRO®AL-DIN	Metric	HSSE	N	M3 - M12	DIN OAL	437
11017		HY-PRO®V DIN	Inch	HSSE	V	No. 4 - ½"	DIN OAL	438
11117		HY-PRO®V DIN	Metric	HSSE	V	M3 - M12	DIN OAL	438
280		HY-PRO®	Inch	HSSE	TiCN, S/O, Bright	No. 2 - 1 ½"		439-441
289		HY-PRO®	Metric	HSSE	TiCN, S/O, Bright	M3 - M30		442
287		HY-PRO® SEVEN	Inch/ Metric	HSS	TiN, S/O, Bright	No. 0 - ½"		443
288		HY-PRO® SEVEN	Inch/ Metric	HSS	TiN, S/O, Bright	M3 - M12		443
105		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - ¾"		444-446
105B		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 0 - 7/16"		447
105A		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - ½"	Assembly Type Taps	448
105+		GENERAL PURPOSE	Inch	HSS	TiN, Bright	No. 4 - No. 10	H7 Taps	448
105H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	No. 6 - ¾"	+.005" Oversize	449

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Spiral Pointed Taps

List No.	P					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 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
320	○	○	◎	◎	◎	○	○	○	○	○	○			○			
250	○	○	◎	◎	○	○	○	○	○					○			
259	○	○	◎	◎	○	○	○	○	○					○			
260	○	○	◎	◎	◎	○	○	○	○	○	○			○			
269	○	○	◎	◎	◎	○	○	○	○	○	○			○			
11015	◎	◎	◎	○	○	◎	◎	○	○	○	○	○	○	○			
11115	◎	◎	◎	○	○	◎	◎	○	○	○	○	○	○	○			
13118	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	○		
13059										◎	◎						
13159										◎	◎						
11016										◎	◎						
11116										◎	◎						
11017	◎	◎	◎	◎	◎	◎	◎	○	◎					○			
11117	◎	◎	◎	◎	◎	◎	◎	○	◎					○			
280	○	◎	◎	◎	○	○	○	○	○					○			
289	○	◎	◎	◎	○	○	○	○	○					○			
287	◎	◎								○	○						
288	◎	◎								○	○						
105	○	○	○						○	○	○						
105B	○	○	○						○	○	○						
105A	○	○	○						○	○	○						
105+	○	○	○						○	○	○						
105H	○	○	○						○	○	○						

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List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Spiral Pointed Taps								
142H		GENERAL PURPOSE	Metric	HSS	Bright	M4 - M12	+.005" Oversize	449
142		GENERAL PURPOSE	Metric	HSS	TiCN, TiN, S/O, Bright	M1.6 - M20		450
122		GENERAL PURPOSE	Metric	HSSE	S/O, Bright	M3 - M24	JIS	451
917		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 4 - $^{5}/_{8}$"	Long Shank	452
11118		GENERAL PURPOSE	Metric	HSS	S/O	M4 - M12	Extended Length	453
S111		GENERAL PURPOSE	Inch	HSS	Bright	No. 00	Miniature	454
Straight Fluted Taps								
10051		EXOTAP® VCX	Inch	XPM	V	No. 6 - ½"		455
11051		EXOTAP® VCX	Metric	XPM	V	M3 - M12		455
305		EXOTAP-MOLD®	Inch	HSS-CO	Bright	No. 4 - ¾"		456
10052		EXOTAP® DC	Inch	VC-10	V	¼ - 1"	DIN OAL	457
11052		EXOTAP® DC	Metric	VC-10	V	M6 - M24	DIN OAL	458
10053		EXOTAP® DC-OIL	Inch	VC-10	V	¼ - 1"	Coolant-Through, DIN OAL	459
11053		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M24	Coolant-Through, DIN OAL	460
11054		EXOTAP® DC	Metric	VC-10	V	M6 - M10	DIN Shank, DIN OAL	461
11055		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M12	Coolant-Through, DIN Shank, DIN OAL	462
10056		EXOTAP® DC	Inch	VC-10	V	¼ - ¾"		463
11056		EXOTAP® DC	Metric	VC-10	V	M6 - M14		463
10057		EXOTAP® DC-OIL	Inch	VC-10	V	¼ - ½"	Coolant-Through	464
11057		EXOTAP® DC-OIL	Metric	VC-10	V	M6 - M14	Coolant-Through	464
240		HYPRO® DC	Inch	HSSE	N, Bright	No. 2 - ½"		465
241		HYPRO® DC	Metric	HSSE	N	M3 - M12		466

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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														
	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
Spiral Pointed Taps																	
142H	○	○	○						○	○	○						
142	○	○	○						○	○	○						
122	○	○	○						○	○	○						
917	○	○	○						○	○	○						
11118	○	○	○						○	○	○						
S111	○	○	○						○	○	○						
Straight Fluted Taps																	
10051				○												◎	
11051				○												◎	
305				○	◎									◎	○		
10052									◎		◎						
11052									◎		◎						
10053									◎		◎						
11053									◎		◎						
11054									◎		◎						
11055									◎		◎						
10056									◎		◎						
11056									◎		◎						
10057									◎		◎						
11057									◎		◎						
240									◎	○	◎						
241									◎	○	◎						

○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Straight Fluted Taps								
101C		GENERAL PURPOSE	Inch	HSS	N, S/O	¼ - ¾"		467
141C		GENERAL PURPOSE	Metric	HSS	N, S/O	M6 - M12		467
101		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	¼ - 1 ½"		468-469
101H		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	¼ - ¾"	+.005" Oversize	470
102		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	No. 0 - No. 12		471-472
102H		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 6 - No. 10	+.005" Oversize	473
103		GENERAL PURPOSE	Inch	HSS	TiN, S/O, Bright	No. 8 - ½"	Three Flutes	474
104		GENERAL PURPOSE	Inch	HSS	S/O, Bright	No. 2 - $^{5}/_{16}$"	Two Flutes	475
101N		GENERAL PURPOSE	Inch	HSS	Bright	No. 12 - 1"	UNEF	476
141		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M1.6 - M36		477
121		GENERAL PURPOSE	Metric	HSS	S/O, Bright	M2 - M36	JIS	478
916		GENERAL PURPOSE	Inch	HSS	S/O	¼ - ¾"	Pulley Taps, Long Shank	479
S110		GENERAL PURPOSE	Inch	HSS	Bright	No. 00 - No. 000	Miniature	480
114		GENERAL PURPOSE	Inch	HSS-CO	N	No. 2 - ¼"	For Plastics	481
180		GENERAL PURPOSE	Inch	HSS	Bright	1 $^{1}/_{8}$ - 2 ¼"	8 Pitch	482
101L		GENERAL PURPOSE	Inch	HSS	Bright	No. 6 - 1"	Left Hand	483
311		EXOCARB®VX	Inch	Carbide	V	No. 4 - ½"	DIN OAL	484
341		EXOCARB®VX	Metric	Carbide	V	M2.6 - M20	JIS	485
329		EXOCARB® Diamond	Inch	Carbide	DIA	No. 4 - ½"	UNJC, UNJF, DIN OAL	486
359		EXOCARB® Diamond	Metric	Carbide	DIA	M3 - M12	JIS	487
379		EXOCARB®	Metric	Carbide	EXO®	M6 - M12	Synchronized, Coolant-Through, JIS	488
319		EXOCARB®	Inch	Carbide	Bright	No. 4 - ½"	DIN OAL	489
10059		EXOCARB®	Inch	Carbide	Bright	No. 10 - $^{3}/_{8}$"		490

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

Straight Fluted Taps

List No.	P					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 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
101C									◎		◎						
141C									◎		◎						
101	○	○	○						○	○	○						
101H	○	○	○						○	○	○						
102	○	○	○						○	○	○						
102H	○	○	○						○	○	○						
103	○	○	○						○	○	○						
104	○	○	○						○	○	○						
101N	○	○	○						○	○	○						
141	○	○	○						○	○	○						
121	○	○	○						○	○	○						
916	○	○	○						○								
S110	○	○	○						○	○	○						
114																	
180	○	○	○						○	○	○						
101L	○	○	○						○	○	○						
311																○	◎
341																○	◎
329										◎	◎						
359										◎	◎						
379									◎	◎	◎						
319									◎	◎	◎						
10059									◎	◎	◎						

○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Straight Fluted Taps								
10061		EXOCARB®	Metric	Carbide	Bright	M3 - M10	DIN OAL	491
349		EXOCARB®	Metric	Carbide	Bright	M1.4 - M24	JIS	492
356		EXOCARB®	Metric	Carbide	Bright	M6 - M12	JIS, Long Shank	493
Screw Thread Insert Taps								
16260		EXOPRO® XPF	Inch	HSS-CO	V	No. 2 - 1"	STI, Forming Tap, DIN OAL	494-495
16360		EXOPRO® XPF	Metric	HSS-CO	V	M2 - M24	STI, Forming Tap, DIN OAL	496
315Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Fluted	497
315Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Fluted	498
315		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Fluted	499
345STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Fluted	500
302		EXOTAP VA-3®	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Fluted	501-502
343STI		EXOTAP VA-3®	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Fluted	503
13039		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - ½"	STI, Spiral Fluted	504
S108		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Fluted	505
S109		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Fluted	506
314Ti		EXOTAP® VC-10 Ti	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Pointed	507
314Ni		EXOTAP® VC-10 Ni	Inch	VC-10	V	No. 2 - ½"	STI, Spiral Pointed	508
314		EXOTAP® VC-10	Inch	VC-10	V, S/O	No. 2 - 1"	STI, Spiral Pointed	509
344STI		EXOTAP® VC-10	Metric	VC-10	V, S/O	M2 - M24	STI, Spiral Pointed	510
301		EXOTAP VA-3®	Inch	HSSE	V, S/O	No. 2 - 1"	STI, Spiral Pointed	511
342STI		EXOTAP VA-3®	Metric	HSSE	V, S/O	M2 - M24	STI, Spiral Pointed	512
13036		HYPRO® AL	Inch	HSSE	Bright, V	No. 2 - ½"	STI, Spiral Pointed	513
125		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Spiral Pointed	514

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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														
	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
Straight Fluted Taps																	
10061									◎	◎	◎						
349									◎	◎	◎						
356									◎	◎	◎						
Screw Thread Insert Taps																	
16260	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
16360	◎	◎	◎	◎	◎	◎	◎	◎		◎	◎	○	○	◎	○		
315Ti				○				○				○	◎	○	○		
315Ni								○				◎	○	○	○		
315				◎	○		○	◎				○	○	◎	○		
345STI				◎	○		○	◎				○	○	◎	○		
302	◎	○	○			◎	◎	○									
343STI	◎	○	○			◎	◎	○									
13039										◎	◎						
S108	○	○	○						○	○	○						
S109	○	○	○						○	○	○						
314Ti				○				○				○	◎	○	○		
314Ni								○				◎	○	○	○		
314				◎	○		○	◎				○	○	◎	○		
344STI				◎	○		○	◎				○	○	◎	○		
301	◎	○	○			◎	◎	○									
342STI	◎	○	○			◎	◎	○									
13036										◎	◎						
125	○	○	○						○	○	○						

○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List	Item	Brand	Inch/ Metric	Material	Coating	Size Range	Features	Product Page/ Tech Page
Screw Thread Insert Taps								
127		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Spiral Pointed	515
126		GENERAL PURPOSE	Inch	HSS	Bright	No. 2 - 1"	STI, Straight Fluted	516
128		GENERAL PURPOSE	Metric	HSS	Bright	M2 - M24	STI, Straight Fluted	517
Pipe Taps								
308		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16 - 1"	NPT	518
318		EXOPIPE®	Inch	HSSE	TiN, S/O	1/16 - 1"	NPTF	519
12053		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8 - 1"	NPT, Interrupted	520
12054		HY-PRO® PIPE	Inch	HSSE	TiCN	1/8 - 1"	NPTF, Interrupted	520
328		EXOTAP-MOLD®	Inch	HSS-CO	Bright	1/8 - ¾	NPT, ANPT	521
108		TAPER PIPE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16 - 2"	NPT, ANPT	522
108AL		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - 1"	NPT	522
118		GENERAL PURPOSE	Inch	HSS	TiCN, TiN, S/O, Bright	1/16 - 2"	NPTF	523
108G		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8 - 2"	NPT, NPTF, ANPT, Interrupted Thread	524
S125		GENERAL PURPOSE	Inch	HSS	TiCN, S/O, Bright	1/8 - 1"	NPT, NPTF, Short Projection	524
12006		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - ¾	NPTF, Special Short Projection	525
12007		GENERAL PURPOSE	Inch	HSS	Bright	1/8 - ¾	NPT	525
109		GENERAL PURPOSE	Inch	HSS	S/O, Bright	1/8 - 1"	NPS, NPSF	526
Round Dies								
134		GENERAL	Inch	HSS	Bright	No. 0 - 1 ½	Solid & Adjustable Round Split Dies	527-528
134P		GENERAL	Inch	HSS	Bright	1/8 - ½	Adjustable Round Split Dies, Taper Pipe	529
135		GENERAL	Metric	HSS	Bright	M2 - M30	Adjustable Round Split Dies	530
Thread Gages								
15001		GENERAL	Inch	HSS	Bright	No. 2 - 1 ½	GO/NOGO Set, Class 2B	531
15002		GENERAL	Metric	HSS	Bright	M3 - M24	GO/NOGO Set, Class 6H	532

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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														
	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
Screw Thread Insert Taps																	
127	○	○	○						○	○	○						
126	○	○	○						○	○	○						
128	○	○	○						○	○	○						
Pipe Taps																	
308	○	○				◎	◎	◎									
318	○	○				◎	◎	◎									
12053	○	◎	◎	◎	◎	○	○	○	○					○	○		
12054	○	◎	◎	◎	◎	○	○	○	○					○	○		
328	○	○	○	◎	◎	○	○	○						◎	○		
108	○	○	○						○	○	○						
108AL										◎	◎						
118	○	○	○						○	○	○						
108G	○	○	○						○	○	○						
S125	○	○	○						○	○	○						
12006	○	○	○						○	○	○						
12007	○	○	○						○	○	○						
109	○	○	○						○	○	○						

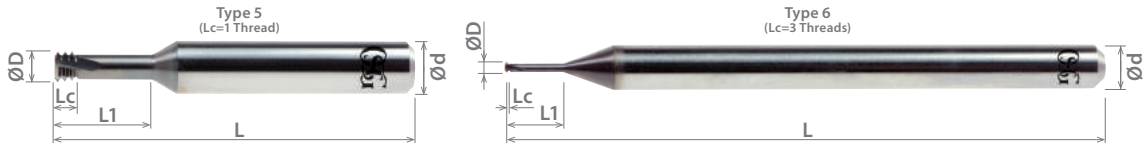
○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 41200

Miniature, Helical Flute

SPEED FEED P567 | CARBIDE | SS | WXS® | 11° | SHRINK h6



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	72	0.055		0.014	0.196				4120000215	–
1	64	0.055		0.016	0.198				–	4120000315
2, 3	56	0.064	1.661	0.054	0.189	1/4		6	–	4120000413
2	64	0.064		0.047	0.189				–	4120000513
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.

HTE

For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

ThreadPro

Work Material

List No.	P					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 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
41200	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	▢	▢	▢	▢	▢	○	○

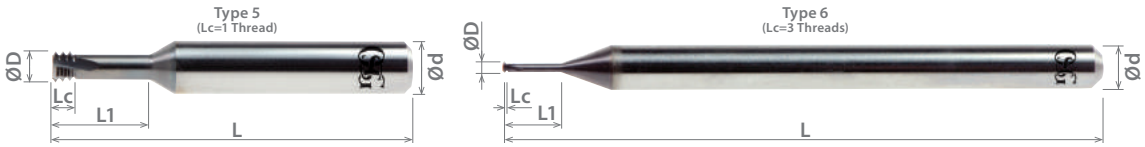
○ good ▢ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 41300

Miniature, Helical Flute

SPEED FEED P567 | CARBIDE | SS | WXS® | 11° | SHRINK h6



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®
M1	0.25	0.72	40	0.26	2.75	3	3	5	3900495	–
M1.2	0.25	0.91		0.26	3.25				3900496	–
M1.4	0.30	1.05		0.31	3.80				3900497	–
M1.6	0.35	1.20		0.36	4.35				3900498	–
M1.7, M1.8	0.35	1.30		0.36	4.85				3900499	–
M2	0.40	1.50		1.20	4.40	6		6	–	3900500
M2.5, M2.6	0.45	1.90	41	1.35	5.60				–	3900501
M3	0.50	2.40		1.50	6.50				–	3900502
M4	0.70	3.10		2.10	8.70				–	3900503
M5	0.80	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.

HTE

For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

ThreadPro

Work Material

List No.	P					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 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
41300	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	○

○ good ◎ best

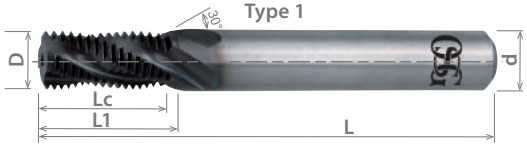
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 41000 NEW SIZES

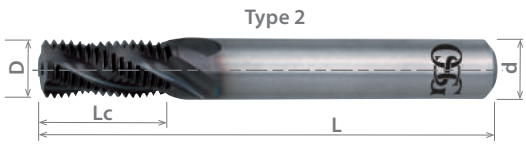
SPEED FEED P566 | CARBIDE | EXO® | 11-30° | SHRINK h6

UNC/UNF/UNEF/UNS, Regular & Long Length, Helical Flute

Type 1



Type 2



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			0.374	0.437				4100000511
12	24 UNC	0.160	3	0.331	0.374	1/4			4100000611
	28 UNF			0.323	0.358				4100000711
1/4	20 UNC	0.180		0.402	0.449				4100000811
	28 UNF			0.551	0.598				4100003211
				0.394	0.429				4100000911
				0.535	0.571				4100003311
	32 UNEF	0.190		0.374	0.406				4100002811
5/16	18 UNC	0.245		0.500	–			2	4100001011
				0.720	–				4100003411
	24 UNF			0.500	–				4100001111
				0.752	–				4100003511
	32 UNEF	0.250		0.469	–				4100002911
3/8	16 UNC	0.300		0.594	–	5/16			4100001211
				0.874	–				4100003611
	24 UNF			0.583	–				4100001311
				0.874	–				4100003711
	32 UNEF	0.310		0.563	–				4100003011
7/16	14 UNC	0.350		0.713	0.783	3/8		1	4100001411
				1.071	1.142				4100003811
	20 UNF			0.701	0.752				4100001511
				1.051	1.098				4100003911
1/2	13 UNC	0.370		0.768	–		4	2	4100001611
				1.079	–				4100004011
	20 UNF			0.750	–				4100001711
				1.098	–				4100004111
	32 UNS	0.375		0.752	–				4100003111
9/16	12 UNC	0.430	4	0.917	1.000	1/2		1	4100001811
				1.335	1.417				4100004211
	18 UNF	0.450		0.890	0.945				4100001911
				1.390	1.445				4100004311
5/8	11 UNC	0.430		1.000	1.091				4100002011
				1.453	1.547				4100004411
	18 UNF	0.495		0.945	–			2	4100002111
				1.500	–				4100004511
3/4	10 UNC	0.620		1.201	–	5/8			4100002211
				1.701	–				4100004611
	16 UNF			1.126	–				4100002311
			4.5	1.689	–				4100004711
7/8	9 UNC	0.745	4	1.335	–	3/4			4100002411
			5	2.000	–				4100004811
	14 UNF		4	1.358	–				4100002511
			5	2.000	–				4100004911

Packed: 1 pc.
Available EXO® coating only.
For internal threads only.

HTE

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 41000 (Continued) NEW SIZES

UNC/UNF/UNEF/UNS, Regular & Long Length, Helical Flute

SPEED FEED P566 | CARBIDE | EXO® | 11-30° | SHRINK h6

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.

HTE

For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

ThreadPro

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
41000	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	○

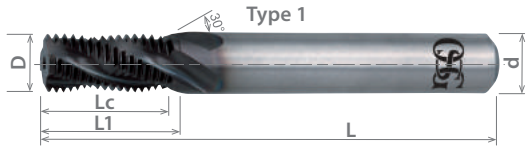
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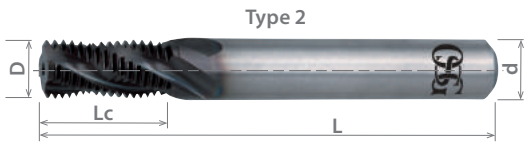
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 41100

SPEED FEED P566 | CARBIDE | EXO® | 11°-30° | SHRINK h6

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			
M6	1.00	4.5	60	10.00	15	6	3	1	4110000111
				13.00					3900001
M8	1.25	6.0	65	13.80	–			2	4110000311
				17.50	–				3900012
	1.00			13.00	–				4110000211
				17.00	–				3900011
M10	1.50	7.5	70	16.50	26	8		1	4110000611
				22.50					3900023
	1.25			16.25					4110000511
	1.00			16.00					4110000411
				21.00					3900021
M12	1.75	9.5	85	21.00	28	10	4		4110000811
				26.30					3900034
	1.25			20.00					4110000711
				26.30					3900032
M14	2.00	10.0	85	24.00	–			2	4110001011
				30.00	–				3900044
	1.50			22.50	–				4110000911
				30.00	–				3900043
M16	2.00	12.0	95	34.00	–	12			3900054
	1.50			25.50	–				4110001111
				34.50	–				3900053
M20	2.50	16.0	105	42.50	–	16			3900075
	1.50			31.50	–				4110001211
				42.00	–				3900073
M24	3.00	20.0	120	51.00	–	20	5		3900086
	2.00			50.00	–				3900084

Packed: 1 pc.
Available EXO®coating only.
For internal threads only.

HTE

For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

ThreadPro

Work Material

List No.	P					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 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
41100	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	▢	▢	▢	▢	▢	○	

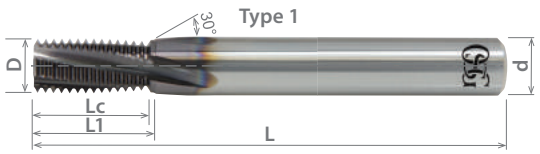
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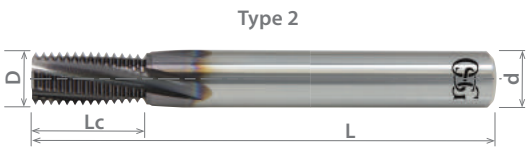
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List 41050 NEW!

SPEED FEED P566 | COOLANT THROUGH | CARBIDE | EXO® | 11° | SHRINK h6

UNC/UNF, Coolant-Through, 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			
1/4	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	—			2	4105000311
	24 UNF			0.500	—				4105000411
3/8	16 UNC	0.300		0.562	—	5/16			4105000511
	24 UNF			0.582	—				4105000611
7/16	14 UNC	0.350		0.712	0.783	3/8		1	4105000711
	20 UNF			0.700	0.751				4105000811
1/2	13 UNC	0.370		0.767	—		5	2	4105000911
	20 UNF			0.750	—				4105001011
9/16	12 UNC	0.430	4	0.917	1.000	1/2		1	4105001111
	18 UNF	0.450		0.889	0.944				4105001211
5/8	11 UNC	0.430		1.000	1.090				4105001311
	18 UNF	0.495		0.944	—			2	4105001411
3/4	10 UNC	0.620		1.200	—	5/8			4105001511
	16 UNF			1.125	—				4105001611
7/8	9 UNC	0.745		1.330	—	3/4	6		4105001711
	14 UNF			1.358	—				4105001811
1	8 UNC	0.745		1.625	—				4105001911
	12 UNF			1.582	—				4105002011

Packed: 1 pc.
Available EXO®coating only.
For internal threads only.

HTE

For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

ThreadPro

Work Material

List No.	P					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 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
41050	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▢ best

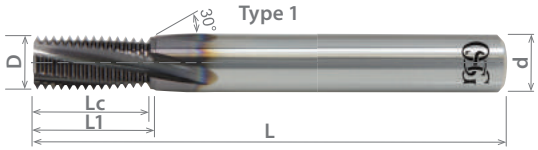
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List 41150

SPEED FEED P566 | COOLANT THROUGH | CARBIDE | EXO® | 11° | SHRINK h6

Coolant-through, Long Length, Helical Flute

Type 1



Type 2



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
M6	1.00	4.5	60	13	15.0	6	4	1	8304701
		6.0	65	17	—			2	8304711
M8	1.25	6.0		17.5	—				8304712
M10	1.50	7.5	70	22.5	26.0	8		1	8304723
	1.00			21					8304721
M12	1.75	9.5	85	26.3	28.0	10	5		8304734
	1.25			26.3					8304732
M14	2.00	10.0		30	—			2	8304744
	1.50			30	—				8304743
M16	2.00	12.0	95	34	—	12			8304754
	1.50			34.5	—				8304753
M20	2.50	16.0	105	42.5	—	16			8304775
	1.50			42	—				8304773
M24	3.00	20.0	120	51	—	20	6		8304786
	2.00			50	—				8304784

Packed: 1 pc.
Available EXO®coating only.
For internal threads only.

HTE

For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

ThreadPro

Work Material

List No.	P					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 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
41150	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	○	

○ good ▢ best

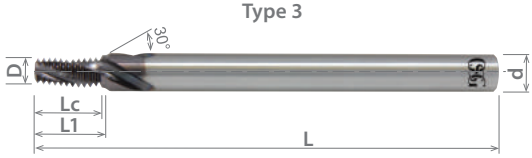
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List 42000

SPEED FEED P566 | CARBIDE | EXO® | 30° | SHRINK h6

NPT, Helical Flute

Type 3



Type 4



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	27	0.286		0.409	—	5/16		4	4200000211
1/4 or 3/8	18	0.334		0.610	—	3/8	4		4200000311
1/2 or 3/4	14	0.575	4	0.787	—	5/8			4200000411
1 thru 2	11-1/2	0.785		0.957	1.04	1		3	4200000511
2-1/2	8	0.917		1.358	—			4	4200000611

Packed: 1 pc.
Available EXO®coating only.
For internal threads only.

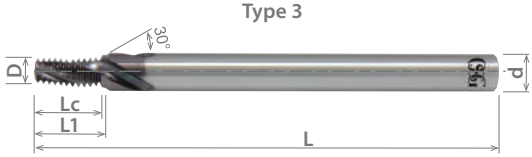
HTE

List 42001

SPEED FEED P566 | CARBIDE | EXO® | 30° | SHRINK h6

NPTF, Helical Flute

Type 3



Type 4



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	27	0.286		0.409	—	5/16		4	4200100211
1/4 or 3/8	18	0.335		0.610	—	3/8	4		4200100311
1/2	14	0.575	4	0.787	—	5/8			4200100411
3/4	14	0.575		0.787	—				4200100711
1 or 1-1/4	11-1/2	0.785		0.957	1.04	1		3	4200100511
1-1/2 or 2	11-1/2	0.785		0.957	1.04				4200100811
2-1/2	8	0.917		1.358	—			4	4200100611

Packed: 1 pc.
Available EXO®coating only.
For internal threads only.

HTE

ThreadPro

For more information on thread mill applications, including ThreadPro software, visit: www.osgtool.com/ThreadPro.

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
42000	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	
42001	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	◎	◎	◎	◎	◎	○	

○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 16050 NEW SIZES

COOLANT THROUGH | HSS-CO | V

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
1/4 -20 UNC	1.5P	H6	80	30	1605014216	0.2245	0.2295	H6	H4
	2.5P	H4			1605014204				
		H6			1605014206				
	4.5P	H6			1605014246				
1/4 - 28 UNF	1.5P	H6	80	30	1605014816	0.2318	0.2354	H6	H4
	2.5P	H4			1605014284				
		H6			1605014286				
	4.5P	H6			1605014846				
5/16 - 18 UNC	1.5P	H7	90	35	1605051617	0.2842	0.2898	H7	H5
	2.5P	H5			1605056185				
		H7			1605056187				
	4.5P	H7			1605051647				
5/16 - 24 UNF	1.5P	H7	90	35	1605056217	0.2912	0.02955	H7	H5
	2.5P	H5			1605056245				
		H7			1605056247				
	4.5P	H7			1605056447				
3/8-16 UNC	1.5P	H7	100	40	1605038117	0.3431	0.3495	H7	H5
	2.5P	H5			1605038165				
		H7			1605038167				
	4.5P	H7			1605038147				
3/8 - 24 UNF	1.5P	H7	100	40	1605038217	0.3537	0.358	H7	H5
	2.5P	H5			1605038245				
		H7			1605038247				
	4.5P	H7			1605038447				
7/16 - 14 UNC	1.5P	H8	100	43	1605076118	0.4011	0.4084	H8	H5
	2.5P	H5			1605076145				
		H8			1605076148				
	4.5P	H8			1605076448				
7/16 - 20 UNF	1.5P	H8	100	43	1605076218	0.412	0.4171	H8	H5
	2.5P	H5			1605076205				
		H8			1605076208				
	4.5P	H8			1605076248				
1/2 - 13 UNC	1.5P	H8	110	49	1605012118	0.4608	0.4686	H8	H5
	2.5P	H5			1605012135				
		H8			1605012138				
	4.5P	H8			1605012148				
1/2-20 UNF	1.5P	H8	100	49	1605012218	0.4745	0.4796	H8	H5
	2.5P	H5			1605012205				
		H8			1605012208				
	4.5P	H8			1605012248				
9/16 - 12 UNC	1.5P	H10	110	50	1605091110	0.5200	0.5285	H10	H7
	2.5P	H7			1605096127				
		H10			1605096120				
	4.5P	H10			1605091140				
9/16 - 18 UNF	1.5P	H10	100	50	1605091810	0.5342	0.5398	H10	H7
	2.5P	H7			1605096187				
		H10			1605096180				
	4.5P	H10			1605091840				
5/8 - 11 UNC	1.5P	H10	110	54	1605058150	0.5787	0.5879	H10	H7
	2.5P	H7			1605058117				
		H10			1605058110				

Packed: 1 pc.
Available V coating only.

EP

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 16050 (Continued) NEW SIZES

COOLANT THROUGH | HSS-CO | V

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
5/8 - 11 UNC	4.5P	H10	110	54	1605058140	0.5787	0.5879	H7	H7
5/8 - 18 UNF	1.5P	H10	100	54	1605058810	0.5967	0.6023	H10	H7
	2.5P	H7			1605058187				
		H10			1605058180				
	4.5P	H10			1605058840				
3/4 - 10 UNC	1.5P	H10	125	61	1605034110	0.699	0.7092	H10	H7
	2.5P	H7			1605034107				
		H10			1605034100				
	4.5P	H10			1605034140				
3/4 - 16 UNF	1.5P	H10	110	61	1605034610	0.7181	0.7245	H10	H7
	2.5P	H7			1605034167				
		H10			1605034160				
	4.5P	H10			1605034640				
7/8 - 9 UNC	1.5P	H11	140	67	1605078911	0.8183	0.8297	H11	H8
	2.5P	H8			1605078908				
		H11			1605078901				
	4.5P	H11			1605078941				
7/8 - 14 UNF	1.5P	H11	125	67	1605078111	0.8386	0.8459	H11	H8
	2.5P	H8			1605078148				
		H11			1605078141				
	4.5P	H8			1605078149				
		H11			1605078142				
1" - 8	1.5P	H11	160	76	1605018111	0.9363	0.949	H11	H8
	2.5P	H8			1605001088				
		H11			1605001081				
	4.5P	H11			1605018411				
1" - 12	1.5P	H11	140	76	1605011211	0.9575	0.966	H11	H8
	2.5P	H8			1605001128				
		H11			1605001121				
	4.5P	H11			1605011241				
1, 1/8 - 7	2.5P	H13	180	72	1605011878	1.0521	1.0667	H13	-
1, 1/8 - 8	2.5P	H11	180	72	1605011888	1.0613	1.074	H11	-
1, 1/8 - 12	2.5P	H11	150	60	1605011826	1.0825	1.091	H11	-
1, 1/4 - 7	2.5P	H13	180	72	1605012578	1.1771	1.1917	H13	-
1, 1/4 - 8	2.5P	H11	180	72	1605012588	1.1863	1.199	H11	-
1, 1/4 - 12	2.5P	H11	150	60	1605012526	1.2075	1.216	H11	-
1, 3/8 - 6	2.5P	H14	200	80	1605013768	1.29	1.307	H14	-
1, 3/8 - 8	2.5P	H13	200	80	1605013788	1.3113	1.324	H13	-
1, 3/8 - 12	2.5P	H11	170	68	1605013126	1.3325	1.341	H11	-
1, 1/2 - 6	2.5P	H15	200	80	1605011268	1.415	1.432	H15	-
1, 1/2 - 8	2.5P	H13	200	80	1605011288	1.4363	1.449	H13	-
1, 1/2 - 12	2.5P	H11	170	68	1605012126	1.4575	1.466	H11	-
1, 5/8 - 8	2.5P	H13	200	80	1605016288	1.5613	1.574	H13	-
1, 3/4 - 5	2.5P	H16	220	88	1605017558	1.648	1.6684	H16	-
1, 3/4 - 8	2.5P	H13	200	80	1605017588	1.6863	1.699	H13	-

Packed: 1 pc.
Available V coating only.

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														
	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
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

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List 16150 NEW SIZES

COOLANT THROUGH | HSS-CO | V

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	6H	4H
M6 x 1.0	1.5P	D8	80	30	1615060118	5.49	5.59	D8	D5
	2.5P	D5			1615006015				
		D8			1615006018				
	4.5P	D8			1615060148				
M6 x 0.75	1.5P	D7	80	30	1615067517	5.62	5.69	D7	D4
	2.5P	D4			1615006754				
		D7			1615006757				
	4.5P	D7			1615067547				
M7 x 1.0	1.5P	D8	80	30	1615070118	6.49	6.59	D8	D5
	2.5P	D5			1615007015				
		D8			1615007018				
	4.5P	D8			1615070148				
M8 x 1.25	1.5P	D9	90	35	1615081219	7.36	7.49	D9	D5
	2.5P	D5			1615008255				
		D9			1615008259				
	4.5P	D9			1615081249				
M8 x 1.0	1.5P	D8	90	35	1615080118	7.49	7.59	D8	D5
	2.5P	D5			1615008015				
		D8			1615008018				
	4.5P	D8			1615080148				
M8 x 0.75	1.5P	D7	80	30	1615087517	7.62	7.69	D7	D4
	2.5P	D4			1615008754				
		D7			1615008757				
	4.5P	D7			1615087547				
M10 X 1.5	1.5P	D10	100	39	1615010110	9.24	9.39	D10	D6
	2.5P	D6			1615010156				
		D10			1615010150				
	4.5P	D10			1615010140				
M10 x 1.25	1.5P	D9	100	39	1615010119	9.36	9.49	D9	D5
	2.5P	D5			1615010255				
		D9			1615010259				
	4.5P	D9			1615010149				
M10 x 1.0	1.5P	D8	90	35	1615010118	9.49	9.59	D8	D5
	2.5P	D5			1615010015				
		D8			1615010018				
	4.5P	D8			1615010148				
M12 x 1.75	1.5P	D11	110	49	1615012711	11.11	11.23	D11	D6
	2.5P	D6			1615012756				
		D11			1615010751				
	4.5P	D11			1615012541				
M12 x 1.5	1.5P	D11	100	49	1615012111	11.24	11.39	D11	D6
	2.5P	D6			1615012156				
		D11			1615012151				
	4.5P	D11			1615012141				
M12 x 1.25	1.5P	D10	100	49	1615012210	11.36	11.49	D10	D6
	2.5P	D6			1615012256				
		D10			1615012250				
	4.5P	D10			1615012240				
M12 x 1.0	1.5P	D10	100	49	1615012110	11.49	11.59	D10	D6
	2.5P	D6			1615012106				
		D10			1615012100				

Packed: 1 pc.
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List 16150 (Continued) NEW SIZES

COOLANT THROUGH | HSS-CO | V

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	6H	4H
M12 x 1.0	4.5P	D10	100	49	1615012140	11.49	11.59	D10	D6
M14 x 2.0	1.5P	D12	110	50	1615014212	12.98	13.18	D12	D7
	2.5P	D7			1615014027				
		D12			1615014022				
	4.5P	D12			1615014242				
M14 x 1.5	1.5P	D11	100	50	1615014511	13.24	13.39	D11	D6
	2.5P	D6			1615014156				
		D11			1615014151				
	4.5P	D11			1615014541				
M16 x 2.0	1.5P	D12	110	54	1615016212	14.98	15.18	D12	D7
	2.5P	D7			1615016207				
		D12			1615016202				
	4.5P	D12			1615016242				
M16 x 1.5	1.5P	D11	100	54	1615016111	15.24	15.39	D11	D6
	2.5P	D6			1615016152				
		D11			1615016151				
	4.5P	D11			1615016141				
M18 x 2.5	1.5P	D12	125	55	1615018212	16.73	16.98	D12	D7
	2.5P	D7			1615018257				
		D12			1615018252				
	4.5P	D12			1615018242				
M18 x 1.5	1.5P	D11	110	55	1615018111	17.24	17.39	D11	D6
	2.5P	D6			1615018156				
		D11			1615018151				
	4.5P	D11			1615018141				
M20 x 2.5	1.5P	D12	140	61	1615020212	18.73	18.98	D12	D7
	2.5P	D7			1615020257				
		D12			1615020252				
	4.5P	D12			1615020242				
M20 x 1.5	1.5P	D11	125	61	1615020111	19.24	19.39	D11	D6
	2.5P	D6			1615020156				
		D11			1615020151				
	4.5P	D11			1615020141				
M22 x 2.5	1.5P	D12	140	67	1615022512	20.73	20.98	D12	D7
	2.5P	D7			1615022257				
		D12			1615022252				
	4.5P	D12			1615022542				
M22 x 2.0	1.5P	D12	140	67	1615022212	20.98	21.18	D12	D7
	2.5P	D7			1615022207				
		D12			1615022202				
	4.5P	D12			1615022242				
M22 x 1.5	1.5P	D11	125	67	1615022111	21.24	21.39	D11	D6
	2.5P	D6			1615022156				
		D11			1615022151				
	4.5P	D11			1615022141				

Packed: 1 pc.
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EP

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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	
16150	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○			
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

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List 16150 (Continued) NEW SIZES

COOLANT THROUGH | HSS-CO | V

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	6H	4H
M24 x 3.0	1.5P	D15	160	68	1615024315	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	140	68	1615024223	22.98	23.18	D13	D7
	2.5P	D7			1615024207				
		D13			1615024203				
	4.5P	D13			1615024243				
M24 x 1.5	1.5P	D11	140	68	1615024111	23.24	23.39	D11	D6
	2.5P	D6			1615024156				
		D11			1615024151				
	4.5P	D11			1615024141				
M27 x 3.0	2.5P	D15	160	64	1615027309	25.47	25.78	D15	-
M30 x 3.5	2.5P	D15	180	72	1615030350	28.22	28.57	D15	-
M33 x 3.5	2.5P	D16	180	72	1615033350	31.22	31.57	D16	-
M36 x 4.0	2.5P	D17	200	80	1615036411	33.96	34.37	D17	-
M42 x 4.5	2.5P	D17	200	80	1615042451	39.71	40.16	D17	-
M45 x 4.5	2.5P	D17	220	88	1615045451	42.71	43.16	D17	-

Packed: 1 pc.
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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														
	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
16150	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
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 NEW SIZES

HSS-CO V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
0 - 80 UNF	1.5P	H3	40	9	1625008013	0.0536	0.0549	H3	H2
	2.5P	H2			1625000802				
		H3			1625000803				
	4.5P	H3			1625008043				
1 - 64 UNC	1.5P	H3	45	9	1625016413	0.0650	0.0666	H3	H2
	2.5P	H2			1625001642				
		H3			1625001643				
	4.5P	H3			1625016443				
1 - 72 UNF	1.5P	H3	45	9	1625017213	0.0659	0.0673	H3	H2
	2.5P	H2			1625001722				
		H3			1625001723				
	4.5P	H3			1625017243				
2 - 56 UNC	1.5P	H3	45	11	1625025613	0.0769	0.0787	H3	H2
	2.5P	H2			1625002562				
		H3			1625002563				
	4.5P	H3			1625025643				
2 - 64 UNF	1.5P	H3	45	11	1625026413	0.0780	0.0796	H3	H2
	2.5P	H2			1625002642				
		H3			1625002643				
	4.5P	H3			1625026443				
3 - 48 UNC	1.5P	H3	50	11	1625034813	0.0884	0.0905	H3	H2
	2.5P	H2			1625003482				
		H3			1625003483				
	4.5P	H3			1625034843				
3 - 56 UNF	1.5P	H3	50	11	1625035613	0.0899	0.0917	H3	H2
	2.5P	H2			1625003562				
		H3			1625003563				
	4.5P	H3			1625035643				
4 - 40 UNC	1.5P	H5	56	19	1625044015	0.0993	0.1018	H5	H3
	2.5P	H3			1625004403				
		H5			1625004405				
	4.5P	H5			1625044045				
4 - 48 UNF	1.5P	H3	56	19	1625044815	0.1014	0.1035	H5	H3
	2.5P	H2			1625004483				
		H3			1625004485				
	4.5P	H3			1625044845				
5 - 40 UNC	1.5P	H5	56	19	1625054015	0.1123	0.1148	H5	H3
	2.5P	H3			1625005403				
		H5			1625005405				

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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														
	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
16250	▢	▢	▢	▢	▢	▢*	▢*	▢*		▢	▢	▢	▢	▢	▢		
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 16250 (Continued) NEW SIZES

HSS-CO V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
5 - 40 UNC	4.5P	H5	56	19	1625054045	0.1123	0.1148	H5	H3
5 - 44 UNF	1.5P	H5	56	19	1625054415	0.1134	0.1157	H5	H3
	2.5P	H3			1625005443				
		H5			1625005445				
	4.5P	H5			1625054445				
6 - 32 UNC	1.5P	H5	56	21	1625063215	0.1221	0.1252	H5	H3
	2.5P	H3			1625006323				
		H5			1625006325				
	4.5P	H5			1625063245				
6 - 40 UNF	1.5P	H5	56	21	1625064015	0.1253	0.1278	H5	H3
	2.5P	H3			1625006403				
		H5			1625006405				
	4.5P	H5			1625064045				
8 - 32 UNC	1.5P	H5	63	22	1625083215	0.1481	0.1512	H5	H3
	2.5P	H3			1625008323				
		H5			1625008325				
	4.5P	H5			1625083245				
8 - 36 UNF	1.5P	H5	63	22	1625083615	0.1498	0.1526	H5	H3
	2.5P	H3			1625008363				
		H5			1625008365				
	4.5P	H5			1625083645				
10 - 24 UNC	1.5P	H6	70	25	1625010216	0.1688	0.1729	H6	H4
	2.5P	H4			1625010244				
		H6			1625010246				
	4.5P	H6			1625010249				
10 - 32 UNF	1.5P	H6	70	26	1625010316	0.1741	0.1772	H6	H4
	2.5P	H4			1625010324				
		H6			1625010326				
	4.5P	H6			1625010346				
12 - 24 UNC	1.5P	H7	80	30	1625012417	0.1948	0.1989	H7	H5
	2.5P	H5			1625012245				
		H7			1625012247				
	4.5P	H7			1625012447				
12 - 28 UNF	1.5P	H7	80	30	1625012817	0.1978	0.2014	H7	H5
	2.5P	H5			1625012285				
		H7			1625012287				
	4.5P	H7			1625012847				
1/4 - 20 UNC	1.5P	H6	80	32	1625014216	0.2245	0.2295	H6	H4
	2.5P	H4			1625014204				
		H6			1625014206				
	4.5P	H6			1625014246				
1/4 - 28 UNF	1.5P	H6	80	32	1625014816	0.2318	0.2354	H6	H4
	2.5P	H4			1625014284				
		H6			1625014286				
	4.5P	H6			1625014846				
5/16 - 18 UNC	1.5P	H7	90	35	1625051617	0.2842	0.2898	H7	H5
	2.5P	H5			1625056185				
		H7			1625056187				
	4.5P	H7			1625051647				

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List 16250 (Continued) NEW SIZES

HSS-CO V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
5/16 - 24 UNF	1.5P	H7	90	35	1625056217	0.2912	0.2955	H7	H5
	2.5P	H5			1625056245				
		H7			1625056247				
	4.5P	H7			1625056249				
3/8 - 16 UNC	1.5P	H7	100	40	1625038117	0.3431	0.3495	H7	H5
	2.5P	H5			1625038165				
		H7			1625038167				
	4.5P	H7			1625038147				
3/8 - 24 UNF	1.5P	H7	100	40	1625038217	0.3537	0.3580	H7	H5
	2.5P	H5			1625038245				
		H7			1625038247				
	4.5P	H7			1625038249				
7/16 - 14 UNC	1.5P	H8	100	43	1625076118	0.4011	0.4084	H8	H5
	2.5P	H5			1625076145				
		H8			1625076148				
	4.5P	H8			1625076149				
7/16 - 20 UNF	1.5P	H8	100	43	1625076218	0.4120	0.4171	H8	H5
	2.5P	H5			1625076205				
		H8			1625076208				
	4.5P	H8			1625076248				
1/2 - 13 UNC	1.5P	H8	110	49	1625012118	0.4608	0.4686	H8	H5
	2.5P	H5			1625012135				
		H8			1625012138				
	4.5P	H8			1625012148				
1/2 - 20 UNF	1.5P	H8	100	49	1625012218	0.4745	0.4796	H8	H5
	2.5P	H5			1625012205				
		H8			1625012208				
	4.5P	H8			1625012248				
9/16 - 12 UNC	1.5P	H7	110	50	1625091117	0.5200	0.5280	H10	H7
	2.5P	H7			1625096127				
		H10			1625096120				
	4.5P	H7			1625091147				
9/16 - 18 UNF	1.5P	H10	100	50	1625091810	0.5342	0.5398	H10	H7
	2.5P	H7			1625096187				
		H10			1625096180				
	4.5P	H10			1625091840				
5/8 - 11 UNC	1.5P	H10	110	54	1625058410	0.5787	0.5879	H10	H7
	2.5P	H7			1625058117				
		H10			1625058110				
	4.5P	H10			1625058140				
5/8 - 18 UNF	1.5P	H10	100	54	1625058810	0.5967	0.6023	H10	H7
	2.5P	H7			1625058187				
		H10			1625058180				
	4.5P	H10			1625058840				

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														
	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
16250	▢	▢	▢	▢	▢	▢*	▢*	▢*		▢	▢	○	○	▢	○		
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.

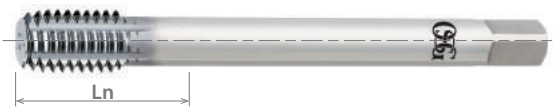
○ good ▢ best

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List 16250 (Continued) NEW SIZES

HSS-CO | V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
3/4 - 10 UNC	1.5P	H10	125	62	1625034110	0.6990	0.7092	H10	H7
	2.5P	H7			1625034107				
		H10			1625034100				
	4.5P	H10			1625034140				
3/4 - 16 UNF	1.5P	H10	110	62	1625034610	0.7181	0.7245	H10	H7
	2.5P	H7			1625034167				
		H10			1625034160				
	4.5P	H10			1625034640				
7/8 - 9 UNC	1.5P	H11	140	67	1625078911	0.8183	0.8297	H11	H8
	2.5P	H8			1625078908				
		H11			1625078901				
	4.5P	H11			1625078941				
7/8 - 14 UNF	1.5P	H11	125	67	1625078111	0.8386	0.8459	H11	H8
	2.5P	H8			1625078148				
		H11			1625078141				
	4.5P	H11			1625078149				
1" - 8 UNC	1.5P	H11	160	76	1625018111	0.9363	0.949	H11	H8
	2.5P	H8			1625001088				
		H11			1625001081				
	4.5P	H11			1625018411				
1" - 12 UNF	1.5P	H11	140	76	1625011211	0.9575	0.9660	H11	H8
	2.5P	H8			1625001128				
		H11			1625001121				
	4.5P	H11			1625011241				
1 1/8 - 7 UNC	2.5P	H13	180	72	1625011878	1.0521	1.0667	H13	–
1 1/8 - 8 UNS	2.5P	H11	180	72	1625011888	1.0613	1.074	H11	–
1 1/8 - 12 UNF	2.5P	H11	150	60	1625011826	1.0825	1.091	H11	–
1 1/4 - 7 UNC	2.5P	H13	180	72	1625012578	1.1771	1.1917	H13	–
1 1/4 - 8 UNS	2.5P	H11	180	72	1625012588	1.1863	1.199	H11	–
1 1/4 - 12 UNF	2.5P	H11	150	60	1625012526	1.2075	1.216	H11	–
1 3/8 - 6 UNC	2.5P	H14	200	80	1625013768	1.29	1.307	H14	–
1 3/8 - 8 UNS	2.5P	H13	200	80	1625013788	1.3113	1.324	H13	–
1 3/8 - 12 UNF	2.5P	H14	170	68	1625013126	1.3325	1.341	H11	–
1 1/2 - 6 UNC	2.5P	H15	200	80	1625011268	1.415	1.432	H15	–
1 1/2 - 8 UNS	2.5P	H13	200	80	1625011288	1.4363	1.449	H13	–
1 1/2 - 12 UNF	2.5P	H11	170	68	1625012126	1.4575	1.466	H11	–
1 5/8 - 8 UNS	2.5P	H13	200	80	1625016288	1.5613	1.574	H13	–
1 3/4 - 5 UNC	2.5P	H16	220	88	1625017558	1.648	1.6684	H16	–
1 3/4 - 8 UNS	2.5P	H13	200	80	1625017588	1.6863	1.699	H13	–

Packed: 1 pc.
Available V coating only.

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														
	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
16250	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
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.

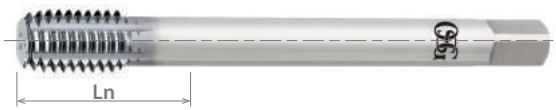
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List 16350 NEW SIZES

HSS-CO V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	6H	4H
M1 x 0.25	1.5P	D5	40	6	1635012515	0.88	0.90	D5	D3
	2.5P	D5			1635012525				
	4.5P	D5			1635012545				
M1.2 x 0.35	1.5P	D5	40	7	1635012215	1.08	1.10	D5	D3
	2.5P	D5			1635012225				
	4.5P	D5			1635012245				
M1.4 x 0.3	1.5P	D5	40	8	1635014315	1.26	1.28	D5	D3
	2.5P	D5			1635014325				
	4.5P	D5			1635014345				
M1.6 x 0.35	1.5P	D5	40	9	1635016315	1.42	1.46	D5	D3
	2.5P	D3			1635016353				
		D5			1635016355				
	4.5P	D5			1635016345				
M1.7 x 0.35	1.5P	D5	40	9	1635017315	1.52	1.56	D5	D3
	2.5P	D3			1635017353				
		D5			1635017355				
	4.5P	D5			1635017345				
M1.8 X 0.35	1.5P	D5	40	9	1635018315	1.62	1.66	D5	D3
	2.5P	D3			1635018353				
		D5			1635018355				
	4.5P	D5			1635018345				
M2 x 0.4	1.5P	D5	45	9	1635024155	1.80	1.84	D5	D3
	2.5P	D3			1635002043				
		D5			1635002045				
	4.5P	D5			1635024455				
M2.5 x 0.45	1.5P	D5	50	11	1635025415	2.27	2.32	D5	D3
	2.5P	D3			1635025453				
		D5			1635025455				
	4.5P	D5			1635025445				
M2.6 x 0.45	1.5P	D5	50	11	1635026415	2.38	2.42	D5	D3
	2.5P	D5			1635026425				
	4.5P	D5			1635026445				
M3 x 0.5	1.5P	D5	56	19	1635030515	2.75	2.80	D5	D3
	2.5P	D3			1635003053				
		D5			1635003055				
	4.5P	D5			1635030545				
M3 x 0.35	1.5P	D5	56	19	1635033515	2.83	2.89	D5	D3
	2.5P	D3			1635003353				
		D5			1635003355				
	4.5P	D5			1635033545				

Packed: 1 pc.
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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														
	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
16350	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
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) NEW SIZES

HSS-CO V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	6H	4H
M3.5 x 0.6	1.5P	D6	56	21	1635035616	3.19	3.26	D6	D4
	2.5P	D4			1635035064				
		D6			1635035066				
	4.5P	D6			1635035646				
M4 x 0.7	1.5P	D6	63	22	1635040716	3.64	3.71	D6	D4
	2.5P	D4			1635004074				
		D6			1635004076				
	4.5P	D6			1635040746				
M4 x 0.5	1.5P	D6	63	22	1635040516	3.75	3.80	D6	D4
	2.5P	D4			1635004054				
		D6			1635004056				
	4.5P	D6			1635040546				
M4.5 x 0.75	1.5P	D6	70	27	1635045716	4.13	4.19	D6	D4
	2.5P	D4			1635045754				
		D6			1635045756				
	4.5P	D6			1635045746				
M5 x 0.8	1.5P	D7	70	27	1635050817	4.59	4.67	D6	D4
	2.5P	D4			1635005084				
		D7			1635005087				
	4.5P	D7			1635050847				
M5 x 0.5	1.5P	D5	70	27	1635050515	4.75	4.80	D5	D3
	2.5P	D3			1635005053				
		D5			1635005055				
	4.5P	D5			1635050545				
M6 x 1.0	1.5P	D8	80	32	1635060118	5.49	5.59	D8	D5
	2.5P	D5			1635006015				
		D8			1635006018				
	4.5P	D8			1635060148				
M6 X 0.75	1.5P	D7	80	32	1635067517	5.62	5.69	D6	D4
	2.5P	D4			1635006754				
		D7			1635006757				
	4.5P	D7			1635067547				
M7 x 1.0	1.5P	D8	80	30	1635070118	6.49	6.59	D8	D5
	2.5P	D5			1635007015				
		D8			1635007018				
	4.5P	D8			1635070148				
M8 x 1.25	1.5P	D9	90	35	1635081219	7.36	7.49	D9	D5
	2.5P	D5			1635008255				
		D9			1635008259				
	4.5P	D9			1635081249				
M8 x 1.0	1.5P	D8	90	35	1635080118	7.49	7.59	D8	D5
	2.5P	D5			1635008015				
		D8			1635008018				
	4.5P	D8			1635080148				
M8 x 0.75	1.5P	D7	80	30	1635087517	7.62	7.69	D6	D4
	2.5P	D4			1635008754				
		D7			1635008757				
	4.5P	D7			1635087547				

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List 16350 (Continued) NEW SIZES

HSS-CO V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)

Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	6H	4H
M10 x 1.5	1.5P	D10	100	39	1635010110	9.24	9.39	D10	D6
	2.5P	D6			1635010156				
		D10			1635010150				
	4.5P	D10			1635010140				
M10 x 1.25	1.5P	D9	100	39	1635010119	9.36	9.49	D9	D5
	2.5P	D5			1635010255				
		D9			1635010259				
	4.5P	D9			1635010149				
M10 x 1.0	1.5P	D8	90	35	1635010118	9.49	9.59	D8	D5
	2.5P	D5			1635010015				
		D8			1635010018				
	4.5P	D8			1635010148				
M12 x 1.75	1.5P	D11	110	49	1635012171	11.11	11.23	D11	D6
	2.5P	D6			1635012756				
		D11			1635012751				
	4.5P	D11			1635012541				
M12 x 1.5	1.5P	D11	100	49	1635012111	11.24	11.39	D11	D6
	2.5P	D6			1635012156				
		D11			1635012151				
	4.5P	D11			1635012141				
M12 x 1.25	1.5P	D10	100	49	1635012210	11.36	11.49	D10	D6
	2.5P	D10			1635012220				
	4.5P	D10			1635012240				
M12 x 1.0	1.5P	D10	100	49	1635012110	11.49	11.59	D10	D6
	2.5P	D10			1635012120				
	4.5P	D10			1635012140				
M14 x 2.0	1.5P	D12	110	50	1635014212	12.98	13.18	D12	D7
	2.5P	D7			1635014027				
		D12			1635014022				
	4.5P	D12			1635014242				
M14 x 1.5	1.5P	D11	100	50	1635014511	13.24	13.39	D11	D6
	2.5P	D6			1635014156				
		D11			1635014151				
	4.5P	D11			1635014541				
M16 x 2.0	1.5P	D12	110	54	1635016212	14.98	15.18	D12	D7
	2.5P	D7			1635016207				
		D12			1635016202				
	4.5P	D12			1635016242				
M16 x 1.5	1.5P	D11	100	54	1635016111	15.24	15.39	D11	D6
	2.5P	D6			1635016156				
		D11			1635016151				
	4.5P	D11			1635016141				
M18 x 2.5	1.5P	D12	125	55	1635018212	16.73	16.98	D12	D7
	2.5P	D7			1635018257				
		D12			1635018252				
	4.5P	D12			1635018242				

Packed: 1 pc.
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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														
	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
16350	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
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) NEW SIZES

HSS-CO V

DIN Overall Length, Bottom (1.5P-2P), Modified Bottom (2.5P-3P), Plug (4P-4.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	6H	4H
M18 x 1.5	1.5P	D11	110	55	1635018111	17.24	17.39	D11	D6
	2.5P	D6			1635018156				
		D11			1635018151				
	4.5P	D11			1635018141				
M20 x 2.5	1.5P	D12	140	61	1635020212	18.73	18.98	D12	D7
	2.5P	D7			1635020257				
		D12			1635020252				
	4.5P	D12			1635020242				
M20 x 1.5	1.5P	D11	125	61	1635020111	19.24	19.39	D11	D6
	2.5P	D6			1635020156				
		D11			1635020151				
	4.5P	D11			1635020141				
M22 x 2.5	1.5P	D12	140	67	1635022512	20.73	20.98	D12	D7
	2.5P	D12			1635022522				
	4.5P	D12			1635022542				
M22 x 2.0	1.5P	D12	140	67	1635022212	20.98	21.18	D12	D7
	2.5P	D12			1635022222				
	4.5P	D12			1635022242				
M22 x 1.5	1.5P	D11	125	67	1635022111	21.24	21.39	D11	D6
	2.5P	D11			1635022121				
	4.5P	D11			1635022141				
M24 x 3	1.5P	D15	160	68	1635024315	22.47	22.78	D15	D9
	2.5P	D15			1635024325				
	4.5P	D15			1635024345				
M24 x 2.0	1.5P	D13	140	68	1635024123	22.98	23.18	D13	–
	2.5P	D13			1635024223				
	4.5P	D13			1635024243				
M24 x 1.5	1.5P	D11	140	68	1635024111	23.24	23.39	D11	–
	2.5P	D11			1635024121				
	4.5P	D11			1635024141				
M27 x 3.0	2.5P	D15	160	64	1635027039	22.47	22.78	D15	–
M30 x 3.5	2.5P	D15	180	72	1635030350	28.22	28.57	D15	–
M33 x 3.5	2.5P	D16	180	72	1635033350	31.22	31.57	D16	–
M36 x 4.0	2.5P	D17	200	80	1635036411	33.96	34.37	D17	–
M42 x 4.5	2.5P	D17	200	80	1635042451	39.71	40.16	D17	–
M45 x 4.5	2.5P	D17	220	88	1635045451	42.71	43.16	D17	–

Packed: 1 pc.
Available V coating only.

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														
	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
16350	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
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 16255 NEW!

HSS-CO V

Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
5 - 40 UNC	2.5P	H5	80 120	19	1625554025 1625554255	0.1123	0.1148	H5	H3
5 - 44 UNF	2.5P	H5	80 120	19	1625554425 1625554205	0.1134	0.1157	H5	H3
6 - 32 UNC	2.5P	H5	80 120	21	1625563225 1625563255	0.1221	0.1252	H5	H3
6 - 40 UNF	2.5P	H5	80 120	21	1625564025 1625564255	0.1253	0.1278	H5	H3
8 - 32 UNC	2.5P	H5	80 120	22	1625583225 1625583255	0.1481	0.1512	H5	H3
8 - 36 UNF	2.5P	H5	80 120	22	1625583625 1625586255	0.1498	0.1526	H5	H3
10 - 24 UNC	2.5P	H6	100 150	25	1625510226 1625510426	0.1688	0.1729	H6	H4
10 - 32 UNF	2.5P	H6	100 150	26	1625510326 1625510256	0.1741	0.1772	H6	H4
12 - 24 UNC	2.5P	H7	100 150	30	1625512227 1625512427	0.1948	0.1989	H7	H5
12 - 28 UNF	2.5P	H7	100 150	30	1625512827 1625512257	0.1978	0.2014	H7	H5
1/4 - 20 UNC	2.5P	H6	100 150	32	1625514226 1625514026	0.2245	0.2295	H6	H4
1/4 - 28 UNF	2.5P	H6	100 150	32	1625514826 1625514256	0.2318	0.2354	H6	H4
5/16 - 18 UNC	2.5P	H7	110 150	35	1625551127 1625556127	0.2842	0.2898	H7	H5
5/16 - 24 UNF	2.5P	H7	110 150	35	1625551227 1625551427	0.2912	0.2955	H7	H5
3/8 - 16 UNC	2.5P	H7	120 150	40	1625538127 1625538627	0.3431	0.3495	H7	H5
3/8 - 24 UNF	2.5P	H7	120 150	40	1625538227 1625538427	0.3537	0.3580	H7	H5
7/16 - 14 UNC	2.5P	H8	120 150	43	1625571128 1625576128	0.4011	0.4084	H8	H5
7/16 - 20 UNF	2.5P	H8	120 150	43	1625571228 1625576228	0.4120	0.4171	H8	H5
1/2 - 13 UNC	2.5P	H8	150 180	49	1625512128 1625512328	0.4608	0.4686	H8	H5

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

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														
	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
16255	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
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

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List 16255 (Continued) NEW!

HSS-CO V

Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
1/2 - 20 UNF	2.5P	H8	150 180	49	1625512228 1625512028	0.4745	0.4796	H8	H5
9/16 - 12 UNC	2.5P	H7	150 180	50	1625591127 1625591227	0.5200	0.5285	H10	H7
9/16 - 18 UNF	2.5P	H7	150 180	50	1625591827 1625596827	0.5342	0.5398	H10	H7
5/8 - 11 UNC	2.5P	H7	150 180	54	1625558127 1625558257	0.5787	0.5879	H10	H7
5/8 - 18 UNF	2.5P	H7	150 180	54	1625558827 1625551827	0.5967	0.6023	H10	H7
3/4 - 10 UNC	2.5P	H7	180 220	61	1625534127 1625534027	0.6990	0.7092	H10	H7
3/4 - 16 UNF	2.5P	H7	180 220	61	1625534627 1625531627	0.7181	0.7245	H10	H7
7/8 - 9 UNC	2.5P	H8	180 220	67	1625579828 1625575258	0.8183	0.8297	H11	H8
7/8 - 14 UNF	2.5P	H8	180 220	67	1625578128 1625578428	0.8386	0.8459	H11	H8
1" - 8 UNC	2.5P	H8	180 220	76	1625518208 1625518258	0.9363	0.949	H11	H8
1" - 12 UNF	2.5P	H8	180 220	76	1625511428 1625514208	0.9575	0.966	H11	H8

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

EP

Work Material																			
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
16255	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
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

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List 16355 NEW!

HSS-CO V

Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
M3 x 0.5	2.5P	D5	80 120	19	1635530525 1635535025	2.75	2.8	D5	D3
M3 x 0.35	2.5P	D5	80 120	19	1635530325 1635533525	2.83	2.89	D5	D3
M3.5 x 0.6	2.5P	D6	80 120	21	1635535226 1635535626	3.19	3.26	D6	D4
M4 x 0.7	2.5P	D6	80 120	22	1635540726 1635547256	3.64	3.71	D6	D4
M4 x 0.5	2.5P	D6	80 120	22	1635540526 1635545256	3.75	3.8	D6	D4
M4.5 x 0.75	2.5P	D6	90 120	27	1635545726 1635545526	4.13	4.19	D6	D4
M5 x 0.8	2.5P	D7	100 150	27	1635550827 1635550257	4.59	4.67	D7	D4
M5 x 0.5	2.5P	D5	100 150	27	1635550525 1635550255	4.75	4.8	D5	D3
M6 x 1.0	2.5P	D8	100 150	32	1635561028 1635561258	5.49	5.59	D8	D5
M6 x 0.75	2.5P	D7	100 150	32	1635560727 1635567527	5.62	5.69	D7	D4
M7 x 1.0	2.5P	D8	100 150	30	1635571258 1635571028	6.49	6.59	D8	D5
M8 x 1.25	2.5P	D9	110 150	35	1635581229 1635582529	7.36	7.49	D9	D5
M8 x 1.0	2.5P	D8	110 150	35	1635581258 1635581028	7.49	7.59	D8	D5
M8 x 0.75	2.5P	D7	110 150	30	1635580727 1635587527	7.62	7.69	D7	D4
M10 x 1.5	2.5P	D10	120 150	39	1635510120 1635510520	9.24	9.39	D10	D6
M10 x 1.25	2.5P	D9	120 150	39	1635510129 1635510229	9.36	9.49	D9	D5
M10 x 1.0	2.5P	D8	120 150	35	1635510128 1635510258	9.49	9.59	D8	D5
M12 x 1.75	2.5P	D11	150 180	49	1635512721 1635512751	11.11	11.23	D11	D6
M12 x 1.5	2.5P	D11	150 180	49	1635512121 1635512251	11.24	11.39	D11	D6

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

continued on next page

EP

Work Material																			
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
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.

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List 16355 (Continued) NEW!

HSS-CO | V

Long Shank, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	Overall Length	Neck Length	EDP Number	Tap Drill Size		Class of Fit	
				Ln	V	Min	Max	2B	3B
M12 x 1.25	2.5P	D10	150 180	49	1635512520 1635512250	11.41	11.49	D10	D6
M12 x 1.0	2.5P	D10	150 180	49	1635512120 1635512210	11.52	11.59	D10	D6
M14 x 2.0	2.5P	D12	150 180	50	1635514222 1635514252	12.98	13.18	D10	D7
M14 x 1.5	2.5P	D11	150 180	50	1635514121 1635514521	13.24	13.39	D11	D6
M16 x 2.0	2.5P	D12	150 180	54	1635516222 1635516252	14.98	15.18	D12	D7
M16 x 1.5	2.5P	D11	150 180	54	1635516121 1635516521	15.24	15.39	D11	D6
M18 x 2.5	2.5P	D12	150 180	55	1635518252 1635518552	16.73	16.98	D12	D7
M18 x 1.5	2.5P	D11	150 180	55	1635518121 1635518521	17.24	17.39	D11	D6
M20 x 2.5	2.5P	D12	180 220	61	1635520252 1635520222	18.73	18.98	D12	D7
M20 x 1.5	2.5P	D11	180 220	61	1635520121 1635520521	19.24	19.39	D11	D6

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

EP

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
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.

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List 14050

Bottom (2P-2.5P), Short Bottom (1P-1.5P)

VC10 V



Tap Size	Lead	Thread Limit	EDP Number	Tap Drill Size		Class of Fit	
			V	Min	Max	2B	3B
0 - 80 UNF	1.5P	H2	1405000008	0.0536	0.0549	H3	H2
		H3	1405000108				
	2.5P	H2	1405000208				
		H3	1405000308				
1 - 64 UNC	1.5P	H2	1405000408	0.0650	0.0666	H3	H2
		H3	1405000508				
	2.5P	H2	1405000608				
		H3	1405000708				
2 - 56 UNC	1.5P	H2	1405000808	0.0769	0.0787	H3	H2
		H3	1405000908				
		H4	1405001008				
	2.5P	H2	1405001108				
		H3	1405001208				
		H4	1405001308				
3 - 48 UNC	1.5P	H2	1405001408	0.0884	0.0905	H3	H2
		H3	1405001508				
		H4	1405001608				
	2.5P	H2	1405001708				
		H3	1405001808				
		H4	1405001908				
4 - 40 UNC	1.5P	H3	1405002008	0.0993	0.1018	H5	H3
		H4	1405002108				
		H5	1405002208				
	2.5P	H3	1405002308				
		H4	1405002408				
		H5	1405002508				
5 - 40 UNC	1.5P	H3	1405002608	0.1123	0.1148	H5	H3
		H4	1405002708				
		H5	1405002808				
	2.5P	H3	1405002908				
		H4	1405003008				
		H5	1405003108				
6 - 32 UNC	1.5P	H3	1405003208	0.1221	0.1253	H5	H3
		H4	1405003308				
		H5	1405003408				
		H6	1405003508				
	2.5P	H3	1405003608				
		H4	1405003708				
		H5	1405003808				
		H6	1405003908				

Packed: 1 pc.
Available V coating only.

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														
	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
14050	◎	◎	◎	◎	◎	◎	◎	○		◎	◎			○			
SFM	35-130	20-50	15-30	15-30	15-20	15-50	15-50	15-40		65-150	65-130			10-15			

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List 14050

Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Tap Drill Size		Class of Fit	
			V	Min	Max	2B	3B
8 - 32 UNC	1.5P	H3	1405004008	0.1481	0.1513	H5	H3
		H4	1405004108				
		H5	1405004208				
		H6	1405004308				
	2.5P	H3	1405004408				
		H4	1405004508				
		H5	1405004608				
		H6	1405004708				
10 - 24 UNC	1.5P	H3	1405004808	0.1688	0.1730	H6	H4
		H4	1405004908				
		H5	1405005008				
		H6	1405005108				
	2.5P	H3	1405005208				
		H4	1405005308				
		H5	1405005408				
		H6	1405005508				
10 - 32 UNF	1.5P	H3	1405005608	0.1741	0.1773	H6	H4
		H4	1405005708				
		H5	1405005808				
		H6	1405005908				
	2.5P	H3	1405006008				
		H4	1405006108				
		H5	1405006208				
		H6	1405006308				
12 - 24 UNC	1.5P	H5	1405006408	0.1948	0.199	H7	H5
		H7	1405006508				
	2.5P	H5	1405006608				
		H7	1405006708				
1/4 - 20 UNC	1.5P	H5	1405006808	0.2245	0.2296	H6	H4
		H6	1405006908				
		H7	1405007008				
		H8	1405007108				
	2.5P	H5	1405007208				
		H6	1405007308				
		H7	1405007408				
		H8	1405007508				
1/4 - 28 UNF	1.5P	H4	1405007608	0.2318	0.2354	H6	H4
		H5	1405007708				
		H6	1405007808				
		H7	1405007908				
	2.5P	H4	1405008008				
		H5	1405008108				
		H6	1405008208				
		H7	1405008308				
5/16 - 18 UNC	1.5P	H5	1405008408	0.2842	0.2898	H7	H5
		H6	1405008508				
		H7	1405008608				
		H8	1405008708				
		H9	1405008808				

Packed: 1 pc.
Available V coating only.

EXT

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List 14050

Bottom (2P-2.5P), Short Bottom (1P-1.5P)

EXOTAP VC10 V

Tap Size	Lead	Thread Limit	EDP Number	Tap Drill Size		Class of Fit	
			V	Min	Max	2B	3B
5/16 - 18 UNC	2.5P	H5	1405008908	0.2842	0.2898	H7	H5
		H6	1405009008				
		H7	1405009108				
		H8	1405009208				
		H9	1405009308				
5/16 - 24 UNF	1.5P	H4	1405009408	0.2913	0.2955	H7	H5
		H5	1405009508				
		H6	1405009608				
		H7	1405009708				
		H8	1405009808				
	2.5P	H4	1405009908				
		H5	1405010008				
		H6	1405010108				
		H7	1405010208				
		H8	1405010308				
3/8 - 16 UNC	1.5P	H5	1405010408	0.3431	0.3495	H7	H5
		H6	1405010508				
		H7	1405010608				
		H8	1405010708				
		H9	1405010808				
	2.5P	H5	1405010908				
		H6	1405011008				
		H7	1405011108				
		H8	1405011208				
		H9	1405011308				
3/8 - 24 UNF	1.5P	H4	1405011408	0.3538	0.358	H7	H5
		H5	1405011508				
		H6	1405011608				
		H7	1405011708				
		H8	1405011808				
	2.5P	H4	1405011908				
		H5	1405012008				
		H6	1405012108				
		H7	1405012208				
		H8	1405012308				

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
14050	◎	◎	◎	◎	◎	◎	◎	○		◎	◎			○			
SFM	35-130	20-50	15-30	15-30	15-20	15-50	15-50	15-40		65-150	65-130			10-15			

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List 14150

Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number	Tap Drill Size		Class of Fit	
			V	Min	Max	2B	3B
M1.6 x 0..35	2.5P	D3	1415000008	1.42	1.46	D5	D3
		D5	1415000108				
M1.7 x 0.35	2.5P	D3	1415000208	1.52	1.56	D5	D3
		D5	1415000308				
M2 x 0.4	2.5P	D3	1415000408	1.80	1.84	D5	D3
		D5	1415000508				
M2.5 x 0.45	2.5P	D3	1415000608	2.27	2.32	D5	D3
		D5	1415000708				
M2.6 x 0.45	2.5P	D3	1415000808	2.37	2.42	D5	D3
		D5	1415000908				
M3 x 0.5	1.5P	D3	1415001008	2.75	2.80	D5	D3
		D5	1415001108				
	2.5P	D3	1415001208				
		D5	1415001308				
M3.5 x 0.6	1.5P	D4	1415001408	3.19	3.26	D6	D4
		D6	1415001508				
	2.5P	D4	1415001608				
		D6	1415001708				
M4 x 0.7	1.5P	D4	1415001808	3.64	3.71	D6	D4
		D6	1415001908				
	2.5P	D4	1415002008				
		D6	1415002108				
M5 x 0.8	1.5P	D4	1415002208	4.59	4.67	D7	D4
		D7	1415002308				
	2.5P	D4	1415002408				
		D7	1415002508				
M6 x 1.0	1.5P	D5	1415002608	5.49	5.59	D8	D5
		D8	1415002708				
	2.5P	D5	1415002808				
		D8	1415002908				
M8 x 1.25	1.5P	D5	1415003008	7.36	7.49	D9	D5
		D9	1415003108				
	2.5P	D5	1415003208				
		D9	1415003308				
M10 x 1.5	1.5P	D6	1415003808	9.24	9.39	D10	D6
		D10	1415003908				
	2.5P	D6	1415004008				
		D10	1415004108				
M10 x 1.25	1.5P	D5	1415004608	9.36	9.49	D9	D5
		D9	1415004708				
	2.5P	D5	1415004808				
		D9	1415004908				
M10 x 1.0	1.5P	D5	1415003408	9.49	9.59	D9	D5
		D9	1415003508				
	2.5P	D5	1415003608				
		D9	1415003708				

Packed: 1 pc.
Available V coating only.

EXT

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List 14150 (Continued)

Bottom (2P-2.5P), Short Bottom (1P-1.5P)

VC10 V

Tap Size	Lead	Thread Limit	EDP Number	Tap Drill Size		Class of Fit	
			V	Min	Max	2B	3B
M12 x 1.75	1.5P	D6	1415004208	11.11	11.29	D11	D6
		D11	1415004308				
	2.5P	D6	1415004408				
		D11	1415004508				

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
14150	▢	▢	▢	▢	▢	▢	▢	○		▢	▢			○			
SFM	35-130	20-50	15-30	15-30	15-20	15-50	15-50	15-40		65-150	65-130			10-15			

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List 14001

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)





Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
0 - 80 UNF	1.5P	H2	1400100000	1400100001	1400100005	1400100006	1400100008	0.0536	0.0549	H3	H2
		H3	1400100100	1400100101	1400100105	–	1400100108				
	2.5P	H2	1400100200	1400100201	1400100205	–	1400100208				
		H3	1400100300	1400100301	1400100305	–	1400100308				
		H4	1400100400	1400100401	1400100405	–	1400100408				
		H5	1400100500	1400100501	1400100505	–	1400100508				
		H6	1400100600	1400100601	–	–	1400100608				
		H7	1400100700	1400100701	–	–	1400100708				
1 - 64 UNC	2.5P	H2	1400100800	1400100801	1400100805	–	1400100808	0.0650	0.0666	H3	H2
		H3	1400100900	1400100901	1400100905	–	1400100908				
		H4	1400101000	1400101001	1400101005	–	1400101008				
		H5	1400101100	1400101101	1400101105	–	1400101108				
		H6	1400101200	1400101201	–	–	1400101208				
		H7	1400101300	1400101301	–	–	1400101308				
1 - 72 UNF	1.5P	H2	1400101400	1400101401	1400101405	–	1400101408	0.0659	0.0673	H3	H2
		H3	1400101500	1400101501	1400101505	–	1400101508				
	2.5P	H2	1400101600	1400101601	1400101605	–	1400101608				
		H3	1400101700	1400101701	1400101705	–	1400101708				
		H4	1400101800	1400101801	1400101805	–	1400101808				
		H5	1400101900	1400101901	1400101905	–	1400101908				
		H6	1400102000	1400102001	1400102005	–	1400102008				
		H7	1400102100	1400102101	–	–	1400102108				
2 - 56 UNC	1.5P	H2	1400102200	1400102201	1400102205	–	1400102208	0.0769	0.0787	H3	H2
		H3	1400102300	1400102301	1400102305	1400102306	1400102308				
		H4	1400102400	1400102401	1400102405	–	1400102408				
	2.5P	H2	1400102500	1400102501	1400102505	–	1400102508				
		H3	1400102600	1400102601	1400102605	–	1400102608				
		H4	1400102700	1400102701	1400102705	–	1400102708				
		H5	1400102800	1400102801	1400102805	–	1400102808				
		H6	1400102900	1400102901	1400102905	–	1400102908				
		H7	1400103000	1400103001	1400103005	–	1400103008				
2 - 64 UNF	2.5P	H2	1400103100	1400103101	1400103105	–	1400103108	0.0780	0.0796	H3	H2
		H3	1400103200	1400103201	1400103205	–	1400103208				
		H4	1400103300	1400103301	1400103305	–	1400103308				
		H5	1400103400	1400103401	–	–	1400103408				
		H6	1400103500	1400103501	–	–	1400103508				
		H7	1400103600	1400103601	–	–	1400103608				
		H8	–	–	–	–	1400157808				
		H9	–	–	–	–	1400157908				
3 - 48 UNC	2.5P	H2	1400103700	1400103701	1400103705	–	1400103708	0.0884	0.0905	H3	H2
		H3	1400103800	1400103801	1400103805	–	1400103808				
		H4	1400103900	1400103901	1400103905	–	1400103908				
		H5	1400104000	1400104001	–	–	1400104008				
		H6	1400104100	1400104101	–	–	1400104108				
		H7	1400104200	1400104201	–	–	1400104208				
3 - 56 UNF	2.5P	H2	1400104300	1400104301	1400104305	–	1400104308	0.0899	0.0917	H3	H2
		H3	1400104400	1400104401	1400104405	–	1400104408				
		H4	1400104500	1400104501	1400104505	–	1400104508				
		H5	1400104600	1400104601	1400104605	–	1400104608				
		H6	1400104700	1400104701	1400104705	–	1400104708				
		H7	1400104800	1400104801	–	–	1400104808				

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

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
4 - 40 UNC	1.5P	H3	1400104900	1400104901	1400104905	1400104906	1400104908	0.0993	0.1018	H5	H3
		H4	1400105000	1400105001	1400105005	–	1400105008				
		H5	1400105100	1400105101	1400105105	–	1400105108				
		H6	1400157300	1400157301	1400157305	–	1400157308				
		H7	1400157400	1400157401	1400157405	–	1400157408				
	2.5P	H2	1400105200	1400105201	1400105205	–	1400105208				
		H3	1400105300	1400105301	1400105305	1400105306	1400105308				
		H4	1400105400	1400105401	1400105405	–	1400105408				
		H5	1400105500	1400105501	1400105505	–	1400105508				
		H6	1400105600	1400105601	1400105605	–	1400105608				
		H7	1400105700	1400105701	1400105705	–	1400105708				
		H8	–	–	–	–	1400158008				
		H9	–	–	–	–	1400158108				
		H10	–	–	–	–	1400158208				
		H14	–	–	–	–	1400159808				
	4.5P	H2	1400105800	1400105801	1400105805	–	1400105808				
		H3	1400105900	1400105901	1400105905	–	1400105908				
		H4	1400106000	1400106001	1400106005	–	1400106008				
		H5	1400106100	1400106101	1400106105	–	1400106108				
		H6	1400106200	1400106201	1400106205	–	1400106208				
		H7	1400106300	1400106301	1400106305	–	1400106308				
4 - 48 UNF	2.5P	H2	1400106400	1400106401	1400106405	–	1400106408	0.1014	0.1035	H5	H3
		H3	1400106500	1400106501	1400106505	–	1400106508				
		H4	1400106600	1400106601	1400106605	–	1400106608				
		H5	1400106700	1400106701	1400106705	–	1400106708				
		H6	1400106800	1400106801	–	–	1400106808				
		H7	1400106900	1400106901	–	–	1400106908				
	4.5P	H2	1400107000	1400107001	1400107005	–	1400107008				
		H3	1400107100	1400107101	1400107105	–	1400107108				
		H4	1400107200	1400107201	–	–	1400107208				
		H5	1400107300	1400107301	–	–	1400107308				
		H6	1400107400	1400107401	–	–	1400107408				
		H7	1400107500	1400107501	–	–	1400107508				
5 - 40 UNC	2.5P	H2	1400107600	1400107601	–	–	1400107608	0.1123	0.1148	H5	H3
		H3	1400107700	1400107701	1400107705	–	1400107708				
		H4	1400107800	1400107801	–	–	1400107808				
		H5	1400107900	1400107901	1400107905	–	1400107908				
		H6	1400108000	1400108001	1400108005	–	1400108008				
		H7	1400108100	1400108101	1400108105	–	1400108108				
	4.5P	H2	1400108200	1400108201	1400108205	–	1400108208				
		H3	1400108300	1400108301	1400108305	–	1400108308				
		H4	1400108400	1400108401	1400108405	–	1400108408				
		H5	1400108500	1400108501	1400108505	–	1400108508				
		H6	1400108600	1400108601	1400108605	–	1400108608				
		H7	1400108700	1400108701	1400108705	–	1400108708				

Packed: 1 pc.
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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	Med.	High														
	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
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

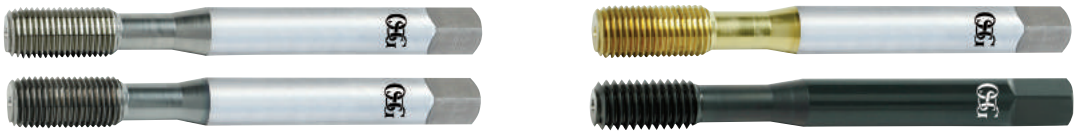
○ good ◎ best

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
5 - 44 UNF	2.5P	H2	1400108800	1400108801	1400108805	–	1400108808	0.1135	0.1157	H5	H3
		H3	1400108900	1400108901	1400108905	–	1400108908				
		H4	1400109000	1400109001	1400109005	–	1400109008				
		H5	1400109100	1400109101	1400109105	–	1400109108				
		H6	1400109200	1400109201	1400109205	–	1400109208				
		H7	1400109300	1400109301	1400109305	–	1400109308				
	4.5P	H2	1400109400	1400109401	1400109405	–	1400109408				
		H3	1400109500	1400109501	1400109505	–	1400109508				
		H4	1400109600	1400109601	1400109605	–	1400109608				
		H5	1400109700	1400109701	1400109705	–	1400109708				
		H6	1400109800	1400109801	1400109805	–	1400109808				
		H7	1400109900	1400109901	1400109905	–	1400109908				
6 - 32 UNC	1.5P	H3	1400110000	1400110001	1400110005	–	1400110008	0.1221	0.1253	H5	H3
		H4	1400110100	1400110101	1400110105	–	1400110108				
		H5	1400110200	1400110201	1400110205	1400110206	1400110208				
		H6	1400157500	1400157501	–	–	–				
		H7	1400157600	1400157601	–	–	–				
		H8	1400157700	1400157701	–	–	–				
	2.5P	H2	1400110300	1400110301	1400110305	–	1400110308				
		H3	1400110400	1400110401	1400110405	1400110406	1400110408				
		H4	1400110500	1400110501	1400110505	–	1400110508				
		H5	1400110600	1400110601	1400110605	1400110606	1400110608				
		H6	1400110700	1400110701	1400110705	–	1400110708				
		H7	1400110800	1400110801	1400110805	–	1400110808				
		H8	1400110900	1400110901	1400110905	–	1400110908				
		H9	1400111000	1400111001	1400111005	–	1400111008				
		H10	1400111100	1400111101	1400111105	–	1400111108				
		H11	–	–	–	–	1400158308				
		H12	–	–	–	–	1400158408				
		H14	–	–	–	–	1400159908				
	4.5P	H2	1400111200	1400111201	1400111205	–	1400111208				
		H3	1400111300	1400111301	1400111305	–	1400111308				
		H4	1400111400	1400111401	1400111405	–	1400111408				
		H5	1400111500	1400111501	1400111505	–	1400111508				
		H6	1400111600	1400111601	1400111605	–	1400111608				
		H7	1400111700	1400111701	1400111705	–	1400111708				
		H8	1400111800	1400111801	1400111805	–	1400111808				
		H9	1400111900	1400111901	1400111905	–	1400111908				
		H10	1400112000	1400112001	1400112005	–	1400112008				
6 - 40 UNF	2.5P	H2	1400112100	1400112101	1400112105	–	1400112108	0.1253	0.1278	H5	H3
		H3	1400112200	1400112201	1400112205	–	1400112208				
		H4	1400112300	1400112301	1400112305	–	1400112308				
		H5	1400112400	1400112401	1400112405	–	1400112408				
		H6	1400112500	1400112501	1400112505	–	1400112508				
		H7	1400112600	1400112601	1400112605	–	1400112608				
		H8	1400112700	1400112701	1400112705	–	1400112708				
		H9	1400112800	1400112801	1400112805	–	1400112808				
		H10	1400112900	1400112901	1400112905	–	1400112908				
	4.5P	H2	1400113000	1400113001	1400113005	–	1400113008				
		H3	1400113100	1400113101	1400113105	–	1400113108				

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Specify treatment at time of order.

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
6 - 40 UNF	4.5P	H4	1400113200	1400113201	1400113205	–	1400113208	0.1253	0.1278	H5	H3
		H5	1400113300	1400113301	1400113305	–	1400113308				
		H6	1400113400	1400113401	1400113405	–	1400113408				
		H7	1400113500	1400113501	1400113505	–	1400113508				
		H8	1400113600	1400113601	1400113605	–	1400113608				
		H9	1400113700	1400113701	1400113705	–	1400113708				
		H10	1400113800	1400113801	1400113805	–	1400113808				
8 - 32 UNC	1.5P	H3	1400113900	1400113901	1400113905	–	1400113908	0.1481	0.1513	H5	H3
		H4	1400114000	1400114001	1400114005	–	1400114008				
		H5	1400114100	1400114101	1400114105	1400114106	1400114108				
	2.5P	H2	1400114200	1400114201	1400114205	–	1400114208				
		H3	1400114300	1400114301	1400114305	–	1400114308				
		H4	1400114400	1400114401	1400114405	–	1400114408				
		H5	1400114500	1400114501	1400114505	1400114506	1400114508				
		H6	1400114600	1400114601	1400114605	–	1400114608				
		H7	1400114700	1400114701	1400114705	–	1400114708				
		H8	1400114800	1400114801	1400114805	–	1400114808				
		H9	1400114900	1400114901	1400114905	–	1400114908				
		H10	1400115000	1400115001	1400115005	–	1400115008				
		H11	–	–	–	–	1400158508				
		H12	–	–	–	–	1400158608				
		H14	–	–	–	–	1400160008				
	4.5P	H2	1400115100	1400115101	1400115105	–	1400115108				
		H3	1400115200	1400115201	1400115205	–	1400115208				
		H4	1400115300	1400115301	1400115305	–	1400115308				
		H5	1400115400	1400115401	1400115405	–	1400115408				
		H6	1400115500	1400115501	1400115505	–	1400115508				
		H7	1400115600	1400115601	1400115605	–	1400115608				
		H8	1400115700	1400115701	1400115705	–	1400115708				
		H9	1400115800	1400115801	1400115805	–	1400115808				
		H10	1400115900	1400115901	1400115905	–	1400115908				
8 - 36 UNF	2.5P	H2	1400116000	1400116001	1400116005	–	1400116008	0.1498	0.1527	H5	H3
		H3	1400116100	1400116101	1400116105	–	1400116108				
		H4	1400116200	1400116201	1400116205	–	1400116208				
		H5	1400116300	1400116301	1400116305	–	1400116308				
		H6	1400116400	1400116401	1400116405	–	1400116408				
		H7	1400116500	1400116501	1400116505	–	1400116508				
		H8	1400116600	1400116601	1400116605	–	1400116608				
		H9	1400116700	1400116701	1400116705	–	1400116708				
		H10	1400116800	1400116801	1400116805	–	1400116808				
	4.5P	H2	1400116900	1400116901	1400116905	–	1400116908				
		H3	1400117000	1400117001	1400117005	–	1400117008				
		H4	1400117100	1400117101	1400117105	–	1400117108				
		H5	1400117200	1400117201	1400117205	–	1400117208				
		H6	1400117300	1400117301	1400117305	–	1400117308				

Packed: 1 pc.
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Specify treatment at time of order.

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HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

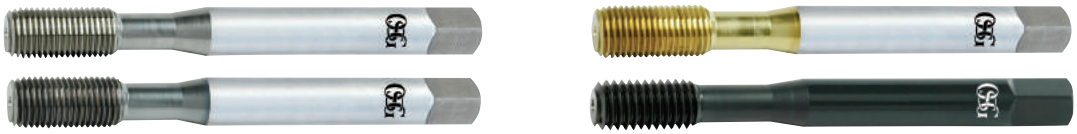
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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
8 - 36 UNF	4.5P	H7	1400117400	1400117401	1400117405	–	1400117408	0.1498	0.1527	H5	H3
		H8	1400117500	1400117501	1400117505	–	1400117508				
		H9	1400117600	1400117601	1400117605	–	1400117608				
		H10	1400117700	1400117701	1400117705	–	1400117708				
10 - 24 UNC	1.5P	H3	1400117800	1400117801	1400117805	–	1400117808	0.1688	0.1730	H6	H4
		H4	1400117900	1400117901	1400117905	–	1400117908				
		H5	1400118000	1400118001	1400118005	–	1400118008				
		H6	1400157100	1400157101	1400157105	–	1400157108				
	2.5P	H2	1400118100	1400118101	1400118105	–	1400118108				
		H3	1400118200	1400118201	1400118205	–	1400118208				
		H4	1400118300	1400118301	1400118305	–	1400118308				
		H5	1400118400	1400118401	1400118405	–	1400118408				
		H6	1400118500	1400118501	1400118505	–	1400118508				
		H7	1400118600	1400118601	1400118605	–	1400118608				
		H8	1400118700	1400118701	1400118705	–	1400118708				
		H9	1400118800	1400118801	1400118805	–	1400118808				
		H10	1400118900	1400118901	1400118905	–	1400118908				
	4.5P	H2	1400119000	1400119001	1400119005	–	1400119008				
		H3	1400119100	1400119101	1400119105	–	1400119108				
		H4	1400119200	1400119201	1400119205	–	1400119208				
		H5	1400119300	1400119301	1400119305	–	1400119308				
		H6	1400119400	1400119401	1400119405	–	1400119408				
		H7	1400119500	1400119501	1400119505	–	1400119508				
		H8	1400119600	1400119601	1400119605	–	1400119608				
		H9	1400119700	1400119701	1400119705	–	1400119708				
		H10	1400119800	1400119801	1400119805	–	1400119808				
10 - 32 UNF	1.5P	H3	1400119900	1400119901	1400119905	–	1400119908	0.1741	0.1776	H6	H4
		H4	1400120000	1400120001	1400120005	–	1400120008				
		H5	1400120100	1400120101	1400120105	–	1400120108				
		H6	1400157200	1400157201	1400157205	–	1400157208				
	2.5P	H2	1400120200	1400120201	1400120205	–	1400120208				
		H3	1400120300	1400120301	1400120305	–	1400120308				
		H4	1400120400	1400120401	1400120405	1400120406	1400120408				
		H5	1400120500	1400120501	1400120505	1400120506	1400120508				
		H6	1400120600	1400120601	1400120605	–	1400120608				
		H7	1400120700	1400120701	1400120705	1400120706	1400120708				
		H8	1400120800	1400120801	1400120805	–	1400120808				
		H9	1400120900	1400120901	1400120905	–	1400120908				
		H10	1400121000	1400121001	1400121005	–	1400121008				
		H11	–	–	–	–	1400158708				
		H12	–	–	–	–	1400158808				
		H14	–	–	–	–	1400160108				
	4.5P	H2	1400121100	1400121101	1400121105	–	1400121108				
		H3	1400121200	1400121201	1400121205	–	1400121208				
		H4	1400121300	1400121301	1400121305	–	1400121308				
		H5	1400121400	1400121401	1400121405	–	1400121408				
		H6	1400121500	1400121501	1400121505	–	1400121508				
		H7	1400121600	1400121601	1400121605	–	1400121608				
		H8	1400121700	1400121701	1400121705	–	1400121708				
		H9	1400121800	1400121801	1400121805	–	1400121808				
		H10	1400121900	1400121901	1400121905	–	1400121908				

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

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
12 - 24 UNC	2.5P	H2	1400122000	1400122001	1400122005	–	1400122008	0.1948	0.1990	H7	H5
		H3	1400122100	1400122101	1400122105	–	1400122108				
		H4	1400122200	1400122201	1400122205	–	1400122208				
		H5	1400122300	1400122301	1400122305	–	1400122308				
		H6	1400122400	1400122401	1400122405	–	1400122408				
		H7	1400122500	1400122501	1400122505	–	1400122508				
		H8	1400122600	1400122601	1400122605	–	1400122608				
		H9	1400122700	1400122701	1400122705	–	1400122708				
		H10	1400122800	1400122801	1400122805	–	1400122808				
	4.5P	H2	1400122900	1400122901	1400122905	–	1400122908				
		H3	1400123000	1400123001	1400123005	–	1400123008				
		H4	1400123100	1400123101	1400123105	–	1400123108				
		H5	1400123200	1400123201	1400123205	–	1400123208				
		H6	1400123300	1400123301	1400123305	–	1400123308				
		H7	1400123400	1400123401	1400123405	–	1400123408				
		H8	1400123500	1400123501	1400123505	–	1400123508				
		H9	1400123600	1400123601	1400123605	–	1400123608				
		H10	1400123700	1400123701	1400123705	–	1400123708				
12 - 28 UNF	2.5P	H2	1400123800	1400123801	1400123805	–	1400123808	0.1978	0.2014	H7	H5
		H3	1400123900	1400123901	1400123905	–	1400123908				
		H4	1400124000	1400124001	1400124005	–	1400124008				
		H5	1400124100	1400124101	1400124105	–	1400124108				
		H6	1400124200	1400124201	1400124205	–	1400124208				
		H7	1400124300	1400124301	1400124305	–	1400124308				
		H8	1400124400	1400124401	1400124405	–	1400124408				
		H9	1400124500	1400124501	1400124505	–	1400124508				
		H10	1400124600	1400124601	1400124605	–	1400124608				
	4.5P	H2	1400124700	1400124701	1400124705	–	1400124708				
		H3	1400124800	1400124801	1400124805	–	1400124808				
		H4	1400124900	1400124901	1400124905	–	1400124908				
		H5	1400125000	1400125001	1400125005	–	1400125008				
		H6	1400125100	1400125101	1400125105	–	1400125108				
		H7	1400125200	1400125201	1400125205	–	1400125208				
		H8	1400125300	1400125301	1400125305	–	1400125308				
		H9	1400125400	1400125401	1400125405	–	1400125408				
		H10	1400125500	1400125501	1400125505	–	1400125508				
1/4 - 20 UNC	1.5P	H5	1400125600	1400125601	1400125605	–	1400125608	0.2245	0.2296	H6	H4
		H6	1400125700	1400125701	1400125705	1400125706	1400125708				
		H7	1400125800	1400125801	1400125805	–	1400125808				
		H8	1400125900	1400125901	1400125905	–	1400125908				
	2.5P	H2	1400126000	1400126001	1400126005	–	1400126008				
		H3	1400126100	1400126101	1400126105	1400126106	1400126108				
		H4	1400126200	1400126201	1400126205	–	1400126208				
		H5	1400126300	1400126301	1400126305	1400126306	1400126308				
		H6	1400126400	1400126401	1400126405	–	1400126408				

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

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Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)





Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
1/4 - 20 UNC	2.5P	H7	1400126500	1400126501	1400126505	–	1400126508	0.2245	0.2296	H6	H4
		H8	1400126600	1400126601	1400126605	–	1400126608				
		H9	1400126700	1400126701	1400126705	–	1400126708				
		H10	1400126800	1400126801	1400126805	–	1400126808				
		H11	–	–	–	–	1400158908				
		H12	–	–	–	–	1400159008				
		H13	–	–	–	–	1400159108				
	4.5P	H2	1400126900	1400126901	1400126905	–	1400126908				
		H3	1400127000	1400127001	1400127005	–	1400127008				
		H4	1400127100	1400127101	1400127105	–	1400127108				
		H5	1400127200	1400127201	1400127205	–	1400127208				
		H6	1400127300	1400127301	1400127305	–	1400127308				
		H7	1400127400	1400127401	1400127405	–	1400127408				
		H8	1400127500	1400127501	1400127505	–	1400127508				
		H9	1400127600	1400127601	1400127605	–	1400127608				
		H10	1400127700	1400127701	1400127705	–	1400127708				
1/4 - 28 UNF	1.5P	H4	1400127800	1400127801	1400127805	–	1400127808	0.2318	0.2354	H6	H4
		H5	1400127900	1400127901	1400127905	–	1400127908				
		H6	1400128000	1400128001	1400128005	–	1400128008				
		H7	1400128100	1400128101	1400128105	–	1400128108				
	2.5P	H2	1400128200	1400128201	1400128205	–	1400128208				
		H3	1400128300	1400128301	1400128305	–	1400128308				
		H4	1400128400	1400128401	1400128405	–	1400128408				
		H5	1400128500	1400128501	1400128505	–	1400128508				
		H6	1400128600	1400128601	1400128605	–	1400128608				
		H7	1400128700	1400128701	1400128705	–	1400128708				
		H8	1400128800	1400128801	1400128805	–	1400128808				
		H9	1400128900	1400128901	1400128905	–	1400128908				
		H10	1400129000	1400129001	1400129005	–	1400129008				
		H11	–	–	–	–	1400159208				
	4.5P	H2	1400129100	1400129101	1400129105	–	1400129108				
		H3	1400129200	1400129201	1400129205	–	1400129208				
		H4	1400129300	1400129301	1400129305	–	1400129308				
		H5	1400129400	1400129401	1400129405	–	1400129408				
		H6	1400129500	1400129501	1400129505	–	1400129508				
		H7	1400129600	1400129601	1400129605	–	1400129608				
		H8	1400129700	1400129701	1400129705	–	1400129708				
		H9	1400129800	1400129801	1400129805	–	1400129808				
		H10	1400129900	1400129901	1400129905	–	1400129908				
5/16 - 18 UNC	1.5P	H6	1400130000	1400130001	1400130005	–	1400130008	0.2842	0.2898	H7	H5
		H7	1400130100	1400130101	1400130105	–	1400130108				
		H8	1400130200	1400130201	1400130205	–	1400130208				
		H9	1400130300	1400130301	1400130305	–	1400130308				
	2.5P	H2	1400130400	1400130401	1400130405	–	1400130408				
		H3	1400130500	1400130501	1400130505	–	1400130508				
		H4	1400130600	1400130601	1400130605	–	1400130608				
		H5	1400130700	1400130701	1400130705	1400130706	1400130708				
		H6	1400130800	1400130801	1400130805	–	1400130808				
		H7	1400130900	1400130901	1400130905	–	1400130908				
		H8	1400131000	1400131001	1400131005	–	1400131008				

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

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List 14001 (Continued)

HY-PRO HSS-CO TiCN TiN CrN S/O BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
5/16 - 18 UNC	2.5P	H9	1400131100	1400131101	1400131105	–	1400131108	0.2842	0.2898	H7	H5
		H10	1400131200	1400131201	1400131205	–	1400131208				
	4.5P	H2	1400131300	1400131301	1400131305	–	1400131308				
		H3	1400131400	1400131401	1400131405	–	1400131408				
		H4	1400131500	1400131501	1400131505	–	1400131508				
		H5	1400131600	1400131601	1400131605	–	1400131608				
		H6	1400131700	1400131701	1400131705	–	1400131708				
		H7	1400131800	1400131801	1400131805	–	1400131808				
		H8	1400131900	1400131901	1400131905	–	1400131908				
		H9	1400132000	1400132001	1400132005	–	1400132008				
		H10	1400132100	1400132101	1400132105	–	1400132108				
5/16 - 24 UNF	1.5P	H4	1400132200	1400132201	1400132205	–	1400132208	0.2913	0.2955	H7	H5
		H5	1400132300	1400132301	1400132305	–	1400132308				
		H6	1400132400	1400132401	1400132405	–	1400132408				
		H7	1400132500	1400132501	1400132505	–	1400132508				
		H8	1400132600	1400132601	1400132605	–	1400132608				
	2.5P	H2	1400132700	1400132701	1400132705	–	1400132708				
		H3	1400132800	1400132801	1400132805	–	1400132808				
		H4	1400132900	1400132901	1400132905	–	1400132908				
		H5	1400133000	1400133001	1400133005	–	1400133008				
		H6	1400133100	1400133101	1400133105	–	1400133108				
		H7	1400133200	1400133201	1400133205	–	1400133208				
		H8	1400133300	1400133301	1400133305	–	1400133308				
		H9	1400133400	1400133401	1400133405	–	1400133408				
		H10	1400133500	1400133501	1400133505	–	1400133508				
	4.5P	H2	1400133600	1400133601	1400133605	–	1400133608				
		H3	1400133700	1400133701	1400133705	–	1400133708				
		H4	1400133800	1400133801	1400133805	–	1400133808				
		H5	1400133900	1400133901	1400133905	–	1400133908				
		H6	1400134000	1400134001	1400134005	–	1400134008				
		H7	1400134100	1400134101	1400134105	–	1400134108				
		H8	1400134200	1400134201	1400134205	–	1400134208				
		H9	1400134300	1400134301	1400134305	–	1400134308				
		H10	1400134400	1400134401	1400134405	–	1400134408				
		H11	–	–	–	–	1400159308				
		H12	–	–	–	–	1400159408				
3/8 - 16 UNC	1.5P	H5	1400134500	1400134501	1400134505	–	1400134508	0.3431	0.3495	H7	H5
		H6	1400134600	1400134601	1400134605	–	1400134608				
		H7	1400134700	1400134701	1400134705	–	1400134708				
		H8	1400134800	1400134801	1400134805	–	1400134808				
		H9	1400134900	1400134901	1400134905	–	1400134908				
	2.5P	H4	1400135000	1400135001	1400135005	–	1400135008				
		H5	1400135100	1400135101	1400135105	–	1400135108				
		H6	1400135200	1400135201	1400135205	–	1400135208				
		H7	1400135300	1400135301	1400135305	–	1400135308				

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

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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														
	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
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)





Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
3/8 - 16 UNC	2.5P	H8	1400135400	1400135401	1400135405	–	1400135408	0.3431	0.3495	H7	H5
		H9	1400135500	1400135501	1400135505	–	1400135508				
		H10	1400135600	1400135601	1400135605	–	1400135608				
		H11	1400135700	1400135701	1400135705	–	1400135708				
		H12	1400135800	1400135801	1400135805	–	1400135808				
	4.5P	H4	1400135900	1400135901	1400135905	–	1400135908				
		H5	1400136000	1400136001	1400136005	–	1400136008				
		H6	1400136100	1400136101	1400136105	–	1400136108				
		H7	1400136200	1400136201	1400136205	–	1400136208				
		H8	1400136300	1400136301	1400136305	–	1400136308				
		H9	1400136400	1400136401	1400136405	–	1400136408				
		H10	1400136500	1400136501	1400136505	–	1400136508				
		H11	1400136600	1400136601	1400136605	–	1400136608				
		H12	1400136700	1400136701	1400136705	–	1400136708				
3/8 - 24 UNF	1.5P	H4	1400136800	1400136801	1400136805	–	1400136808	0.3538	0.358	H7	H5
		H5	1400136900	1400136901	1400136905	–	1400136908				
		H6	1400137000	1400137001	1400137005	–	1400137008				
		H7	1400137100	1400137101	1400137105	–	1400137108				
		H8	1400137200	1400137201	1400137205	–	1400137208				
	2.5P	H4	1400137300	1400137301	1400137305	–	1400137308				
		H5	1400137400	1400137401	1400137405	–	1400137408				
		H6	1400137500	1400137501	1400137505	–	1400137508				
		H7	1400137600	1400137601	1400137605	–	1400137608				
		H8	1400137700	1400137701	1400137705	–	1400137708				
		H9	1400137800	1400137801	1400137805	–	1400137808				
		H10	1400137900	1400137901	1400137905	–	1400137908				
		H11	1400138000	1400138001	1400138005	–	1400138008				
		H12	1400138100	1400138101	1400138105	–	1400138108				
	4.5P	H4	1400138200	1400138201	1400138205	–	1400138208				
		H5	1400138300	1400138301	1400138305	–	1400138308				
		H6	1400138400	1400138401	1400138405	–	1400138408				
		H7	1400138500	1400138501	1400138505	–	1400138508				
		H8	1400138600	1400138601	1400138605	–	1400138608				
		H9	1400138700	1400138701	1400138705	–	1400138708				
		H10	1400138800	1400138801	1400138805	–	1400138808				
		H11	1400138900	1400138901	1400138905	–	1400138908				
		H12	1400139000	1400139001	1400139005	–	1400139008				
		H13	–	–	–	–	1400159508				
7/16 - 14 UNC	2.5P	H4	1400139100	1400139101	1400139105	–	1400139108	0.4011	0.4084	H8	H5
		H5	1400139200	1400139201	1400139205	–	1400139208				
		H6	1400139300	1400139301	1400139305	–	1400139308				
		H7	1400139400	1400139401	1400139405	–	1400139408				
		H8	1400139500	1400139501	1400139505	–	1400139508				
		H9	1400139600	1400139601	1400139605	–	1400139608				
		H10	1400139700	1400139701	1400139705	–	1400139708				
		H11	1400139800	1400139801	1400139805	–	1400139808				
		H12	1400139900	1400139901	1400139905	–	1400139908				
	4.5P	H4	1400140000	1400140001	1400140005	–	1400140008				
		H5	1400140100	1400140101	1400140105	–	1400140108				
		H6	1400140200	1400140201	1400140205	–	1400140208				
		H7	1400140300	1400140301	1400140305	–	1400140308				

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

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
7/16 - 14 UNC	4.5P	H8	1400140400	1400140401	1400140405	–	1400140408	0.4011	0.4084	H8	H5
		H9	1400140500	1400140501	1400140505	–	1400140508				
		H10	1400140600	1400140601	1400140605	–	1400140608				
		H11	1400140700	1400140701	1400140705	–	1400140708				
		H12	1400140800	1400140801	1400140805	–	1400140808				
7/16 - 20 UNF	2.5P	H4	1400140900	1400140901	1400140905	–	1400140908	0.412	0.4171	H8	H5
		H5	1400141000	1400141001	1400141005	–	1400141008				
		H6	1400141100	1400141101	1400141105	–	1400141108				
		H7	1400141200	1400141201	1400141205	–	1400141208				
		H8	1400141300	1400141301	1400141305	–	1400141308				
		H9	1400141400	1400141401	1400141405	–	1400141408				
		H10	1400141500	1400141501	1400141505	–	1400141508				
		H11	1400141600	1400141601	1400141605	–	1400141608				
		H12	1400141700	1400141701	1400141705	–	1400141708				
	4.5P	H4	1400141800	1400141801	1400141805	–	1400141808				
		H5	1400141900	1400141901	1400141905	–	1400141908				
		H6	1400142000	1400142001	1400142005	–	1400142008				
		H7	1400142100	1400142101	1400142105	–	1400142108				
		H8	1400142200	1400142201	1400142205	–	1400142208				
		H9	1400142300	1400142301	1400142305	–	1400142308				
		H10	1400142400	1400142401	1400142405	–	1400142408				
		H11	1400142500	1400142501	1400142505	–	1400142508				
		H12	1400142600	1400142601	1400142605	–	1400142608				
1/2 - 13 UNC	2.5P	H4	1400142700	1400142701	1400142705	–	1400142708	0.4608	0.4686	H8	H5
		H5	1400142800	1400142801	1400142805	–	1400142808				
		H6	1400142900	1400142901	1400142905	–	1400142908				
		H7	1400143000	1400143001	1400143005	–	1400143008				
		H8	1400143100	1400143101	1400143105	–	1400143108				
		H9	1400143200	1400143201	1400143205	–	1400143208				
		H10	1400143300	1400143301	1400143305	–	1400143308				
		H11	1400143400	1400143401	1400143405	–	1400143408				
		H12	1400143500	1400143501	1400143505	–	1400143508				
	4.5P	H4	1400143600	1400143601	1400143605	–	1400143608				
		H5	1400143700	1400143701	1400143705	–	1400143708				
		H6	1400143800	1400143801	1400143805	–	1400143808				
		H7	1400143900	1400143901	1400143905	–	1400143908				
		H8	1400144000	1400144001	1400144005	–	1400144008				
		H9	1400144100	1400144101	1400144105	–	1400144108				
		H10	1400144200	1400144201	1400144205	–	1400144208				
		H11	1400144300	1400144301	1400144305	–	1400144308				
		H12	1400144400	1400144401	1400144405	–	1400144408				
1/2- 20 UNF	2.5P	H4	1400144500	1400144501	1400144505	–	1400144508	0.4745	0.4796	H8	H5
		H5	1400144600	1400144601	1400144605	–	1400144608				
		H6	1400144700	1400144701	1400144705	–	1400144708				
		H7	1400144800	1400144801	1400144805	–	1400144808				

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	Med.	High														
	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
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)





Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
1/2- 20 UNF	2.5P	H8	1400144900	1400144901	1400144905	–	1400144908	0.4745	0.4796	H8	H5
		H9	1400145000	1400145001	1400145005	–	1400145008				
		H10	1400145100	1400145101	1400145105	–	1400145108				
		H11	1400145200	1400145201	1400145205	–	1400145208				
		H12	1400145300	1400145301	1400145305	–	1400145308				
	4.5P	H4	1400145400	1400145401	1400145405	–	1400145408				
		H5	1400145500	1400145501	1400145505	–	1400145508				
		H6	1400145600	1400145601	1400145605	–	1400145608				
		H7	1400145700	1400145701	1400145705	–	1400145708				
		H8	1400145800	1400145801	1400145805	–	1400145808				
		H9	1400145900	1400145901	1400145905	–	1400145908				
		H10	1400146000	1400146001	1400146005	–	1400146008				
		H11	1400146100	1400146101	1400146105	–	1400146108				
		H12	1400146200	1400146201	1400146205	–	1400146208				
		H13	–	–	–	–	1400159608				
		H14	–	–	–	–	1400159708				
9/16 - 12 UNC	2.5P	H4	1400146300	1400146301	1400146305	–	1400146308	0.5200	0.5285	H10	H7
		H5	1400146400	1400146401	1400146405	–	1400146408				
		H6	1400146500	1400146501	1400146505	–	1400146508				
		H7	1400146600	1400146601	1400146605	–	1400146608				
		H8	1400146700	1400146701	1400146705	–	1400146708				
		H9	1400146800	1400146801	1400146805	–	1400146808				
		H10	1400146900	1400146901	1400146905	–	1400146908				
		H11	1400147000	1400147001	1400147005	–	1400147008				
		H12	1400147100	1400147101	1400147105	–	1400147108				
	4.5P	H4	1400147200	1400147201	1400147205	–	1400147208				
		H5	1400147300	1400147301	1400147305	–	1400147308				
		H6	1400147400	1400147401	1400147405	–	1400147408				
		H7	1400147500	1400147501	1400147505	–	1400147508				
		H8	1400147600	1400147601	1400147605	–	1400147608				
		H9	1400147700	1400147701	1400147705	–	1400147708				
		H10	1400147800	1400147801	1400147805	–	1400147808				
		H11	1400147900	1400147901	1400147905	–	1400147908				
		H12	1400148000	1400148001	1400148005	–	1400148008				
9/16 - 18 UNF	2.5P	H4	1400148100	1400148101	1400148105	–	1400148108	0.5342	0.5398	H10	H7
		H5	1400148200	1400148201	1400148205	–	1400148208				
		H6	1400148300	1400148301	1400148305	–	1400148308				
		H7	1400148400	1400148401	1400148405	–	1400148408				
		H8	1400148500	1400148501	1400148505	–	1400148508				
		H9	1400148600	1400148601	1400148605	–	1400148608				
		H10	1400148700	1400148701	1400148705	–	1400148708				
		H11	1400148800	1400148801	1400148805	–	1400148808				
		H12	1400148900	1400148901	1400148905	–	1400148908				
	4.5P	H4	1400149000	1400149001	1400149005	–	1400149008				
		H5	1400149100	1400149101	1400149105	–	1400149108				
		H6	1400149200	1400149201	1400149205	–	1400149208				
		H7	1400149300	1400149301	1400149305	–	1400149308				
		H8	1400149400	1400149401	1400149405	–	1400149408				
		H9	1400149500	1400149501	1400149505	–	1400149508				
		H10	1400149600	1400149601	1400149605	–	1400149608				
		H11	1400149700	1400149701	1400149705	–	1400149708				
		H12	1400149800	1400149801	1400149805	–	1400149808				

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

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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
5/8 - 11 UNC	2.5P	H4	1400149900	1400149901	1400149905	–	1400149908	0.5786	0.5879	H10	H7
		H5	1400150000	1400150001	1400150005	–	1400150008				
		H6	1400150100	1400150101	1400150105	–	1400150108				
		H7	1400150200	1400150201	1400150205	–	1400150208				
		H8	1400150300	1400150301	1400150305	–	1400150308				
		H9	1400150400	1400150401	1400150405	–	1400150408				
		H10	1400150500	1400150501	1400150505	–	1400150508				
		H11	1400150600	1400150601	1400150605	–	1400150608				
		H12	1400150700	1400150701	1400150705	–	1400150708				
	4.5P	H4	1400150800	1400150801	1400150805	–	1400150808				
		H5	1400150900	1400150901	1400150905	–	1400150908				
		H6	1400151000	1400151001	1400151005	–	1400151008				
		H7	1400151100	1400151101	1400151105	–	1400151108				
		H8	1400151200	1400151201	1400151205	–	1400151208				
		H9	1400151300	1400151301	1400151305	–	1400151308				
		H10	1400151400	1400151401	1400151405	–	1400151408				
		H11	1400151500	1400151501	1400151505	–	1400151508				
		H12	1400151600	1400151601	1400151605	–	1400151608				
5/8 - 18 UNF	2.5P	H4	1400151700	1400151701	1400151705	–	1400151708	0.5967	0.6023	H10	H7
		H5	1400151800	1400151801	1400151805	–	1400151808				
		H6	1400151900	1400151901	1400151905	–	1400151908				
		H7	1400152000	1400152001	1400152005	–	1400152008				
		H8	1400152100	1400152101	1400152105	–	1400152108				
		H9	1400152200	1400152201	1400152205	–	1400152208				
		H10	1400152300	1400152301	1400152305	–	1400152308				
		H11	1400152400	1400152401	1400152405	–	1400152408				
		H12	1400152500	1400152501	1400152505	–	1400152508				
	4.5P	H4	1400152600	1400152601	1400152605	–	1400152608				
		H5	1400152700	1400152701	1400152705	–	1400152708				
		H6	1400152800	1400152801	1400152805	–	1400152808				
		H7	1400152900	1400152901	1400152905	–	1400152908				
		H8	1400153000	1400153001	1400153005	–	1400153008				
		H9	1400153100	1400153101	1400153105	–	1400153108				
		H10	1400153200	1400153201	1400153205	–	1400153208				
		H11	1400153300	1400153301	1400153305	–	1400153308				
		H12	1400153400	1400153401	1400153405	–	1400153408				
3/4 - 10 UNC	2.5P	H6	1400153500	1400153501	1400153505	–	1400153508	0.6990	0.07092	H10	H7
		H7	1400153600	1400153601	1400153605	–	1400153608				
		H8	1400153700	1400153701	1400153705	–	1400153708				
		H9	1400153800	1400153801	1400153805	–	1400153808				
		H10	1400153900	1400153901	1400153905	–	1400153908				
		H11	1400154000	1400154001	1400154005	–	1400154008				
		H12	1400154100	1400154101	1400154105	–	1400154108				
		H13	1400154200	1400154201	1400154205	–	1400154208				
		H14	1400154300	1400154301	1400154305	–	1400154308				

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	Med.	High														
	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
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

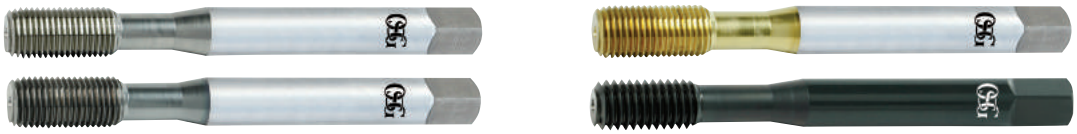
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List 14001 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	2B	3B
3/4 - 10 UNC	4.5P	H6	1400154400	1400154401	1400154405	–	1400154408	0.6990	0.07092	H10	H7
		H7	1400154500	1400154501	1400154505	–	1400154508				
		H8	1400154600	1400154601	1400154605	–	1400154608				
		H9	1400154700	1400154701	1400154705	–	1400154708				
		H10	1400154800	1400154801	1400154805	–	1400154808				
		H11	1400154900	1400154901	1400154905	–	1400154908				
		H12	1400155000	1400155001	1400155005	–	1400155008				
		H13	1400155100	1400155101	1400155105	–	1400155108				
		H14	1400155200	1400155201	1400155205	–	1400155208				
3/4 - 16 UNF	2.5P	H6	1400155300	1400155301	1400155305	–	1400155308	0.7181	0.7245	H10	H7
		H7	1400155400	1400155401	1400155405	–	1400155408				
		H8	1400155500	1400155501	1400155505	–	1400155508				
		H9	1400155600	1400155601	1400155605	–	1400155608				
		H10	1400155700	1400155701	1400155705	–	1400155708				
		H11	1400155800	1400155801	1400155805	–	1400155808				
		H12	1400155900	1400155901	1400155905	–	1400155908				
		H13	1400156000	1400156001	1400156005	–	1400156008				
		H14	1400156100	1400156101	1400156105	–	1400156108				
	4.5P	H6	1400156200	1400156201	1400156205	–	1400156208				
		H7	1400156300	1400156301	1400156305	–	1400156308				
		H8	1400156400	1400156401	1400156405	–	1400156408				
		H9	1400156500	1400156501	1400156505	–	1400156508				
		H10	1400156600	1400156601	1400156605	–	1400156608				
		H11	1400156700	1400156701	1400156705	–	1400156708				
		H12	1400156800	1400156801	1400156805	–	1400156808				
		H13	1400156900	1400156901	1400156905	–	1400156908				
		H14	1400157000	1400157001	1400157005	–	1400157008				

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

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Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
14001	◎	◎	◎	○	○	○	○	○		◎	◎			○			
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15			

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List 14101

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)



Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	6H	4H
M1.6 x 0.35	2.5P	D3	1410100000	1410100001	1410100005	–	1410100008	1.42	1.46	D5	D3
		D5	1410100100	1410100101	1410100105	–	1410100108				
M1.7 x 0.35	2.5P	D3	1410100200	1410100201	1410100205	–	1410100208	1.52	1.56	D5	D3
		D5	1410100300	1410100301	1410100305	–	–				
M2 x 0.4	1.5P	D3	1410100400	1410100401	1410100405	1410100406	1410100408	1.8	1.84	D5	D3
		D5	1410100500	1410100501	1410100505	–	1410100508				
	2.5P	D3	1410100600	1410100601	1410100605	–	1410100608				
		D4	–	–	–	–	1410106108				
		D5	1410100700	1410100701	1410100705	–	1410100708				
		D6	–	–	–	–	1410106208				
		D7	–	–	–	–	1410106308				
		D8	–	–	–	–	1410106408				
M2.5 x 0.45	1.5P	D3	1410100800	1410100801	1410100805	1410100806	1410100808	2.27	2.32	D5	D3
		D5	1410100900	1410100901	1410100905	–	1410100908				
	2.5P	D3	1410101000	1410101001	1410101005	–	1410101008				
		D4	–	–	–	–	1410106508				
		D5	1410101100	1410101101	1410101105	1410101106	1410101108				
		D6	–	–	–	–	1410106608				
		D7	–	–	–	–	1410106708				
		D8	–	–	–	–	1410106808				
M2.6 x 0.45	2.5P	D3	1410101200	1410101201	1410101205	–	–	2.37	2.42	D5	D3
		D5	1410101300	1410101301	1410101305	–	–				
M3 x 0.5	1.5P	D3	1410101400	1410101401	1410101405	1410101406	1410101408	2.75	2.80	D5	D3
		D5	1410101500	1410101501	1410101505	–	1410101508				
		D6	1410106000	–	–	–	–				
	2.5P	D3	1410101600	1410101601	1410101605	–	1410101608				
		D4	–	–	–	–	1410106908				
		D5	1410101700	1410101701	1410101705	–	1410101708				
		D6	–	–	–	–	1410107008				
		D7	–	–	–	–	1410107108				
		D8	–	–	–	–	1410107208				
		D9	–	–	–	–	1410107308				
		D10	–	–	–	–	1410107408				
		D11	–	–	–	–	1410107508				
	4.5P	D5	1410110700	–	–	–	–				
M3.5 x 0.6	1.5P	D4	1410101800	1410101801	1410101805	–	1410101808	3.19	3.26	D6	D4
		D6	1410101900	1410101901	1410101905	–	1410101908				
	2.5P	D4	1410102000	1410102001	1410102005	–	1410102008				
		D5	–	–	–	–	1410107608				

Packed: 1 pc.
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Specify treatment at time of order.

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HYT

Work Material																			
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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		
14101	◎	◎	◎	○	○	○	○	○		◎	◎			○					
SFM	35-100	20-50	15-25	15-25	15-20	15-40	15-40	10-25		50-90	45-100			10-15					

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List 14101 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)





Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	6H	4H
M3.5 x 0.6	2.5P	D6	1410102100	1410102101	1410102105	–	1410102108	3.19	3.26	D6	D4
		D7	–	–	–	–	1410107708				
		D8	–	–	–	–	1410107808				
	4.5P	D4	1410102200	1410102201	1410102205	–	1410102208				
		D6	1410102300	1410102301	1410102305	–	1410102308				
M4 x 0.7	1.5P	D4	1410102400	1410102401	1410102405	1410102406	1410102408	3.64	3.71	D6	D4
		D6	1410102500	1410102501	1410102505	–	1410102508				
	2.5P	D4	1410102600	1410102601	1410102605	–	1410102608				
		D5	–	–	–	–	1410107908				
		D6	1410102700	1410102701	1410102705	–	1410102708				
		D7	–	–	–	–	1410108008				
		D8	–	–	–	–	1410108108				
		D9	–	–	–	–	1410108208				
		D10	–	–	–	–	1410108308				
		D11	–	–	–	–	1410108408				
	4.5P	D4	1410102800	1410102801	1410102805	–	1410102808				
		D6	1410102900	1410102901	1410102905	–	1410102908				
M5 x 0.8	1.5P	D4	1410103000	1410103001	1410103005	–	1410103008	4.59	4.67	D7	D4
		D7	1410103100	1410103101	1410103105	–	1410103108				
	2.5P	D4	1410103200	1410103201	1410103205	–	1410103208				
		D5	–	–	–	–	1410108508				
		D6	–	–	–	–	1410108608				
		D7	1410103300	1410103301	1410103305	–	1410103308				
		D8	–	–	–	–	1410108708				
		D9	–	–	–	–	1410108808				
		D10	–	–	–	–	1410108908				
		D11	–	–	–	–	1410109008				
		D14	–	–	–	–	1410110508				
	4.5P	D4	1410103400	1410103401	1410103405	–	1410103408				
		D7	1410103500	1410103501	1410103505	–	1410103508				
M6 x 1.0	1.5P	D5	1410103600	1410103601	1410103605	–	1410103608	5.49	5.59	D8	D5
		D8	1410103700	1410103701	1410103705	–	1410103708				
	2.5P	D5	1410103800	1410103801	1410103805	–	1410103808				
		D6	–	–	–	–	1410109108				
		D7	–	–	–	–	1410109208				
		D8	1410103900	1410103901	1410103905	1410103906	1410103908				
		D9	–	–	–	–	1410109308				
		D10	–	–	–	–	1410109408				
		D11	–	–	–	–	1410109508				
		D12	–	–	–	–	1410109608				
		D13	–	–	–	–	1410109708				
		D14	–	–	–	–	1410110608				
	4.5P	D5	1410104000	1410104001	1410104005	–	1410104008				
		D8	1410104100	1410104101	1410104105	–	1410104108				
M8 x 1.25	1.5P	D5	1410104200	1410104201	1410104205	–	1410104208	7.36	7.49	D9	D5
		D9	1410104300	1410104301	1410104305	–	1410104308				
	2.5P	D5	1410104400	1410104401	1410104405	–	1410104408				
		D9	1410104500	1410104501	1410104505	1410104506	1410104508				
	4.5P	D5	1410104600	1410104601	1410104605	–	1410104608				
		D9	1410104700	1410104701	1410104705	–	1410104708				

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

HYT

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List 14101 (Continued)

HY-PRO | HSS-CO | TiCN | TiN | CrN | S/O | BR

Plug (4P-4.5P), Bottom (2P-2.5P), Short Bottom (1P-1.5P)

Tap Size	Lead	Thread Limit	EDP Number					Tap Drill Size		Class of Fit	
			Bright	S/O	TiN	CrN	TiCN	Min	Max	6H	4H
M10 x 1.5	1.5P	D6	1410104800	1410104801	1410104805	–	1410104808	9.24	9.39	D10	D6
		D10	1410104900	1410104901	1410104905	–	1410104908				
	2.5P	D6	1410105000	1410105001	1410105005	–	1410105008				
		D7	–	–	–	–	1410109808				
		D8	–	–	–	–	1410109908				
		D9	–	–	–	–	1410110008				
		D10	1410105100	1410105101	1410105105	–	1410105108				
		D11	–	–	–	–	1410110108				
		D12	–	–	–	–	1410110208				
		D13	–	–	–	–	1410110308				
	4.5P	D6	1410105200	1410105201	1410105205	–	1410105208				
		D10	1410105300	1410105301	1410105305	–	1410105308				
M12 x 1.75	1.5P	D6	1410105400	1410105401	1410105405	–	1410105408	11.11	11.29	D11	D6
		D11	1410105500	1410105501	1410105505	–	1410105508				
	2.5P	D6	1410105600	1410105601	1410105605	–	1410105608				
		D11	1410105700	1410105701	1410105705	–	1410105708				
	4.5P	D6	1410105800	1410105801	1410105805	–	1410105808				
		D11	1410105900	1410105901	1410105905	–	1410105908				

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

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	Med.	High														
	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
14101	◎	◎	◎	○	○	○	○	○		◎	◎			○			
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

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List 285

HY-PRO HSS TiCN TiN BR

Bottom (1.5P-2P)



Tap Size	Class of Fit	EDP Number		
		Bottom (1.5P-2P)		
		Bright	TiN	TiCN
0 - 80 UNC	2B	2864200	2864205	2864208
2 - 56 UNC		2864400	2864405	2864408
3 - 48 UNC		2864600	2864605	2864608
4 - 40 UNC		2864800	2864805	2864808
6 - 32 UNC		2865000	2865005	2865008
8 - 32 UNC		2865200	2865205	2865208
10 - 24 UNC		2865400	2865405	2865408
10 - 32 UNF		2865600	2865605	2865608
1/4 - 20 UNC		2865800	2865805	2865808
1/4 - 28 UNF		2866000	2866005	2866008
5/16 - 18 UNC		2866200	2866205	2866208
5/16 - 24 UNF		2866400	2866405	2866408
3/8 - 16 UNC		2866600	2866605	2866608
3/8 - 24 UNF		2866800	2866805	2866808
7/16 - 14 UNC		2867000	2867005	2867008
7/16 - 20 UNF		2867200	2867205	2867208
1/2 - 13 UNC		2867400	2867405	2867408
1/2 - 20 UNF		2867600	2867605	2867608

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
See page 560 for tap drill recommendations.

HY7

List 286

HY-PRO HSS TiCN TiN BR

Bottom (1.5P-2P)

Tap Size	Class of Fit	EDP Number		
		Bottom (1.5P-2P)		
		Bright	TiN	TiCN
M3 x 0.5	6H	2868100	2868105	2868108
M4 x 0.7		2868300	2868305	2868308
M5 x 0.8		2868500	2868505	2868508
M6 x 1.0		2868700	2868705	2868708
M8 x 1.25		2868900	2868905	2868908
M10 x 1.5		2869100	2869105	2869108
M12 x 1.75		2869300	2869305	2869308

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
See page 562 for tap drill recommendations.

HY7

Work Material

List No.	P					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 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
285	◎	○								◎	◎						
286	◎	○								◎	◎						
SFM	35-100	20-50								45-100	45-100						

○ good ◎ best

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List 14153

CARBIDE | BR

Carbide Inlaid Forming Tap, DIN/DIN, Bottom (1.5P-2P)



Tap Size	Thread Limit	Overall Length	Shank Diameter	EDP Number
				Bottom (1.5P-2P)
				Bright
M6 x 1.0	RH7	80	6	1415310100
M8 x 1.25		90	8	1415310200
M10 x 1.5		100	10	1415310400
M10 x 1.25		100	10	1415310300

Packed: 1 pc.
Available Bright finish only.
See page 562 for tap drill recommendations.

HTE

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
14153										◻	◻						
SFM										65-150	50-120						

◻ good ◻ best

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List 369

CARBIDE BR

JIS, Forming Tap, Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	Overall Length	EDP Number	
			Plug	Bottom
			Bright	Bright
M3 x 0.5	RH5	46	8315054	8315055
M4 x 0.7	RH6	52	8315060	8315061
M5 x 0.8	RH6	60	8315066	8315067
M6 x 1.0	RH7	62	8315072	8315073
M8 x 1.25	RH7	70	8315084	8315085
M10 x 1.5	RH7	75	8315096	8315097
M10x 1.25	RH7	75	8315102	8315103
M12 x 1.75	RH8	82	8315114	8315115
M12 x 1.5	RH7	82	8315120	8315121
M12 x 1.25	RH7	82	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 562 for tap drill recommendations.

HTE

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
369										◎	◎						
SFM										65-150	50-120						

○ good ◎ best

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List 357

CARBIDE BR

Forming Tap, Long Shank, JIS, Bottom (1.5P-2P)



Tap Size	Thread Limit	Overall Length	EDP Number
			Bottom (1.5P-2P)
			Bright
M6 x 1.0	RH7	100	8315633
M8 x 1.25	RH7	150	8315639
M10 x 1.5	RH7	150	8315645
M10 x 1.25	RH7	150	8315649
M12 x 1.75	RH8	150	8315653
M12 x 1.5	RH7	150	8315657
M12 x 1.25	RH8	150	8315661

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
See page 562 for tap drill recommendations.

HTE

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
357										◻	◻						
SFM										65-150	50-120						

◻ good ◻ best

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List 16450

HSSE | TiN | Var.

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P-3P)
				TiN
2 - 56 UNC	H2	2	45	1645002562
3 - 48 UNC	H2		50	1645003482
4 - 40 UNC	H2		56	1645004402
4 - 48 UNF	H2		56	1645004482
5 - 40 UNC	H2		56	1645005402
6 - 32 UNC	H2		56	1645006322
	H3			1645006323
6 - 40 UNF	H2		56	1645006402
8 - 32 UNC	H2		63	1645008322
	H3			1645008323
8 - 36 UNF	H2		63	1645008362
10 - 24 UNC	H2		70	1645010242
	H3			1645010243
10 - 32 UNF	H2		70	1645010322
	H3			1645010323
12 - 24 UNC	H3		80	1645012243
12 - 28 UNF	H3		80	1645012283
1/4 - 20 UNC	H3		80	1645014203
	H5			1645014205
1/4 - 28 UNF	H3		80	1645014283
	H4			1645014284
5/16 - 18 UNC	H3	3	90	1645056183
	H5			1645056185
5/16 - 24 UNF	H3		90	1645056243
	H4			1645056244
3/8 - 16 UNC	H3		100	1645038163
	H5			1645038165
3/8 - 24 UNF	H3		90	1645038243
	H4			1645038244
7/16 - 14 UNC	H3		100	1645076143
	H5			1645076145
7/16 - 20 UNF	H3		100	1645076203
	H5			1645076205
1/2 - 13 UNC	H3		110	1645012133
	H5			1645012135
1/2 - 20 UNF	H3		100	1645012203
	H5			1645012205
9/16 - 12 UNC	H3		110	1645096123
	H5			1645096125
9/16 - 20 UNF	H3		100	1645096183
	H5			1645096185
5/8 - 11 UNC	H3		110	1645058113
	H5			1645058115
5/8- 18 UNF	H3		100	1645058183
	H5			1645058185

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.

EP

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List 16450 (Continued)

HSSE | TiN | Var.

DIN Overall Length, Modified Bottom (2.5P-3P)

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P-3P)
				TiN
3/4 - 10 UNC	H3	4	125	1645034103
	H5			1645034105
3/4 - 16 UNF	H3		110	1645034163
	H5			1645034165
7/8 - 9 UNC	H4		140	1645078094
	H6			1645078096
7/8 - 14 UNF	H4		125	1645078144
	H6			1645078146
1" - 8 UNC	H4		160	1645010084
	H6			1645010086
1"- 12 UNF	H4		140	1645010124
	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.

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														
	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
16450	○	○	○	◎		◎	◎	○									
SFM	50-80	50-80	30-80	50-100		20-35	20-35	15-25									

○ good ◎ best

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List 16455

HSSE | TiN | Var.

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P-3P)
				TiN
M2 x 0.4	D3	2	45	1645502043
M2.5 x 0.45	D3		50	1645525453
M2.6 x 0.45	D3		50	1645526453
M3 x 0.5	D4		56	1645503054
M4 x 0.7	D4		63	1645504074
M5 x 0.8	D4		70	1645505084
M6 x 1	D3		80	1645506103
	D5			1645506105
M8 X 1.25	D4	3	90	1645508124
	D6			1645508126
M10 x 1.5	D4		100	1645510154
	D6			1645510156
M12 x 1.75	D4		110	1645512174
	D6			1645512176
M14 x 2	D5		110	1645514205
	D7			1645514207
M16 x 2	D5		110	1645516205
	D7			1645516207
M18 x 2.5	D7	4	125	1645518257
M20 x 2.5	D8		140	1645520258
M24 x 3	D9		160	1645524309

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.

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														
	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
16455	○	○	○	◎		◎	◎	○									
SFM	50-80	50-80	30-80	50-100		20-35	20-35	15-25									

○ good ◎ best

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List 335Ni

VC10 | HR | 11°

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P-3P)
				HR
2 - 56 UNC	H2	2	45	3350002562
4 - 40 UNC	H2	3	56	3350004402
	H3			3350004403
6 - 32 UNC	H2		56	3350006322
	H3			3350006323
8 - 32 UNC	H2		63	3350008322
	H3			3350008323
10 - 24 UNC	H3		70	3350010243
	H5			3350010245
10 - 32 UNC	H2		70	3350010322
	H3			3350010323
1/4 - 20 UNC	H3		80	3350014203
	H5			3350014205
1/4 - 28 UNF	H3		80	3350014283
	H4			3350014284
5/16 - 18 UNC	H3		90	3350516183
	H5			3350516185
5/16 - 24 UNF	H3		90	3350516243
	H5			3350516245
3/8 - 16 UNC	H3		100	3350038163
	H5			3350038165
3/8 - 24 UNF	H3		90	3350038243
	H4			3350038244
7/16 - 14 UNC	H3		100	3350716143
	H5			3350716145
7/16 - 20 UNF	H3		100	3350716203
	H5			3350716205
1/2 - 13 UNC	H3		110	3350012133
	H5			3350012135
1/2 - 20 UNF	H3		100	3350012203
	H5			3350012205
9/16 - 18 UNC	H3	4	100	3350096183
	H5			3350096185
5/8 - 11 UNC	H3		110	3350058113
	H5			3350058115
5/8 - 18 UNC	H3		100	3350058183
	H5			3350058185
3/4 - 10 UNC	H3		125	3350034103
	H5			3350034105

Packed: 1 pc.
Available HR 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														
	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
335Ni								○				◎				○	
SFM								8-20				8-15				8-12	

○ good ◎ best

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List 335Ni (Continued)

VC10 | HR | 11°

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P-3P)
				HR
3/4 - 16 UNF	H3	4	110	3350034163
	H5			3350034165
7/8 - 19 UNC	H3		140	3350078093
	H5			3350078095
7/8 - 14 UNF	H3		125	3350078143
	H5			3350078145
1" - 8 UNC	H3		160	3350001083
	H5			3350001085
1" - 12 UNF	H3		140	3350001123
	H5			3350001125

Packed: 1 pc.
Available HR coating only.

EP

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened 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													
335Ni								▢				▣				▢	
SFM								8-20				8-15				8-12	

▢ good ▣ best

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List 336Ni

VC10 | HR | 11°

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P-3P)
				HR
M2.5 x 0.45	D3	3	50	3360250453
M3 x 0.5	D3		56	3360003053
M4 x 0.7	D4		63	3360004074
M5 x 0.8	D4		70	3360005084
M6 x 1.0	D5		80	3360006105
M6 x 0.75	D5		80	3360006755
M8 x 1.25	D5		90	3360008255
M8 x 1.0	D5		90	3360008105
M10 x 1.5	D6		100	3360010156
M10 x 1.25	D5		100	3360010255
M12 x 1.75	D6		100	3360012756
M12 x 1.5	D6		110	3360012156
M14 x 2.0	D7		100	3360014207
M14 x 1.5	D6		110	3360014156
M16 x 2.0	D7		100	3360016207
M16 x 1.5	D6		110	3360016156
M18 x 2.5	D7		110	3360018257
M18 x 1.5	D6		125	3360018156
M20 x 2.5	D8		125	3360020258
M20 x 1.5	D6		140	3360020156
M22 x 2.5	D8		125	3360022258
M22 x 1.5	D6		140	3360022156
M24 x 3.0	D8	4	140	3360024308
M24 x 1.5	D6		160	3360024156

Packed: 1 pc.
Available HR coating only.

EP

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
336Ni								▢				▣				▢	
SFM								8-20				8-15				8-12	

▢ good ▣ best

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List 313Ti

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P-3P) V
2 - 56 UNC	H2	3	1305710108
4 - 40 UNC	H2		1305710208
6 - 32 UNC	H2		1305710408
	H3		1305710508
6 - 40 UNF	H2		1305710608
8 - 32 UNC	H2		1305710708
	H3		1305710808
8 - 36 UNF	H2		1305710908
10 - 24 UNC	H3		1305711008
10 - 32 UNF	H2		1305711108
	H3		1305711208
1/4 - 20 UNC	H3		1305711308
	H5		1305711408
1/4 - 28 UNF	H3		1305711508
	H4		1305711608
	H5		1305714608
5/16 - 18 UNC	H3		1305711708
	H5		1305711808
5/16 - 24 UNF	H3		1305711908
	H4		1305712008
3/8 - 16 UNC	H3		1305712108
	H5		1305712208
3/8 - 24 UNF	H3		1305712308

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P-3P) V
3/8 - 24 UNF	H4	3	1305712408
7/16 - 14 UNC	H3		1305712508
	H5		1305712608
7/16 - 20 UNF	H3		1305712708
	H5		1305712808
1/2 - 13 UNC	H3		1305712908
	H5		1305713008
1/2 - 20 UNF	H3		1305713108
	H5		1305713208
9/16 - 18 UNC	H3		1305713308
	H5		1305713408
5/8-11 UNC	H3	4	1305713508
5/8 - 18 UNF	H3		1305713608
	H5		1305713708
3/4 - 10 UNC	H5		1305713808
3/4 - 16 UNF	H3		1305713908
	H5		1305714008
7/8 - 9 UNC	H3		1305714208
	H5		1305714308
7/8 - 14 UNC	H3		1305714408
	H5		1305714508
1" - 8 UNC	H5		1305714108

Packed: 1 pc.
Available V coating only.

EXT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
313Ti				▢				▢				▣	▣	▢	▢		
SFM				15-30				8-20				8-15	8-15	15-35	10-20		

▢ good ▣ best

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List 345Ti

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number
			Modified Bottom (2.5P-3P)
			V
M2.5 x 0.45	D3	3	1316210008
M3 x 0.5	D3		1316210108
M4 x 0.7	D4		1316210208
M5 x 0.8	D4		1316210308
M6 x 1.0	D5		1316210408
M8 x 1.25	D5		1316210508
M10 x 1.5	D6		1316210708
M10 x 1.25	D5		1316210608
M12 x 1.75	D6		1316210808
M12 x 1.25	D5		1316210908

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
345Ti				▢				▢				▣	▣	▢	▢		
SFM				15-30				8-20				8-15	8-15	15-35	10-20		

▢ good ▣ best

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List 313Ni

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)	
			S/O	S/O	V
2 - 56 UNC	H2	2	–	1770701	–
4 - 40 UNC	H2	3	1770501	1719001	1719008
	H3		1770601	1719101	–
6 - 32 UNC	H2		0140101	1720701	–
	H3		1770001	1709101	1709108
	H5		–	1709201	–
	H7		–	1770101	–
8 - 32 UNC	H2		0140201	–	–
	H3		–	1709301	1709308
	H5		–	1709401	–
10 - 24 UNC	H3		–	1719501	1719508
	H5		–	1719601	–
10 - 32 UNF	H2		0140301	1770201	–
	H3		1770301	1709501	1709508
	H4		–	1770401	–
	H5		–	1709601	–
1/4 - 20 UNC	H3		0140401	1719701	1719708
	H5		–	1719801	–
	H7		–	1771401	–
1/4 - 28 UNF	H3		0140501	1709701	1709708
	H4		0140601	–	–
	H5		–	1709801	–
5/16 - 18 UNC	H3		–	1719901	1719908
	H5		–	1720001	–
	H7		–	1771201	–
5/16 - 24 UNF	H3		0140701	1709901	1709908
	H4		–	0140801	–
	H5		–	1710001	–
3/8 - 16 UNC	H3		1771001	1720101	1720108
	H5		–	1720201	–
	H7		–	1771101	–
3/8 - 24 UNF	H3		0140901	1710101	1710108
	H4		0141001	–	–
	H5		–	1710201	–
7/16 - 14 UNC	H3		–	1720301	–
	H5		–	1720401	–
7/16 - 20 UNF	H3		0141101	1710301	–
	H5		0141201	1710401	–
1/2 - 13 UNC	H3		1770901	1720501	1720508
	H5		–	1720601	–
1/2 - 20 UNF	H3		0141301	1710501	1710508
	H5		0141401	1710601	–
	H7		–	1771301	–
9/16 - 18 UNF	H3		0141501	–	–
	H5		0141601	–	–
5/8 - 11 UNC	H3	4	–	1710701	–
5/8 - 18 UNF	H3		–	1710801	–
	H5		–	1710901	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

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List 313Ni (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

EXOTAP | VC10 | V | S/O | 10°

Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)	
			S/O	S/O	V
3/4 - 10 UNC	H3	4	–	1770801	–
	H5		–	1711001	–
3/4 - 16 UNF	H3		–	1711101	–
	H5		–	1711201	–
7/8 - 9 UNC	H3		–	1711401	–
	H5		–	1711501	–
7/8 - 14 UNF	H3		–	1711601	–
	H5		–	1711701	–
1" - 8 UNC	H5		–	1711301	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
345Ni								▢				▣	▢	▢	▢		
SFM								8-20				8-15	8-15	15-35	10-20		

▢ good ▣ best

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List 345Ni

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number
			Modified Bottom (2.5P-3.P)
			S/O
M2.5 x 0.45	D3	3	1316110001
M3 x 0.5	D3		1316110101
M4 x 0.7	D4		1316110201
M5 x 0.8	D4		1316110301
M6 x 1.0	D5		1316110401
M8 x 1.25	D5		1316110501
M10 x 1.5	D6		1316110701
M10 x 1.25	D5		1316110601
M12 x 1.75	D6		1316110801

Packed: 1 pc.
Available Steam Oxide finish only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened 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													
345Ni								▢				▣	▢	▢	▢		
SFM								8-20				8-15	8-15	15-35	10-20		

▢ good ▣ best

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List 313

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

EXOTAP | VC10 | V | S/O | 15°



Tap Size	Thread Limit	No. of Flutes	EDP Number			
			Bottom (1.5P-2P)		Modified Bottom (2.5P-3.P)	
			S/O	V	S/O	V
2 - 56 UNC	H2	2	0141701	0141708	1754001	1754008
4 - 40 UNC	H2		0141801	0141808	1752001	1752008
	H3		–	–	1754101	1754108
	H4		–	–	1754201	1754208
5 - 40 UNC	H2		–	–	1752101	1752108
6 - 32 UNC	H2		–	–	1754301	1754308
	H3		0141901	0141908	1752201	1752208
	H4		0142001	0142008	1754401	1754408
	H5		–	–	1754501	1754508
8 - 32 UNC	H2		0142101	0142108	1754601	1754608
	H3		0142201	0142208	1752301	1752308
	H4		0142301	0142308	1754701	1754708
	H5		–	–	1754801	1754808
	H6		–	–	1754901	1754908
10 - 24 UNC	H3	3	–	–	1752401	1752408
	H5		–	–	1703001	1703008
10 - 32 UNF	H2		0142401	0142408	1703101	1703108
	H3		0142501	0142508	1752501	1752508
	H4		0142601	0142608	1703201	1703208
	H5		–	–	1703301	1703308
	H6		–	–	1703401	1703408
1/4 - 20 UNC	H3		–	–	1752601	1752608
	H5		–	–	1703501	1703508
1/4 - 28 UNF	H3		0142701	0142708	1752701	1752708
	H4		0142801	0142808	1703601	1703608
	H5		–	–	1703701	1703708
	H6		–	–	1703801	1703808
5/16 - 18 UNC	H3		–	–	1752801	1752808
	H5		–	–	1703901	1703908
5/16 - 24 UNF	H3		0142901	0142908	1752901	1752908
	H4		0143001	0143008	1704001	1704008
	H5		–	–	1704101	1704108
	H6		–	–	1704201	1704208
3/8 - 16 UNC	H3		–	–	1753001	1753008
	H5		–	–	1704301	1704308
3/8 - 24 UNF	H3		0143101	0143108	1753101	1753108
	H4		0143201	0143208	1704401	1704408

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																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
313				◎	○		○	◎				○	○	◎	○		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 313 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number			
			Bottom (1.5P-2P)		Modified Bottom (2.5P-3.P)	
			S/O	V	S/O	V
3/8 - 24 UNF	H5	3	–	–	1704501	1704508
	H6		–	–	1704601	1704608
7/16 - 14 UNC	H3		–	–	1753201	1753208
	H5		–	–	1704701	1704708
7/16 - 20 UNF	H3		0143301	0143308	1753301	1753308
	H5		0143401	0143408	1704801	1704808
1/2 - 13 UNC	H3		–	–	1753401	1753408
	H5		–	–	1704901	1704908
1/2 - 20 UNF	H3		0143501	0143508	1753501	1753508
	H5		0143601	0143608	1705001	1705008
5/8 - 11 UNC	H3	4	–	–	1753601	1753608
5/8 - 18 UNF	H3		–	–	1753701	1753708
	H5		–	–	1705101	1705108
3/4 - 10 UNC	H3		–	–	1753801	1753808
3/4 - 16 UNF	H3		–	–	1753901	1753908

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																			
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
313				◎	○		○	◎				○	○	◎	○		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 345

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Modified Bottom (2.5P-3.P)	
			S/O	V
M3 x 0.5	D3	3	1705501	1705508
M4 x 0.7	D4		1705601	1705608
M5 x 0.8	D4		1705701	1705708
M6 x 1.0	D5		1705801	1705808
M8 x 1.25	D5		1705901	1705908
M10 x 1.5	D6		1706101	1706108
M10 x 1.25	D5		1706001	1706008
M12 x 1.75	D6		1706201	1706208

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened 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													
345				◎	○		○	◎				○	○	◎	○		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 16505 NEW SIZES

DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number	
					Bottom (1.5P)	Mod Bottom (2.5P)
				Ln	V	V
4 - 40 UNC	H2	2	56	19	1650508908	1650500108
4 - 48 UNF	H2	2	56	19	1650509008	1650500208
5 - 40 UNC	H2	2	56	19	1650509108	1650500308
5 - 44 UNF	H2	2	56	19	1650509208	1650500408
6 - 32 UNC	H2	3	56	21	1650509308	1650500608
	H3	3	56	21	1650509408	1650500508
6 - 40 UNF	H2	3	56	21	1650509508	–
	H2	2	56	21	–	1650500708
8 - 32 UNC	H2	3	63	22	1650509608	–
	H3	3	63	22	1650509708	–
	H2	2	63	22	–	1650500908
	H3	2	63	22	–	1650500808
8 - 36 UNF	H2	3	63	22	1650509808	–
	H2	2	63	22	–	1650501008
10 - 24 UNC	H3	3	70	26	1650509908	–
	H3	2	70	26	–	1650501108
10 - 32 UNF	H2	3	70	26	1650510008	–
	H3	3	70	26	1650510108	–
	H2	2	70	26	–	1650501308
	H3	2	70	26	–	1650501208
12 - 24 UNC	H3	3	80	32	1650510208	–
	H3	2	80	32	–	1650501408
12 - 28 UNF	H3	3	80	32	1650510308	–
	H3	2	80	32	–	1650501508
12 - 32 UNEF	H3	3	80	32	1650510408	–
	H3	2	80	32	–	1650505608
1/4 - 20 UNC	H3	3	80	32	1650510608	–
	H5	3	80	32	1650510708	–
	H3	2	80	32	–	1650501708
	H5	2	80	32	–	1650501608
1/4 - 28 UNF	H3	3	80	32	1650510908	–
	H4	3	80	32	1650510808	–
	H3	2	80	32	–	1650501908
	H4	2	80	32	–	1650501808
1/4 - 32 UNEF	H3	2	80	32	1650510508	1650505708
	H3	3	80	32	1650511008	–
5/16 - 18 UNC	H3	3	90	35	1650511108	1650502108
	H5	3	90	35	1650511208	1650502008
5/16 - 24 UNF	H3	3	90	35	1650511308	1650502308
	H4	3	90	35	1650511408	1650502208
5/16 - 32 UNEF	H3	3	80	35	1650511508	1650505808
3/8 - 16 UNC	H3	3	100	39	1650511608	1650502508
	H5	3	100	39	1650511708	1650502408
3/8 - 24 UNF	H3	3	90	35	1650511808	1650502708
	H4	3	90	35	1650511908	1650502608
3/8 - 32 UNEF	H4	3	90	35	1650512008	–
	H3	3	90	35	–	1650505908
7/16 - 14 UNC	H3	3	100	43	1650512108	1650502908
	H5	3	100	43	1650512208	1650502808

Packed: 1 pc.
Available V coating only.

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List 16505 (Continued) NEW SIZES

DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)

EXOTAP A VC10 V Var.

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number	
					Bottom (1.5P)	Mod Bottom (2.5P)
				Ln	V	V
7/16 - 20 UNF	H3	3	100	43	1650512308	1650503108
	H5				1650512408	1650503008
7/16 - 28 UNEF	H4		90	43	1650512508	1650506008
1/2 - 13 UNC	H3		110	49	1650512608	1650503308
	H5				1650512708	1650503208
1/2 - 20 UNF	H3		100	49	1650512808	1650503508
	H5				1650512908	1650503408
1/2 - 28 UNEF	H4		100	49	1650513008	1650506108
9/16 - 12 UNC	H3		110	50	–	1650503708
	H5				–	1650503608
9/16 - 18 UNF	H3		100	50	–	1650503908
	H5				–	1650503808
9/16 - 24 UNEF	H4		100	50	–	1650506208
5/8-11 UNC	H3		110	54	–	1650504108
	H5				–	1650504008
5/8 - 18 UNF	H3		100	54	–	1650504308
	H5				–	1650504208
5/8 - 24 UNEF	H4		100	54	–	1650506308
11/16 - 24 UNEF	H4	4	110	55	–	1650506408
3/4 - 10 UNC	H3		125	61	–	1650504508
	H5				–	1650504408
3/4 - 16 UNF	H3		110	61	–	1650504708
	H5				–	1650504608
3/4 - 20 UNEF	H5		110	61	–	1650506508
13/16 - 20 UNEF	H5		125	61	–	1650506608
7/8 - 9 UNC	H4		140	67	–	1650504908
	H6				–	1650504808
7/8 - 14 UNF	H4		125	67	–	1650505108
	H6				–	1650505008
7/8 - 20 UNEF	H5		125	67	–	1650506708
15/16 - 20 UNEF	H5		140	68	–	1650506808
1 - 8 UNC	H4		160	76	–	1650505208
	H6				–	1650505308
1 - 12 UNF	H6		140	76	–	1650505408
	H4				–	1650505508
1 - 20 UNEF	H5		140	76	–	1650506908
1 - 8 UNS	H8		160	76	–	1650507008
1,1/8 - 7 UNC	H9		180	97	–	1650507108
1,1/8 - 8 UNS	H9		180	97	–	1650507208
1,1/8 - 12 UNF	H8		150	78	–	1650507308
1,1/4 - 7 UNC	H10		180	100	–	1650507408
1,1/4 - 8 UNS	H9		180	100	–	1650507508
1,1/4 - 12 UNF	H8		150	78	–	1650507608
1,3/8 - 6 UNC	H10		200	115	–	1650507708

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														
	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
16505	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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			

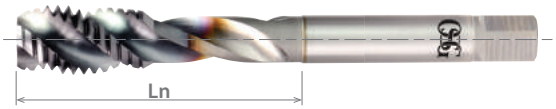
○ good ◎ best

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List 16505 (Continued) NEW SIZES



DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number	
					Bottom (1.5P)	Mod Bottom (2.5P)
				Ln	V	V
1,3/8 - 8 UNS	H9	4	200	115	–	1650507808
1,3/8 - 12 UNF	H8		170	91	–	1650507908
1,1/2 - 6 UNC	H10		200	115	–	1650508008
1,1/2 - 8 UNS	H9		200	115	–	1650508108
1,1/2 - 12 UNF	H8		170	91	–	1650508208
1,5/8 - 8 UNS	H10		200	110	–	1650508308
1,3/4 - 5 UNC	H11		220	120	–	1650508408
1,3/4 - 8 UNS	H10		200	101	–	1650508508
1,7/8 - 8 UNS	H10		225	125	–	1650508608
2 - 4,1/2 UNC	H12		250	140	–	1650508708
2 - 8 UNS	H10		225	122	–	1650508808

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
16505	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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			

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List 16500 NEW SIZES

DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number	
					Bottom (1.5P)	Mod Bottom (2.5P)
				Ln	V	V
M1.4 x 0.3	D2	2	40	12	–	1650003008
M1.6 x 0.35	D3	2	40	14	–	1650003108
M1.7 x 0.35	D3	2	40	14	–	1650003208
M2 x 0.4	D3	2	45	10	–	1650003408
M2 x 0.25	D2	2	45	10	–	1650003308
M2.2 x 0.45	D3	2	45	11	–	1650003608
M2.2 x 0.25	D2	2	45	11	–	1650003508
M2.3 x 0.4	D3	2	45	13	–	1650003708
M2.5 x 0.45	D3	2	50	14	–	1650003908
M2.5 x 0.35	D3	2	50	14	–	1650003808
M2.6 x 0.45	D3	2	50	14	–	1650004008
M3 x 0.5	D3	3	56	19	1650009808	1650000108
M3 x 0.35	D2	2	56	19	1650009708	–
	D3	2			–	1650004108
M3.5 x 0.6	D3	3	56	21	1650010008	–
		2			–	1650004308
M3.5 x 0.35	D3	3	56	21	1650009908	–
		2			–	1650004208
M4 x 0.7	D4	3	63	22	1650010208	1650000308
M4 x 0.5	D3	3	63	22	1650010108	1650000208
M4.5 x 0.75	D4	3	70	27	1650010408	1650004508
M4.5 x 0.5	D3	3	70	27	1650010308	1650004408
M5 x 0.8	D4	3	70	27	1650010608	1650000508
M5 x 0.5	D3	3	70	27	1650010508	1650000408
M5.5 x 0.5	D3	3	80	32	1650010708	1650004608
M6 x 1.0	D5	3	80	32	1650011008	1650000808
M6 x 0.75	D4	3	80	32	1650010908	1650000708
M6 x 0.5	D3	3	80	32	1650010808	1650000608
M7 x 1.0	D5	3	80	30	1650011208	1650004808
M7 x 0.75	D4	3	80	30	1650011108	1650004708
M8 x 1.25	D5	3	90	35	1650011508	1650001008
M8 x 1.0	D5	3	90	35	1650011408	1650000908
M8 x 0.75	D4	3	80	33	1650011308	1650004908
M9 x 1.25	D5	3	90	35	1650011808	1650005208
M9 x 1.0	D5	3	90	35	1650011708	1650005108
M9 x 0.75	D4	3	90	35	1650011608	1650005008
M10 x 1.5	D6	3	100	39	1650012208	1650001308

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														
	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
16500	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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			

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List 16500 (Continued) NEW SIZES

DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number	
					Bottom (1.5P)	Mod Bottom (2.5P)
				Ln	V	V
M10 x 1.25	D5	3	100	39	1650012108	1650001208
M10 x 1.0	D5		90	35	1650012008	1650001108
M10 X 0.75	D4		90	35	1650011908	1650005308
M11 x 1.5	D6		100	43	1650012608	1650005608
M11 x 1.25	D5		100	43	1650012508	–
M11 X 1.0	D5		90	43	1650012408	1650005508
M11 x 0.75	D4		90	43	1650012308	1650005408
M12 x 1.75	D6		110	49	1650013008	1650001708
M12 x 1.5	D6		100	49	1650012908	1650001608
M12 x 1.25	D6		100	49	1650012808	1650001508
M12 x 1.0	D5		100	49	1650012708	1650001408
M14 x 2.0	D7		110	50	–	1650001908
M14 x 1.5	D6		100	50	–	1650001808
M14 x 1.25	D6		100	50	–	1650005808
M14 x 1.0	D5		100	50	–	1650005708
M15 X 1.5	D6		100	54	–	1650006008
M15 x 1.0	D5		100	54	–	1650005908
M16 x 2.0	D7		110	54	–	1650002108
M16 x 1.5	D6		100	54	–	1650002008
M16 x 1.0	D5		100	54	–	1650006108
M17 x 1.5	D6		100	55	–	1650006208
M17 x 1.0	D5		100	55	–	1650006308
M18 x 2.5	D7	4	125	55	–	1650002308
M18 x 2.0	D7		125	55	–	1650006508
M18 x 1.5	D6		110	55	–	1650002208
M18 x 1.0	D5		100	55	–	1650006408
M20 x 2.5	D7		140	61	–	1650002508
M20 x 2.0	D7		140	61	–	1650006708
M20 x 1.5	D6		125	61	–	1650002408
M20 x 1.0	D5		125	61	–	1650006608
M22 x 2.5	D7		140	67	–	1650002708
M22 x 2.0	D7		140	67	–	1650006908
M22 x 1.5	D6		125	67	–	1650002608
M22 x 1.0	D5		125	67	–	1650006808
M24 x 3.0	D8		160	68	–	1650002908
M24 x 2.0	D7		140	68	–	1650007108
M24 x 1.5	D6		140	68	–	1650002808
M24 x 1.0	D5		140	68	–	1650007008
M27 x 3.0	D10		160	80	–	1650007408
M27 x 2.0	D8		140	60	–	1650007308
M27 x 1.5	D8		140	60	–	1650007208
M30 x 3.5	D11		180	100	–	1650007708
M30 x 2.0	D9		150	75	–	1650007608
M30 x 1.5	D8		150	75	–	1650007508
M33 x 3.5	D11		180	100	–	1650008008
M33 x 2.0	D9		160	75	–	1650007908
M33 x 1.5	D8		160	75	–	1650007808
M36 x 4.0	D11		200	115	–	1650008408
M36 X 3.0	D10		200	115	–	1650008308

Packed: 1 pc.
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List 16500 (Continued) NEW SIZES

DIN Overall Length, Modified Bottom (2P-3P), Bottom (1.5P-2P)

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number	
					Bottom (1.5P)	Mod Bottom (2.5P)
				Ln	V	V
M36 x 2.0	D9	4	170	85	–	1650008208
M36 x 1.5	D8		170	85	–	1650008108
M39 x 4.0	D11		200	110	–	1650008508
M42 x 3.0	D12		200	100	–	1650008808
M42 x 2.0	D9		200	100	–	1650008708
M42 x 4.5	D12		170	70	–	1650008908
M42 x 1.5	D8		170	70	–	1650008608
M45 x 4.5	D12		220	120	–	1650009108
M45 x 3.0	D10		200	100	–	1650009008
M48 x 5.0	D13		250	140	–	1650009508
M48 x 3.0	D11		225	115	–	1650009408
M48 x 2.0	D9		190	80	–	1650009308
M48 x 1.5	D8		190	80	–	1650009208
M56 x 5.5	D14		250	130	–	1650009608

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
16500	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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			

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List 16545 NEW!

Coolant-Through, DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Mod Bottom (2.5P)
				Ln	V
1/4 - 20 UNC	H5	3	80	30	1654500108
1/4 - 28 UNF	H4		80	30	1654500208
5/16 - 18 UNC	H5		90	35	1654500308
5/16 - 24 UNF	H4		90	35	1654500408
3/8 - 16 UNC	H5		100	39	1654500508
3/8 - 24 UNF	H4		90	35	1654500608
7/16 - 14 UNC	H5		100	43	1654500708
7/16 - 20 UNF	H5		100	43	1654500808
1/2 - 13 UNC	H5		110	49	1654500908
1/2 - 20 UNF	H5		100	49	1654501008
9/16 - 12 UNC	H5		110	50	1654501108
9/16 - 18 UNF	H5		100	50	1654501208
5/8 - 11 UNC	H5		110	54	1654501308
5/8 - 18 UNC	H5		100	54	1654501408
3/4 - 10 UNC	H5	4	125	61	1654501508
3/4 - 16 UNF	H5		110	61	1654501608
7/8 - 9 UNC	H6		140	67	1654501708
7/8 - 14 UNF	H6		125	67	1654501808
1 - 8 UNC	H6 H8		160	76	1654501908 1654502008
1 - 12 UNC	H6		140	76	1654502108
1,1/8 - 7 UNC	H9		180	97	1654502208
1,1/8 - 8 UNS	H9		180	97	1654502308
1,1/8 - 12 UNF	H8		150	78	1654502408
1,1/4 - 7 UNC	H10		180	100	1654502508
1,1/4 - 8 UNS	H9		180	100	1654502608
1,1/4-12 UNF	H8		150	78	1654502708
1,3/8 - 6 UNC	H10		200	115	1654502808
1,3/8 - 8 UNS	H9		200	115	1654502908
1,3/8 - 12 UNF	H8		170	91	1654503008
1,1/2 - 6 UNC	H10		200	115	1654503108
1,1/2 - 8 UNS	H9		200	115	1654503208
1,1/2 - 12 UNF	H8		170	91	1654503308
1,5/8 - 8 UNS	H10		200	110	1654503408
1,3/4 - 5 UNC	H11		220	120	1654503508
1,3/4 - 8 UNS	H10		200	101	1654503608
1,7/8 - 8 UNS	H10		225	125	1654503708
2 - 4,1/2 UNC	H12		250	140	1654503808
2 - 8 UNS	H10		225	122	1654503908

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														
	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
16545	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 16540 NEW!

Coolant-Through, DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number
					Mod Bottom (2.5P)
				Ln	V
M6 x 1.0	D5	3	80	30	1654000208
M6 x 0.75	D4		80	30	1654000108
M7 x 1.0	D5		80	30	1654000308
M8 x 1.25	D5		90	35	1654000608
M8 x 1.0	D5		90	35	1654000508
M8 X 0.75	D4		80	33	1654000408
M9 x 1.25	D5		90	35	1654000708
M10 x 1.5	D6		100	39	1654001008
M10 x 1.25	D5		100	39	1654000908
M10 x 1.0	D5		90	35	1654000808
M11 x 1.5	D6		100	43	1654001108
M12 x 1.75	D6		110	49	1654001508
M12 x 1.5	D6		100	49	1654001408
M12 x 1.25	D6		100	49	1654001308
M12 x 1.0	D5		100	49	1654001208
M14 x 2.0	D7		110	50	1654001708
M14 x 1.5	D6		100	50	1654001608
M15 x 1.5	D6		100	54	1654001808
M16 x 2.0	D7		110	54	1654002008
M16 x 1.5	D6		100	54	1654001908
M17 x 1.5	D6		100	55	1654002108
M18 x 2.5	D7	4	125	55	1654002308
M18 x 1.5	D6		110	55	1654002208
M20 x 2.5	D7		140	61	1654002508
M20 x 1.5	D6		125	61	1654002408
M22 x 2.5	D7		140	67	1654002808
M22 x 2.0	D7		140	67	1654002708
M22 x 1.5	D6		125	67	1654002608
M24 x 3.0	D8		160	68	1654003108
M24 x 2.0	D7		140	68	1654003008
M24 x 1.5	D6		140	68	1654002908
M27 x 3.0	D10		160	80	1654003208
M30 x 3.5	D11		180	100	1654003308
M33 x 3.5	D11		180	95	1654003408
M36 x 4.0	D11		200	115	1654003508
M39 x 4.0	D11		200	110	1654003608
M42 x 4.5	D12		200	100	1654003708
M45 x 4.5	D12		220	120	1654003808
M48 x 5.0	D13		250	140	1654003908
M56 x 5.5	D14		250	130	1654004008

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														
	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
16540	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 16525 NEW!

Long Shank, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number
					Mod Bottom (2.5P)
				Ln	V
6 - 32 UNC	H3	2	120	21	1652500608
6 - 40 UNF	H2		100	21	1652500708
8 - 32 UNC	H3		120	22	1652500908
8 - 36 UNF	H2		100	22	1652501008
10 - 24 UNC	H3		125	26	1652501108
10 - 32 UNF	H3		150	26	1652501308
12 - 24 UNC	H3		125	32	1652501408
12 - 28 UNF	H3		125	32	1652501508
1/4 - 20 UNC	H5		150	32	1652501708
1/4 - 28 UNF	H4		150	32	1652501908
5/16 - 18 UNC	H5	3	150	35	1652502108
5/16 - 24 UNF	H4		150	35	1652502308
3/8 - 16 UNC	H5		150	39	1652502508
3/8 - 24 UNF	H4		150	35	1652502708
7/16 - 14 UNC	H5		150	60	1652502908
7/16 - 20 UNF	H5		150	60	1652503108
1/2 - 13 UNC	H5		180	72	1652503308
1/2 - 20 UNF	H5		180	72	1652503508
9/16 - 12 UNC	H5		180	72	1652503708
9/16 - 18 UNF	H5		180	72	1652503908
5/8 - 11 UNC	H5		180	72	1652504108
5/8 - 18 UNF	H5		180	72	1652504308
3/4 - 10 UNC	H5	4	200	80	1652504508
3/4 - 16 UNF	H5		200	80	1652504708
7/8 - 9 UNC	H6		200	80	1652504908
7/8 - 14 UNF	H6		200	80	1652505108
1 - 8 UNC	H6		200	88	1652505308
1 - 12 UNF	H6		200	88	1652505508

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

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														
	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
16525	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 16520 NEW!

Long Shank, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Mod Bottom (2.5P)
				Ln	V
M3 x 0.5	D3	3	100	19	1652001308
M3 x 0.35	D3		100	21	1652001208
M3.5 x 0.6	D3		100	21	1652001508
M3.5 x 0.35	D3		100	21	1652001408
M4 x 0.7	D4		100	22	1652001708
M4 x 0.5	D3		100	22	1652001608
M4.5 x 0.75	D4		100	27	1652001908
M4.5 x 0.5	D3		100	27	1652001808
M5 x 0.8	D4		125	27	1652002108
M5 x 0.5	D3		125	27	1652002008
M5.5 x 0.5	D3		125	32	1652002208
M6 x 1.0	D5		150	32	1652002708
M6 x 0.75	D4		150	32	1652002508
M6 x 0.5	D3		125	32	1652002308
M8 x 1.25	D5		150	35	1652003708
M8 x 1.0	D5		150	35	1652003508
M8 x 0.75	D4		150	33	1652003308
M10 x 1.5	D6		150	39	1652005108
M10 x 1.25	D5		150	39	1652004908
M10 x 1.0	D5		150	35	1652004708
M10 x 0.75	D4		150	35	1652004508
M12 x 1.75	D6		180	72	1652006708
M12 x 1.5	D6		180	72	1652006508
M12 x 1.25	D6		180	72	1652006308
M12 x 1.0	D5		180	72	1652006108
M14 x 2	D7		150	60	1652007108
M14 x 1.5	D6		150	60	1652007008
M14 x 1.25	D6		150	60	1652006908
M14 x 1.0	D5		150	60	1652006808
M15 x 1.5	D6		160	64	1652007308
M15 x 1.0	D5		160	64	1652007208
M16 x 2.0	D7		180	70	1652007708
M16 x 1.5	D6		160	64	1652007508
M16 x 1.0	D5		160	64	1652007408
M18 x 2.5	D7	4	180	72	1652008308
M18 x 2.0	D7		180	72	1652008208
M18 x 1.5	D6		180	72	1652008108
M18 x 1.0	D5		180	72	1652008008
M20 x 2.5	D7		200	80	1652008708
M20 x 2.0	D7		200	80	1652008608

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

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														
	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
16520	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 16520 (Continued) NEW!

Long Shank, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number
					Mod Bottom (2.5P)
				Ln	V
M20 x 1.5	D6	4	200	80	1652008508
M20 x 1.0	D5		200	80	1652008408
M22 x 2.5	D7		200	80	1652009108
M22 x 2.0	D7		200	80	1652009008
M22 x 1.5	D6		200	80	1652008908
M22 x 1.0	D5		200	80	1652008808
M24 x 3.0	D8		200	83	1652009508
M24 x 2.0	D7		200	83	1652009408
M24 x 1.5	D6		200	83	1652009308
M24 x 1.0	D5		200	83	1652009208

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

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														
	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
16520	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 303

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number				
			Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)		
			S/O	V	S/O	TiN	V
2 - 56 UNC	H2	2	0135401	0135408	1748901	–	–
3 - 48 UNC	H2	2	0135501	0135508	1748701	–	–
4 - 40 UNC	H2	2	–	–	1763901	1763905	1763908
		3	0135601	0135608	1732001	–	1732008
	H3	2	–	–	1748001	–	–
		3	0135701	0135708	1722001	–	1722008
	H4	2	–	–	1748101	–	–
	H5	2	1748301	–	1748201	–	–
	H6	2	–	–	1748401	–	–
4 - 48 UNF	H2	2	–	–	1748801	–	–
		3	0135801	0135808	–	–	–
5 - 40 UNC	H2	3	0135901	0135908	1732101	–	1732108
6 - 32 UNC	H2	3	0136001	0136008	1724201	–	1724208
	H3	3	0136101	0136108	1732201	1732205	1732208
	H4	3	–	–	1746701	–	–
	H5	3	1746801	–	1722201	–	1722208
	H7	3	1746901	–	–	–	–
6 - 40 UNF	H2	3	0136201	0136208	1748501	–	–
	H3	3	–	–	1748601	–	–
8 - 32 UNC	H2	3	0136301	0136308	1724301	–	1724308
	H3	3	0136401	0136408	1732301	1732305	1732308
	H4	3	1747101	–	1747001	–	–
	H5	3	–	–	1722301	–	1722308
	H6	3	–	–	1747201	–	–
	H7	3	–	–	1747301	–	–
8 - 36 UNF	H3	3	0136501	0136508	–	–	–
10 - 24 UNC	H2	3	0136601	0136608	1724501	–	1724508
	H3	3	0136701	0136708	1732401	1732405	1732408
	H5	3	1749501	–	1749401	–	–
	H7	3	–	–	1749601	–	–
10 - 32 UNF	H2	3	0136801	0136808	1724601	–	1724608
	H3	3	0136901	0136908	1732501	1732505	1732508
	H4	3	–	–	1747401	–	–
	H5	3	1747501	–	1722501	–	1722508
	H6	3	–	–	1747601	–	–
	H7	3	–	–	1747701	–	–
12 - 24 UNC	H3	3	0137001	0137008	1749701	–	–
12 - 28 UNF	H3	3	–	–	1749801	–	–

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																
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
303	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 303 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

EXOTAP | HSSE | V | TiN | S/O | 45°



Tap Size	Thread Limit	No. of Flutes	EDP Number				
			Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)		
			S/O	V	S/O	TiN	V
1/4 - 20 UNC	H2	3	–	–	1762601	–	–
	H3		0137101	0137108	1732601	1732605	1732608
	H5		0137201	0137208	1722601	–	1722608
	H7		–	–	1762701	–	–
1/4 - 28 UNF	H2		–	–	1763401	–	–
	H3		0137301	0137308	1732701	1732705	1732708
	H4		0137401	0137408	1722701	–	1722708
	H5		1763601	–	1763501	–	–
	H6		–	–	1763701	–	–
	H7		–	–	1763801	–	–
5/16 - 18 UNC	H3		0137501	0137508	1732801	1732805	1732808
	H5		0137601	0137608	1722801	–	1722808
	H7		–	–	1762201	–	–
5/16 - 24 UNF	H3		0137701	0137708	1732901	1732905	1732908
	H4		0137801	0137808	1722901	–	1722908
	H5		1763201	–	1763101	–	–
	H7		–	–	1763301	–	–
3/8 - 16 UNC	H3		0137901	0137908	1733001	1733005	1733008
	H5		0138001	0138008	1723001	–	1723008
	H7		–	–	1761801	–	–
3/8 - 24 UNF	H3		0138101	0138108	1733101	1733105	1733108
	H4		0138201	0138208	1723101	–	1723108
	H5		1763001	–	1762901	–	–
7/16 - 14 UNC	H3		0138301	0138308	1733201	1733205	1733208
	H5		–	–	1723201	–	1723208
	H7		–	–	1761701	–	–
7/16 - 20 UNF	H3		0138401	0138408	1733301	1733305	1733308
	H5		0138501	0138508	1723301	–	1723308
	H7		–	–	1762801	–	–
1/2 - 13 UNC	H3		0138601	0138608	1733401	1733405	1733408
	H5		0138701	0138708	1723401	–	1723408
	H7		–	–	1750001	–	–
1/2 - 20 UNF	H3		0138801	0138808	1733501	1733505	1733508
	H5		0138901	0138908	1723501	–	1723508
	H6		–	–	1762401	–	–
	H7		–	–	1762501	–	–
9/16 - 12 UNC	H3	3	–	–	1749901	1749905	1749908
		4	0139001	0139008	1726001	–	1726008
9/16 - 18 UNF	H3	3	–	–	1762301	1762305	1762308
		4	0139101	0139108	1726101	–	1726108
5/8 - 11 UNC	H3	3	–	–	1749101	1749105	1749108
		4	0139201	0139208	1733601	–	1733608
	H5	3	–	–	1749201	–	–
		4	0139301	0139308	–	–	–
	H7	3	–	–	1749301	–	–
5/8 - 18 UNF	H3		–	–	–	1761905	1761908
		4	0139401	0139408	1733701	–	1733708
	H5	3	–	–	1762001	–	–
		4	0139501	0139508	–	–	–
	H7	3	–	–	1762101	–	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.

EXT

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List 303 (Continued)

Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

HSSE | V | TiN | S/O | 45°

Tap Size	Thread Limit	No. of Flutes	EDP Number				
			Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)		
			S/O	V	S/O	TiN	V
3/4 - 10 UNC	H3	4	0139601	0139608	1733801	1733805	1733808
	H6		0139701	0139708	–	–	–
3/4 - 16 UNF	H3		0139801	0139808	1733901	1733905	1733908
	H5		0139901	0139908	–	–	–
7/8 - 9 UNC	H4		–	–	1726201	–	1726208
7/8 - 14 UNF	H4		0140001	0140008	1726301	–	1726308
1 - 8 UNC	H4		–	–	1726401	–	1726408
1 - 12 UNF	H4		–	–	1749001	–	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
303	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 343

Modified Bottom (2.5P-3P)

EXOTAP | HSSE | V | TiN | S/O | 45°



Tap Size	Thread Limit	No. of Flutes	EDP Number			
			Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)		
			S/O	S/O	TiN	V
M3 x 0.5	D3	3	1755001	1755101	–	–
	D4		–	1746401	–	–
M4 x 0.7	D4		1755301	1755401	1755405	1755408
M5 x 0.8	D4		1755601	1755701	1755705	1755708
M6 x 1.0	D5		1755901	1756001	1756005	1756008
M8 x 1.25	D5		1756201	1756301	1756305	1756308
M8 x 1.0	D5		1746501	1746601	–	–
M10 x 1.5	D6		1756501	1756601	1756605	1756608
M10 X 1.25	D5		–	1745701	–	–
M12 x 1.75	D6		1756801	1756901	1756905	1756908
M12 x 1.25	D5		–	1745801	–	–
M14 x 2.0	D7		1755801	1746001	–	–
M14 x 1.5	D6		1756101	1745901	–	–
M16 x 2.0	D7		1755501	1746201	–	–
M16 x 1.5	D6		1755201	1746101	–	–
M18 x 1.5	D6	4	–	1746301	–	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, V or TiN coatings as shown above.

EXT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
343	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

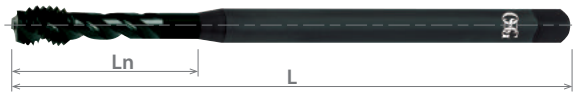
○ good ◎ best

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List 398

Long Shank, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

EXOTAP | HSSE | S/O | 30°



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number	
					Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)
			L	Ln	S/O	S/O
4 - 40 UNC	H2	3	4	0.843	–	1766101
			6		0143701	–
6 - 32 UNC	H3		4	1.031	–	1766301
			6		0143801	1766501
8 - 32 UNC	H3		4	1.125	–	1766701
			6		0143901	1766901
10 - 24 UNC	H3		4	1.312	–	1767101
			6		–	1767301
10 - 32 UNF	H3		4		–	1767501
			6		0144001	1767701
1/4 - 20 UNC	H3		4	1.500	–	1767901
			6		0144101	1768101
1/4 - 28 UNF	H3		6		0144201	1768301
5/16 - 18 UNC	H3		6	1.687	0144301	1768501
5/16 - 24 UNF	H3		6		–	1768601
3/8 - 16 UNC	H3		6	1.875	0144401	1768701
3/8 - 24 UNF	H3		6		0144501	1768801
7/16 - 14 UNC	H3		6		0144601	1768901
7/16 - 20 UNF	H3		6		–	1769001
1/2 - 13 UNC	H3		6		–	1769101
1/2 - 20 UNC	H3		6		–	1769201
5/8 - 11 UNC	H3	4	6		–	1769301

Packed: 1 pc.
Available Steam Oxide finish only.
Neck length is designed for reaching 50% deeper holes than ANSI standard taps.
Shank diameter is standard ANSI.

EXT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
398	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 220

DIN Overall Length, Modified Bottom (2.5P-3P)

HSSE | S/O | 45°



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
4 - 40UNC	2B	3	56	2211401
6 - 32 UNC			56	2212401
8 - 32 INC			63	2217801
10 - 24 UNC			70	2213401
10 - 32 UNF			70	2218801
1/4 - 20 UNC			80	2230001
1/4 - 28 UNF			80	2230401
5/16 - 18 UNC			90	2230801
5/16 - 24 UNF			90	2231201
3/8 - 16 UNC			100	2231601
3/8-24 UNF			100	2231801
7/16 - 14 UNC			100	2232001
7/16 - 20 UNF			100	2232201
1/2 - 13 UNC			110	2232401
1/2 - 20 UNF			100	2232601
5/8 - 11 UNC		4	110	2233201
5/8 -18 UNF			100	2233401
3/4 - 10 UNC			125	2233601
3/4 - 16 UNF			110	2233801
7/8 - 9 UNC			140	2244001
7/8 - 14 UNF			125	2239201

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1 - 8 UNC	2B	4	160	2244401
1 - 12 UNF			140	2239601
1,1/8 - 7 UNC			180	2247201
1,1/8 - 12 UNF			150	2245001
1,1/8 - 8 UNS			180	2247601
1,1/4 - 7 UNC			180	2247701
1,1/4 - 12 UNF			150	2245601
1,1/4 - 8 UNS			180	2247901
1,3/8 - 6 UNC			200	2248001
1,3/8 - 8 UNS			200	2248201
1,3/8 - 12 UNF			170	2246201
1,1/2- 6 UNC			200	2248301
1,1/2 - 8 UNS			200	2248501
1,1/2 - 12 UNF			170	2246801
1,5/8 - 8 UNS			200	2248601
1,3/4 - 5 UNC			220	2248701
1,3/4 - 8 UNS			200	2248801
1,7/8 - 8 UNS			225	2248901
2 - 4,1/2 UNC		5	250	2249001
2 - 8 UNS			225	2249101

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
220	▢	▢	▣	▣	▢	▢	▢	▢	▢					▢			
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75					15-35			

▢ good ▣ best

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List 229

DIN Overall Length, Modified Bottom (2.5P-3P)

HY-PRO | HSSE | S/O | 45°



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
M3 x 0.5	6H	3	56	2290401
M4 x 0.7			63	2290601
M5 x 0.8			70	2290801
M6 x 1.0			80	2291001
M8 x 1.25			90	2291401
M10 x 1.5			100	2291801
M10 x 1.25			100	2291701
M12 x 1.75			110	2292301
M12 x 1.5			100	2292201

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
M12 x 1.25	6H	3	100	2292101
M14 x 2.0			110	2292601
M14 x 1.5			100	2292501
M16 x 2.0			110	2292901
M16 x 1.5			100	2292801
M18 x 2.5		4	125	2293201
M18 x 1.5			110	2293001
M20 x 1.5			140	2293601
M20 x 1.5			125	2293401

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
229	▢	▢	◎	◎	▢	▢	▢	▢	▢					▢			
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75					15-35			

▢ good ◎ best

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List 230

Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) TiN
1/4 - 20 UNC	2B	3	80	2330005
1/4 - 28 UNF			80	2330405
5/16 - 18 UNC			90	2330805
5/16 - 24 UNF			90	2331205
3/8 - 16 UNC			100	2331605
3/8 - 24 UNF			100	2331805
7/16 - 14 UNC			100	2332005
7/16 - 20 UNF			100	2332205
1/2 - 13 UNC			110	2332405
1/2 - 20 UNF			100	2332605

Packed: 1 pc.
Available TiN finish only.

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) TiN
9/16 - 18 UNF	2B	4	100	2333005
5/8 - 11 UNC			110	2333205
5/8 - 18 UNF			100	2333405
3/4 - 10 UNC			125	2333605
3/4 - 16 UNF			110	2333805
7/8 - 9 UNC			140	2334005
7/8 - 14 UNF			125	2334205
1 - 8 UNC			160	2334405

Packed: 1 pc.
Available TiN finish only.

List 239

Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) TiN
M6 x 1.0	6H	3	80	2391005
M8 x 1.25			90	2391405
M10 x 1.5			100	2391805
M10 x 1.25			100	2391705
M12 x 1.75			110	2392305
M12 x 1.5			100	2392205
M12 x 1.25			100	2392105
M14 x 2.0			110	2392605

Packed: 1 pc.
Available TiN finish only.

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) TiN
M14 x 1.5	6H	3	100	2392505
M16 x 2.0			110	2392905
M16 x 1.5			100	2392805
M18 x 2.5		4	125	2393205
M18 x 1.5			110	2393005
M20 x 2.5			140	2393605
M20 x 1.5			125	2393405

Packed: 1 pc.
Available TiN finish only.

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
230	▢	▢	▣	▣	▣	▢	▢	▢	▢	▢	▢			▢			
239	▢	▢	▣	▣	▣	▢	▢	▢	▢	▢	▢			▢			
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

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List 13013

HY-PRO | COOLANT THROUGH | HSSE | V | 15°

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) V
1/4 - 20 UNC	2B	3	80	1301300508
1/4 - 28 UNF			80	1301300608
5/16 - 18 UNC			90	1301300708
5/16 - 24 UNF			90	1301300808
3/8 - 16 UNC			100	1301300908
3/8 - 24 UNF			100	1301301008
7/16 - 14 UNC			100	1301301108

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) V
7/16 - 20 UNF	2B	3	100	1301301208
1/2 - 13 UNC			110	1301301308
1/2 - 20 UNF			100	1301301408
5/8 - 11 UNC		4	110	1301301508
5/8 - 18 UNF			100	1301301608
3/4 - 10 UNC			125	1301301708
3/4 - 16 UNF			110	1301301808

Packed: 1 pc.
Available V coating only.

HYT

List 13113

HY-PRO | COOLANT THROUGH | HSSE | V | 15°

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) V
M6 x 1.0	6H	3	80	1311300508
M8 x 1.25			90	1311300608
M10 x 1.5			100	1311300808
M10 x 1.25			100	1311300708
M12 x 1.75			110	1311301108
M12 x 1.5			100	1311301008
M12 x 1.25			100	1311300908
M14 x 2.0			110	1311301308

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) V
M14 x 1.5	6H	3	100	1311301208
M16 x 2.0			110	1311301508
M16 x 1.5			100	1311301408
M18 x 2.5		4	125	1311301708
M18 x 1.5			110	1311301608
M20 x 2.5			140	1311301908
M20 x 1.5			125	1311301808

Packed: 1 pc.
Available V coating only.

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	Med.	High														
	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
13013			▢	◻	▢				▢		▢			▢	▢		
13113			▢	◻	▢				▢		▢			▢	▢		
SFM			40-100	45-110	20-60				40-100		50-110			20-60	15-50		

▢ good ◻ best

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List 13014

HY-PRO | HSSE | S/O | 15°

Horizontal Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1/2 - 13 UNC	2B	4	110	1301402601
1/2 - 20 UNF			100	1301402701
9/16 - 12 UNC			110	1301400101
9/16 - 18 UNF			100	1301400201
5/8 - 11 UNC			110	1301400301
5/8 - 18 UNF			100	1301400401
3/4 - 10 UNC			125	1301400501
3/4 - 16 UNF			110	1301402801
7/8 - 9 UNC			140	1301400601
7/8 - 14 UNF			125	1301402901
1 - 8 UNC		5	160	1301400701
1 - 12 UNF			140	1301403001
1,1/8 - 7 UNC			180	1301400901
1,1/8 - 8 UNS			180	1301401101
1,1/8 - 12 UNF			150	1301403101
1,1/4 - 7 UNC			180	1301401201
1,1/4 - 8 UNS			180	1301401401

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1,1/4 - 12 UNF	2B	5	150	1301403201
1,3/8 - 6 UNC			200	1301401501
1,3/8 - 8 UNS			200	1301401701
1,3/8 - 12 UNF			170	1301403901
1,1/2 - 6 UNC			200	1301401801
1,1/2 - 8 UNS			200	1301402001
1,1/2 - 12 UNF			170	1301403301
1,5/8 - 8 UNS		6	200	1301402101
1,3/4 - 5 UNC			220	1301403501
1,3/4 - 8 UNS			200	1301402201
1,7/8 - 8 UNS			225	1301402301
2 - 4,1/2 UNC			250	1301403601
2 - 8 UNS			225	1301402401
2,1/4 - 4,1/2 UNC			280	1301403701
2,1/4 - 8 UNS			250	1301404001
2,1/2 - 4 UNC			315	1301403801
2,1/2 - 8 UNS			275	1301402501

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Work Material

List No.	P					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 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
13014	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13024

Horizontal Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1/2 - 13 UNC	2B	4	110	1302402601
1/2 - 20 UNF			100	1302402701
9/16 - 12 UNC			110	1302400101
9/16 - 18 UNF			100	1302400201
5/8 - 11 UNC			110	1302400301
5/8 - 18 UNF			100	1302400401
3/4 - 10 UNC			125	1302400501
3/4 - 16 UNF			110	1302402801
7/8 - 9 UNC			140	1302400601
7/8 - 14 UNF			125	1302402901
1 - 8 UNC		5	160	1302400701
1 - 12 UNF			140	1302403001
1,1/8 - 7 UNC			180	1302400901
1,1/8 - 8 UNS			180	1302401101
1,1/8 - 12 UNF			150	1302403101
1,1/4 - 7 UNC			180	1302401201
1,1/4 - 8 UNS			180	1302401401

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1,1/4 - 12 UNF	2B	5	150	1302403201
1,3/8 - 6 UNC			200	1302401501
1,3/8 - 8 UNS			200	1302401701
1,3/8 -12 UNF			170	1302403901
1,1/2 - 6 UNC			200	1302401801
1,1/2 - 8 UNS			200	1302402001
1,1/2 - 12 UNF			170	1302403301
1,5/8 - 8 UNS		6	200	1302402101
1,3/4 - 5 UNC			220	1302403501
1,3/4 - 8 UNS			200	1302402201
1,7/8 - 8 UNS			225	1302402301
2 - 4,1/2 UNC			250	1302403601
2 - 8 UNS			225	1302402401
2,1/4 - 4,1/2 UNC			280	1302403701
2,1/4 - 8 UNS			250	1302404001
2,1/2 - 4 UNC			315	1302403801
2,1/2 - 8 UNS			275	1302402501

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
13024	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13015

HY-PRO | HSSE | S/O | 45°

Vertical Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1/2 - 13 UNC	2B	3	110	1301502601
1/2 - 20 UNF		4	100	1301502701
9/16 - 12 UNC			110	1301500101
9/16 - 18 UNF			100	1301500201
5/8 - 11 UNC			110	1301500301
5/8 - 18 UNF			100	1301500401
3/4 - 10 UNC			125	1301500501
3/4 - 16 UNF			110	1301502801
7/8 - 9 UNC			140	1301500601
7/8 - 14 UNF			125	1301502901
1 - 8 UNC			160	1301500701
1 - 12 UNF			140	1301503001
1,1/8 - 7 UNC			180	1301500901
1,1/8 - 8 UNS			180	1301501101
1,1/8 - 12 UNF		5	150	1301503101
1,1/4 - 7 UNC			180	1301501201
1,1/4 - 8 UNS			180	1301501401

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1,1/4 - 12 UNF	2B	5	150	1301503201
1,3/8 - 6 UNC			200	1301501501
1,3/8 - 8 UNS			200	1301501701
1,3/8 - 12 UNF			170	1301503401
1,1/2 - 6 UNC			200	1301501801
1,1/2 - 8 UNS			200	1301502001
1,1/2 - 12 UNF			170	1301503301
1,5/8 - 8 UNS		6	200	1301502101
1,3/4 - 5 UNC			220	1301503501
1,3/4 - 8 UNS			200	1301502201
1,7/8 - 8 UNS			225	1301502301
2 - 4,1/2 UNC			250	1301503601
2 - 8 UNS			225	1301502401
2,1/4 - 4,1/2 UNC			280	1301503701
2,1/4 - 8 UNS			250	1301504001
2,1/2 - 4 UNC			315	1301503801
2,1/2 - 8 UNS			275	1301502501

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Work Material

List No.	P					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 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
13015	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13025

HY-PRO | COOLANT THROUGH | HSSE | S/O | 45°

Vertical Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1/2 - 13 UNC	2B	3	110	1302502601
1/2 - 20 UNF		4	100	1302502701
9/16 - 12 UNC			110	1302500101
9/16 - 18 UNF			100	1302500201
5/8 - 11 UNC			110	1302500301
5/8 - 18 UNF			100	1302500401
3/4 - 10 UNC			125	1302500501
3/4 - 16 UNF			110	1302502801
7/8 - 9 UNC			140	1302500601
7/8 - 14 UNF			125	1302502901
1 - 8 UNC			160	1302500701
1 - 12 UNF			140	1302503001
1,1/8 - 7 UNC			180	1302500901
1,1/8 - 8 UNS			180	1302501101
1,1/8 - 12 UNF		5	150	1302503101
1,1/4 - 7 UNC			180	1302501201
1,1/4 - 8 UNS			180	1302501401

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
1,1/4 - 12 UNF	2B	5	150	1302503201
1,3/8 - 6 UNC			200	1302501501
1,3/8 - 8 UNS			200	1302501701
1,3/8 - 12 UNF			200	1302503901
1,1/2 - 6 UNC			200	1302501801
1,1/2 - 8 UNS			200	1302502001
1,1/2 - 12 UNF			170	1302503301
1,5/8 - 8 UNS		6	200	1302502101
1,3/4 - 5 UNC			220	1302503501
1,3/4 - 8 UNS			200	1302502201
1,7/8 - 8 UNS			225	1302502301
2 - 4,1/2 UNC			250	1302503601
2 - 8 UNS			225	1302502401
2,1/4 - 4,1/2 UNC			280	1302503701
2,1/4 - 8 UNS			250	1302504001
2,1/2 - 4 UNC			315	1302503801
2,1/2 - 8 UNS			275	1302502501

Packed: 1 pc.
Available Steam Oxide finish only.

HYL

Work Material

List No.	P					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 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
13025	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13116

HY-PRO | HSSE | S/O | 15°

Horizontal Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P - 3P)
				S/O
M16 x 2.0	D7	4	180	1311602501
	D17 (6H +0.005")		110	1311602401
			110	1311602301
M20 x 2.5	D8		140	1311600101
			200	1311600201
	D18 (6H +0.005")		140	1311601601
M24 x 3.0	D9	5	160	1311600401
			160	1311600501
	D19 (6H +0.005")		200	1311601701
M27 x 3.0	D9		160	1311600601
			200	1311600701
	D19 (6H +0.005")		180	1311601801
M30 x 3.5	D10		180	1311600801
			250	1311600901
	D20 (6H +0.005")		180	1311601901
M33 x 3.5	D10		180	1311601001
			250	1311601101
	D20 (6H +0.005")		180	1311602001
M36 x 4.0	D11		200	1311601201
			250	1311601301
	D21 (6H +0.005")		200	1311602101
M42 x 4.5	D11	6	200	1311601401
			300	1311601501
	D21 (6H +0.005")		200	1311602201

Packed: 1 pc.
Available Steam Oxide finish only.
Note: +0.005" available for threads that will be heat treated after tapping.

HYL

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
13116	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13126

HY-PRO | COOLANT THROUGH | HSSE | S/O | 15°

Horizontal Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number
				Modified Bottom (2.5P - 3P)
				S/O
M16 x 2.0	D7	4	110	1312602401
			180	1312602501
	D17 (6H +0.005")		110	1312602301
M20 x 2.5	D8		140	1312600101
			200	1312600201
	D18 (6H +0.005")		140	1312601601
M24 x 3.0	D9	5	160	1312600401
			200	1312600501
	D19 (6H +0.005")		160	1312601701
M27 x 3.0	D9		160	1312600601
			200	1312600701
	D19 (6H +0.005")		160	1312601801
M30 x 3.5	D10		180	1312600801
			250	1312600901
	D20 (6H +0.005")		180	1312601901
M33 x 3.5	D10		180	1312601001
			250	1312601101
	D20 (6H +0.005")		180	1312602001
M36 x 4.0	D11		200	1312601201
			250	1312601301
	D21 (6H +0.005")		200	1312602101
M42 x 4.5	D11	6	200	1312601401
			300	1312601501
	D21 (6H +0.005")		200	1312602201

Packed: 1 pc.
Available Steam Oxide finish only.
Note: +0.005" available for threads that will be heat treated after tapping.

HYL

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
13126	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13117

HY-PRO | HSSE | S/O | 45°

Vertical Applications, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
M16 x 2.0	D7	4	110	1311702401
			180	1311702501
	D17 (6H +0.005")		110	1311702301
M20 x 2.5	D8		140	1311700101
			200	1311700201
	D18 (6H +0.005")		140	1311701601
M24 x 3.0	D9	5	160	1311700401
			200	1311700501
	D19 (6H +0.005")		160	1311701701
M27 x 3.0	D9		160	1311700601
			200	1311700701
	D19 (6H +0.005")		160	1311701801
M30 x 3.5	D10		180	1311700801
			250	1311700901
	D20 (6H + 0.005)		180	1311701901
M33 x 3.5	D10		180	1311701001
			250	1311701101
	D20 (6H + 0.005)		180	1311702001
M36 x 4.0	D11		200	1311701201
			250	1311701301
	D21 (6H + 0.005)		200	1311702101
M42 x 4.5	D11	6	200	1311701401
			300	1311701501
	D21 (6H + 0.005)		200	1311702201

Packed: 1 pc.
Available Steam Oxide finish only.
Note: +0.005" available for threads that will be heat treated after tapping.

HYL

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
13117	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13127

Vertical Applications, Coolant-Through, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) S/O
M16 x 2.0	D7	4	110	1312702401
			180	1312702501
	D17 (6H +0.005")		110	1312702301
M20 x 2.5	D8		140	1312700101
			200	1312700201
	D18 (6H +0.005")		140	1312701601
M24 x 3.0	D9	5	160	1312700401
			200	1312700501
	D19 (6H +0.005")		160	1312701701
M27 x 3.0	D9		160	1312700601
			200	1312700701
	D19 (6H +0.005")		160	1312701801
M30 x 3.5	D10		180	1312700801
			250	1312700901
	D20 (6H +0.005")		180	1312701901
M33 x 3.5	D10		180	1312701001
			250	1312701101
	D20 (6H +0.005")		180	1312702001
M36 x 4.0	D11		200	1312701201
			250	1312701301
	D21 (6H +0.005")		200	1312702101
M42 x 4.5	D11	6	200	1312701401
			300	1312701501
	D21 (6H +0.005")		200	1312702201

Packed: 1 pc.
Available Steam Oxide finish only.
Note: +0.005" available for threads that will be heat treated after tapping.

HYL

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
13127	◎	◎	◎	◎	○	○	○	○	◎					◎	○		
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

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List 13058

HY-PRO | HSSE | V | 45°

Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
6 - 32 UNC	2B	2	1305800108
8-32 UNC			1305800208
10 - 24 UNC			1305800308
10 - 32 UNF			1305800408
1/4 - 20 UNC			1305800508
1/4 - 28 UNF			1305800608

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
5/16 - 18 UNC	2B	2	1305800708
5/16 - 24 UNF			1305800808
3/8 - 16 UNC			1305800908
3/8- 24 UNF			1305801008
1/2 - 13 UNC			1305801108
1/2 - 20 UNF			1305801208

Packed: 1 pc.
Available V coating only.

HYT

List 13158

HY-PRO | HSSE | V | 45°

Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
M3 x 0.5	6H	2	1315800108
M4 x 0.7			1315800208
M5 x 0.8			1315800308
M6 x 1.0			1315800408
M8 x 1.25			1315800508

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
M10 x 1.5	6H	2	1315800708
M10 x 1.25			1315800608
M12 x 1.75			1315800908
M12 x 1.5			1315800808

Packed: 1 pc.
Available V coating only.

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	Med.	High														
	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
13058										▢	▢						
13158										▢	▢						
SFM										300-800	200-700						

▢ good ▢ best

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List 295

Modified Bottom (2.5P-3P)

HY-PRO | HSSE | BR | 50°



Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
4 - 40 UNC	H2	2	2951300
	H3		2951400
6 - 32 UNC	H2		2952500
	H3		2952600
8 - 32 UNC	H2		2953100
	H3		2953200
10 - 24 UNC	H3		2953800
10 - 32 UNF	H2		2954300
	H3		2954400
	H5		2954600

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.

HYT

Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
1/4 - 20 UNC	H3	2	2955000
	H5		2955200
1/4 - 28 UNF	H3		2955600
5/16 - 18 UNC	H3		2956200
	H5		2956400
5/16 - 24 UNF	H3		2956800
	H4		2956900
3/8 - 16 UNC	H3		2957400
	H5		2957600
3/8 - 24 UNF	H3		2958000

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.

HYT

List 296

Modified Bottom (2.5P-3P)

HY-PRO | HSSE | BR | 50°



Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M3 X 0.5	D3	2	2963300
M4 x 0.7	D4		2963400
M5 x 0.8	D5		2963500
M6 x 1.0	D5		2963600

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.

HYT

Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M8 x 1.25	D5	2	2963800
M10 x 1.5	D6		2964100
M10 x 1.25	D5		2964000

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.

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	Med.	High														
	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
295										▢ best	▢ best						
296										▢ best	▢ best						
SFM										40-80	40-65						

▢ good ▢ best

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List 13019

HY-PRO | HSSE | N | 50°

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) N
2 - 56 UNC	H2	2	45	1301900103
4 - 40 UNC	H2		56	1301900203
6 - 32 UNC	H3	3	56	1301900303
8 - 32 UNC	H3		63	1301900403
10 - 24 UNC	H3		70	1301900503
10 - 32 UNF	H3		70	1301900603
1/4 - 20 UNC	H3		80	1301900703
	H5		80	1301900803
1/4 - 28 UNF	H3		80	1301900903
5/16 - 18 UNC	H3		90	1301901003
	H5		90	1301901103

Packed: 1 pc.
Available Nitride finish only.

HYT

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) N
5/16 - 24 UNF	H3	3	90	1301901203
3/8 - 16 UNC	H3		100	1301901303
	H5		100	1301901403
3/8 - 24 UNF	H3		100	1301901503
1/2 - 13 UNC	H3		110	1301901903
	H5		110	1301902003
1/2 - 20 UNF	H3		110	1301902103
7/16 - 14 UNC	H3		100	1301901603
	H5		100	1301901703
7/16 - 20 UNF	H3		100	1301901803

Packed: 1 pc.
Available Nitride finish only.

HYT

List 13119

HY-PRO | HSSE | N | 50°

DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) N
M3 X 0.5	D3	3	56	1311900103
M4 x 0.7	D4		63	1311900303
M5 x 0.8	D4		70	1311900403
M6 x 1.0	D5		80	1311900503
M8 x 1.25	D5		90	1311900803

Packed: 1 pc.
Available Nitride finish only.

HYT

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) N
M10 x 1.5	D6	3	100	1311901003
M10 x 1.25	D5		100	1311900903
M12 x 1.75	D6		110	1311901303
M12 x 1.5	D5		100	1311901203
M12 x 1.25	D5		100	1311901103

Packed: 1 pc.
Available Nitride finish only.

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	Med.	High														
	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
13019										◎	◎						
13119										◎	◎						
SFM										40-80	40-65						

○ good ◎ best

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List 290

Modified Bottom (2.5P-3P)

HY-PRO | HSSE | TiCN | S/O | BR | 45°



Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Modified Bottom (2.5P - 3P)		
			Bright	Steam Oxide	TiCN
2 - 56 UNC	H2	2	2905600	2905601	2905608
3 - 48 UNC	H2		2906000	2906001	2906008
4 - 40 UNC	H2	3	2906400	2906401	2906408
	H3		2911400	2911401	2911408
	H4		2916500	2916501	2916508
	H5		2916600	2916601	2916608
4 - 48 UNF	H2		2916800	2916801	2916808
5 - 40 UNC	H2		2907000	2907001	2907008
6 - 32 UNC	H2		2907400	2907401	2907408
	H3		2912400	2912401	2912408
	H5		2917400	2917401	2917408
	H7		2917500	2917501	2917508
	H11		2917700	2917701	2917708
6 - 40 UNF	H2		2907200	2907201	2907208
8 - 32 UNC	H2		2907800	2907801	2907808
	H3		2912800	2912801	2912808
	H5		2917800	2917801	2917808
	H7		2918000	2918001	2918008
	H11		2918100	2918101	2918108
10 - 24 UNC	H3		2913400	2913401	2913408
	H5		2918400	2918401	2918408
	H11		2923400	2923401	2923408
10 - 32 UNF	H2		2908800	2908801	2908808
	H3		2913800	2913801	2913808
	H5		2918800	2918801	2918808
	H7		2919000	2919001	2919008
	H11		2919100	2919101	2919108
12 - 24 UNC	H3		2923600	2923601	2923608
12 - 28 UNF	H3		2923800	2923801	2923808
1/4 - 20 UNC	H2		2928000	2928001	2928008
	H3		2930000	2930001	2930008
	H5		2940000	2940001	2940008
	H7		2940200	2940201	2940208
	H11		2940300	2940301	2940308
1/4 - 28 UNF	H2		2930300	2930301	2930308
	H3		2930400	2930401	2930408
	H4		2935400	2935401	2935408
	H5		2940400	2940401	2940408
	H7		2940600	2940601	2940608

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	Med.	High														
	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
290	○	◎	◎	◎	○	○	○	○	○					○			
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

○ good ◎ best

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List 290 (Continued)

HY-PRO | HSSE | TiCN | S/O | BR | 45°

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Modified Bottom (2.5P - 3P)		
			Bright	Steam Oxide	TiCN
1/4 - 28 UNF	H11	3	2940700	2940701	2940708
5/16 - 18 UNC	H2		2930600	2930601	2930608
	H3		2930800	2930801	2930808
	H5		2940800	2940801	2940808
	H7		2941000	2941001	2941008
	H11		2941100	2941101	2941108
5/16 - 24 UNF	H2		2926400	2926401	2926408
	H3		2931200	2931201	2931208
	H4		2936200	2936201	2936208
	H5		2941200	2941201	2941208
	H6		2941300	2941301	2941308
	H7		2941400	2941401	2941408
	H11		2941500	2941501	2941508
3/8 - 16 UNC	H2		2931500	2931501	2931508
	H3		2931600	2931601	2931608
	H5		2941600	2941601	2941608
	H7		2942100	2942101	2942108
	H11		2941900	2941901	2941908
3/8 - 24 UNF	H2		2926800	2926801	2926808
	H3		2931800	2931801	2931808
	H4		2936800	2936801	2936808
	H5		2941800	2941801	2941808
	H7		2941700	2941701	2941708
	H11		2942300	2942301	2942308
7/16 - 14 UNC	H3		2932000	2932001	2932008
	H5		2942000	2942001	2942008
	H7		2943100	2943101	2943108
	H11		2943300	2943301	2943308
7/16 - 20 UNF	H3		2932200	2932201	2932208
	H5		2942200	2942201	2942208
	H7		2949000	2949001	2949008
	H11		2942800	2942801	2942808
1/2 - 13 UNC	H3		2932400	2932401	2932408
	H5		2942400	2942401	2942408
	H7		2942500	2942501	2942508
	H11		2942700	2942701	2942708
1/2 - 20 UNF	H2		2927600	2927601	2927608
	H3		2932600	2932601	2932608
	H5		2942600	2942601	2942608
	H7		2942900	2942901	2942908
	H11		2943000	2943001	2943008
9/16 - 12 UNC	H3	4	2948600	2948601	2948608
9/16 - 18 UNF	H3		2948800	2948801	2948808
5/8 - 11 UNC	H3		2933200	2933201	2933208
	H5		2943200	2943201	2943208
5/8 - 18 UNF	H3		2933400	2933401	2933408
3/4 - 10 UNC	H3		2933600	2933601	2933608
	H5		2943600	2943601	2943608
3/4 - 16 UNF	H3		2933800	2933801	2933808
	H5		2943800	2943801	2943808

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

HYT

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List 290 (Continued)

HY-PRO | HSSE | TiCN | S/O | BR | 45°

Modified Bottom (2.5P-3P)

Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Modified Bottom (2.5P - 3P)		
			Bright	Steam Oxide	TiCN
7/8 - 9 UNC	H5	4	2944000	2944001	2944008
7/8 - 14 UNF	H4		2939200	2939201	2939208
1 - 8 UNC	H5		2944400	2944401	2944408
1 - 12 UNF	H4		2939600	2939601	2939608
1,1/8 - 7 UNC	H6		–	2947201	–
1,1/8 - 8 UNS	H6		–	2947601	–
1,1/8 - 12 UNF	H5		–	2945001	–
1,1/4 - 7 UNC	H6		–	2947701	–
1,1/4 - 8 UNS	H6		–	2947901	–
1,1/4 - 12 UNF	H5		–	2945601	–
1,3/8 - 6 UNC	H6		–	2948001	–
1,3/8 - 8 UNS	H6		–	2948201	–
1,3/8 -12 UNF	H5		–	2946201	–
1,1/2 - 6 UNC	H6		–	2948301	–
1,1/2 - 8 UNS	H6		–	2948501	–
1,1/2 - 12 UNF	H5		–	2946801	–

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

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
290	▢	▣	▣	▣	▢	▢	▢	▢	▢					▢			
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

▢ good ▣ best

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List 299

Modified Bottom (2.5P-3P)

HY-PRO | HSSE | TiCN | S/O | BR | 45°



Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Modified Bottom (2.5P - 3P)		
			Bright	S/O	TiCN
M3 x 0.5	D3	3	2990400	2990401	2990408
	D11		–	2993101	–
M3.5 x 0.6	D4		2990500	2990501	2990508
	D11		–	2993301	–
M4 x 0.7	D4		2990600	2990601	2990608
	D11		–	2993501	–
M5 x 0.8	D4		2990800	2990801	2990808
	D11		–	2993701	–
M6 x 1.0	D5		2991000	2991001	2991008
	D11		–	2993901	–
M7 x 1.0	D5		2991100	2991101	2991108
	D11		–	2994101	–
M8 x 1.25	D5		2991400	2991401	2991408
	D11		–	2994501	–
M8 x 1.0	D5		2991300	2991301	2991308
	D11		–	2994301	–
M10 x 1.5	D6		2991800	2991801	2991808
	D11		–	2995101	–
M10 x 1.25	D5		2991700	2991701	2991708
	D11		–	2994901	–
M10 x 1.0	D5		2991600	2991601	2991608
	D11		–	2994701	–
M12 x 1.75	D6		2992300	2992301	2992308
	D11		–	2995701	–
M12 x 1.5	D6		2992200	2992201	2992208
	D11		–	2995501	–
M12 x 1.25	D5		2992100	2992101	2992108
	D11		–	2995201	–
M14 x 2.0	D7		–	2992601	–
M14 x 1.5	D6		–	2992501	–
M16 x 2.0	D7		–	2992901	–
M16 x 1.5	D6		–	2992801	–
M18 x 2.5	D7	4	–	2993201	–
M18 x 1.5	D6		–	2993001	–
M20 x 1.5	D8		–	2993601	–
M20 x 1.5	D6		–	2993401	–
M22 x 2.5	D8		–	2994001	–
M22 x 1.5	D6		–	2993801	–
M24 x 3.0	D8		–	2994401	–
M24 x 1.5	D6		–	2994201	–
M27 x 3.0	D8		–	2994801	–
M27 x 1.5	D6		–	2994601	–
M30 x 3.5	D9		–	2995301	–
M30 x 1.5	D6		–	2995001	–

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

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	Med.	High														
	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
299	▢	▣	▣	▣	▢	▢	▢	▢	▢					▢			
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

▢ good ▣ best

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List 297

Bottom (1.5P-2P)

HY-PRO | HSS | TiN | S/O | BR | 50°



Tap Size	Class of Fit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Bright	S/O	TiCN
3 - 48 UNC	2B	2	2984500	2984501	2984505
3 - 56 UNF			2984600	2984601	2984605
4 - 40 UNC			2985000	2985001	2985005
4 - 48 UNF			2986400	2986401	2986405
5 - 40 UNC			2986500	2986501	2986505
6 - 32 UNC			2985200	2985201	2985205
6 - 40 UNF			2986600	2986601	2986605
8 - 32 UNC		3	2985300	2985301	2985305
8 - 36 UNF			2986700	2986701	2986705
10 - 24 UNC			2985400	2985401	2985405
10 - 32 UNF			2985500	2985501	2985505

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

HY7

Tap Size	Class of Fit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Bright	S/O	TiCN
12 - 24 UNC	2B	3	2986800	2986801	2986805
1/4 - 20 UNC			2985600	2985601	2985605
1/4 - 28 UNF			2985700	2985701	2985705
5/16 - 18 UNC			2985800	2985801	2985805
5/16 - 24 UNF			2985900	2985901	2985905
3/8 - 16 UNC			2986000	2986001	2986005
3/8 - 24 UNF			2986100	2986101	2986105
7/16 - 14 UNC			2986900	2986901	2986905
7/16 - 20 UNF			2987000	2987001	2987005
1/2 - 13 UNC			2986200	2986201	2986205
1/2 - 20 UNF			2986300	2986301	2986305

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

HY7

List 298

Bottom (1.5P-2P)

HY-PRO | HSS | TiN | S/O | BR | 50°



Tap Size	Class of Fit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Bright	S/O	TiCN
M3 x 0.5	6H	2	2988000	2988001	2988005
M4 x 0.7		3	2988100	2988101	2988105
M5 x 0.8			2988200	2988201	2988205
M6 x 1.0			2988300	2988301	2988305

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

HY7

Tap Size	Class of Fit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Bright	S/O	TiCN
M8 x 1.25	6H	3	2988400	2988401	2988405
M10 x 1.5			2988500	2988501	2988505
M12 x 1.75			2988600	2988601	2988605

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

HY7

Work Material

List No.	P					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 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
297	▢	▢								▢	▢						
298	▢	▢								▢	▢						
SFM	50-90	40-80								30-80	30-80						

▢ good ▢ best

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List 107

HSSE | TiCN | TiN | S/O | BR | 50°

Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number							
			Bottom (1.5P - 2P)				Plug (4P - 4.5P)			
			Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN
3 - 48 UNC	H2	2	1406100	–	–	–	1406000	–	–	–
4 - 40 UNC	H2	2	1406500	1406501	1406505	1406508	1406400	1406401	1406405	1406408
5 - 40 UNC	H2	2	1407100	–	–	1407108	1407000	–		1407008
6 - 32 UNC	H2	2	5001500	–	5001505	5001508	5001400	–	5001405	–
	H3	2	1412500	1412501	1412505	1412508	1412400	1412401	1412405	1412408
8 - 32 UNC	H2	3	5001900	–	–	5001908	5001800	–	–	5001808
	H3	3	1412900	1412901	1412905	1412908	1412800	–	1412805	1412808
10 - 24 UNC	H3	3	1413300	1413301	1413305	1413308	1413200	–	1413205	1413208
10 - 32 UNF	H2	3	5002700	–	5002705	5002708	5002600	–	–	–
	H3	3	1413500	1413501	1413505	1413508	1413400	–	1413405	1413408
12 - 24 UNC	H3	3	1413700	1413701	–	1413708	1413600	–	–	–
1/4 - 20 UNC	H3	3	1430100	1430101	1430105	1430108	1430000	1430001	1430005	1430008
	H5	3	5003500	–	5003505	5003508	5003400	–	5003405	5003408
1/4 - 28 UNF	H3	3	1430300	–	1430305	1430308	1430200	–	1430205	1430208
5/16 - 18 UNC	H3	3	1430500	1430501	1430505	1430508	1430400	1430401	1430405	1430408
	H5	3	5004700	–	5004705	5004708	5004600	–	–	5004608
5/16 - 24 UNF	H3	3	1430700	–	1430705	1430708	1430600	–	1430605	1430608
3/8 - 16 UNC	H3	3	1430900	1430901	1430905	1430908	1430800	1430801	1430805	1430808
	H5	3	5005500	–	5005505	5005508	5005400	–	–	5005408
3/8 - 24 UNF	H3	3	1431100	–	1431105	1431108	1431000	–	1431005	1431008
7/16 - 14 UNC	H3	3	1431300	–	1431305	1431308	1431200	–	1431205	1431208
	H5	3	5006200	–	5006205	–	–	–	–	–
7/16 - 20 UNF	H3	3	1431700	–	1431705	1431708	1431600	–	1431605	1431608
1/2 - 13 UNC	H3	3	1432100	1432101	1432105	1432108	1432000	1432001	1432005	1432008
	H5	3	5007100	–	–	5007108	5007000	–	–	5007008
1/2 - 20 UNF	H3	3	1432500	–	1432505	1432508	1432400	–	1432405	1432408
5/8 - 11 UNC	H3	4	1432900	–	1432905	1432908	1432800	–	–	1432808
5/8 - 18 UNF	H3	4	1433300	–	1433305	1433308	1433200	–	–	1433208
3/4 - 10 UNC	H3	4	1433700	–	1433705	1433708	1433600	–	1433605	1433608
3/4 - 16 UNF	H3	4	1434100	–	1434105	1434108	1434000	–	–	1434008

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
107	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 143

HSSE | TiCN | TiN | S/O | BR | 50°

Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number					
			Bottom (1.5P - 2P)			Plug (4P - 4.5P)		
			Bright	S/O	TiCN	Bright	TiN	TiCN
M3 x 0.5	D3	2	1985200	1985201	1985208	1985100	1985105	–
M4 x 0.7	D4	3	1985500	1985501	1985508	1985400	1985405	1985408
M5 x 0.8	D4		1985800	1985801	1985808	1985700	1985705	1985708
M6 x 1.0	D5		1986100	1986101	1986108	1986000	1986005	1986008
M8 x 1.25	D5		1986400	1986401	1986408	1986300	1986305	1986308
M10 x 1.5	D6		1986700	1986701	1986708	1986600	1986605	1986608
M12 x 1.75	D6		1987000	1987001	1987008	1986900	1986905	1986908

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
143	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 13020

HSS | S/O | 45°

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			S/O	S/O
6 - 32 UNC	H3	3	1302001401	1302000101
8 - 32 UNC	H3		1302001501	1302000201
10 - 24 UNC	H3		1302001601	1302000301
10 - 32 UNF	H3		1302001701	1302000401
1/4 - 20 UNC	H3		1302001801	1302000501
1/4 - 28 UNF	H3		1302001901	1302000601
5/16 - 18 UNC	H3		1302002001	1302000701

Packed: 1 pc.
Available Steam Oxide only.

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			S/O	S/O
5/16 - 24 UNF	H3	3	1302002101	1302000801
3/8 - 16 UNC	H3		1302002201	1302000901
3/8 - 24 UNF	H3		1302002301	1302001001
1/2 - 13 UNC	H3		1302002401	1302001101
5/8 - 11 UNC	H3	4	1302002501	1302001201
5/8 - 18 UNF	H3		1302002601	1302001301

Packed: 1 pc.
Available Steam Oxide only.

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
13020	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 123

HSSE | BR | 50°

JIS, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M3 x 0.5	2	3	11544
M4 x 0.7			11556
M5 x 0.8			11571
M6 x 1.0			11583
M8 x 1.25			11601
M10 x 1.5			11621
M10 x 1.25			11624
M12 x 1.75			11650
M12 x 1.5			11653
M14 x 2.0			11680

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

Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M14 x 1.5	2	3	11683
M16 x 2.0			11705
M16 x 1.5			11708
M18 x 2.5		4	11730
M18 x 1.5			11735
M20 x 2.5			11757
M20 x 1.5			11762
M22 x 2.5			11772
M24 x 3.0			11799

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																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
123	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 918

HSS | BR | 50°

Long Shank*, Plug (4P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number	
				Bottom (1.5P - 2P)	Plug (4P - 4.5P)
				Bright	Bright
4 - 40 UNC	H2	2	4	1296100	1296000
6 - 32 UNC	H3		4	1296300	1296200
			6	1296500	1296400
8 - 32 UNC	H3	3	4	1296700	1296600
			6	1296900	1296800
10 - 24 UNC	H3		4	1297100	1297000
			6	1297300	1297200
10 - 32 UNF	H3		4	1297500	1297400
			6	1297700	1297600
1/4 - 20 UNC	H3		4	1297900	1297800
			6	1298100	1298000

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.
*Shank diameter is standard ANSI.

STT

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number	
				Bottom (1.5P - 2P)	Plug (4P - 4.5P)
				Bright	Bright
1/4 - 28 UNF	H3	3	6	1298300	1298200
5/16 - 18 UNC	H3		6	1298500	1298400
3/8 - 16 UNC	H3		6	1298700	1298600
7/16 - 14 UNC	H3		6	1298900	1298800
1/2 - 13 UNC	H3		6	1299100	1299000
5/8 - 11 UNC	H3	4	6	1299300	1299200

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.
*Shank diameter is standard ANSI.

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														
	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
918	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 389

CARBIDE | BR | 15°

JIS, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)
			Bright	Bright
M3 x 0.5	OH3	3	8315255	8315254
M4 x 0.7			8315261	8315260
M5 x 0.8			8315267	8315266
M6 x 1.0			8315273	8315272
M8 x 1.25	OH4		8315285	8315284
M10 x 1.5			8315297	8315296
M10 x 1.25			8315303	8315302
M12 x 1.75			8315315	8315314

Packed: 1 pc.
Other coatings available upon request.
Specify treatment at time of order.

HTE

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
389									◎	◎	◎						
SFM									40-90	50-100	50-80						

○ good ◎ best

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List 13063

VC10 | V | LHS | 21°

RHC/LHS for Through Hole, Plug (4P - 4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P) V
2 - 56 UNC	H2	3	1306300108
4 - 40 UNC	H2		1306300208
6 - 32 UNC	H3		1306300308
8 - 32 UNC	H3		1306300408
10 - 24 UNC	H3		1306300508
10 - 32 UNF	H3		1306300608
1/4 - 20 UNC	H3		1306300708
	H5		1306300808
1/4 - 28 UNF	H3		1306300908
5/16 - 18 UNC	H3		1306301008

Packed: 1 pc.
Available V coating only.

EP

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P) V
5/16 - 18 UNC	H5	3	1306301108
5/16 - 24 UNC	H3		1306301208
3/8 - 16 UNC	H3		1306301308
	H5		1306301408
3/8 - 24 UNF	H3		1306301508
7/16 - 14 UNC	H3		1306301608
7/16 - 20 UNF	H3		1306301708
1/2 - 13 UNC	H3		1306301808
	H5		1306301908
1/2 - 20 UNF	H3		1306302008

Packed: 1 pc.
Available V coating only.

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														
	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
13063				▢				▢					▣	▢			
SFM				15-50				8-20					8-20	15-35			

▢ good ▣ best

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List 13163

VC10 | V | LHS | 21°

RHC/LHS for Through Hole, Plug (4P - 4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P) V
M2.5 x 0.45	D3	3	1316300108
M3 x 0.5	D3		1316300208
M4 x 0.7	D4		1316300308
M5 x 0.8	D4		1316300408
M6 x 1.0	D5		1316300508

Packed: 1 pc.
Available V coating only.

EP

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P) V
M8 x 1.25	D5	3	1316300808
M10 x 1.5	D6		1316301008
M10 x 1.25	D5		1316300908
M12 x 1.75	D6		1316301308
M12 x 1.25	D5		1316301108

Packed: 1 pc.
Available V coating only.

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														
	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
13163				▢				▢					▣	▢			
SFM				15-50				8-20					8-20	15-35			

▢ good ▣ best

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List 337Ni

VC10 HR

DIN Overall Length, Plug (5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (5P) HR
2 - 56 UNC	H2	2	45	3370002562
4 - 40 UNC	H2	3	56	3370004402
	H3			3370004403
4 - 48 UNF	H2	2	56	3370004482
6 - 32 UNC	H2	3	56	3370006322
	H3			3370006323
8 - 32 UNC	H2		63	3370008322
	H3			3370008323
10 - 24 UNC	H2		70	3370010242
	H3			3370010243
10 - 32 UNF	H2		70	3370010322
	H3			3370010323
1/4 - 20 UNC	H3		80	3370014203
	H5			3370014205
1/4 - 28 UNF	H3		80	3370014283
	H4			3370014284
5/16 - 18 UNC	H3		90	3370516183
	H5			3370516185
5/16 - 24 UNF	H3		90	3370516243
	H5			3370516245
3/8 - 16 UNC	H3		100	3370038163
	H5			3370038165
3/8 - 24 UNF	H3		90	3370038243
	H5			3370038245
7/16 - 14 UNC	H3		100	3370716143

Packed: 1 pc.
Available HR coating only.

EP

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (5P) HR
7/16 - 14 UNC	H5	3	100	3370716145
7/16 - 20 UNF	H3		100	3370716203
	H5			3370716205
1/2 - 13 UNC	H3		110	3370012133
	H5			3370012135
1/2 - 20 UNF	H3		100	3370012203
	H5			3370012205
9/16 - 18 UNC	H3		100	3370916183
	H5			3370916185
5/8 - 11 UNC	H3		110	3370058113
	H5			3370058115
5/8 - 18 UNF	H3		100	3370058183
	H5			3370058185
3/4 - 10 UNC	H3	4	125	3370034103
	H5			3370034105
3/4 - 16 UNC	H3		110	3370034163
	H5			3370034165
7/8 - 19 UNC	H3		140	3370078093
	H5			3370078095
7/8 - 14 UNF	H3		125	3370078143
	H5			3370078145
1 - 8 UNC	H3		160	3370001083
	H5			3370001085
1 - 12 UNF	H3		140	3370001123
	H5			3370001125

Packed: 1 pc.
Available HR coating only.

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														
	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
337Ni								▢				▣				▢	
SFM								8-20				8-15				8-12	

▢ good ▣ best

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List 338Ni

VC10 HR

DIN Overall Length, Plug (5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (5P) HR
M2.5 x 0.45	D3	2	50	3380250453
M3 x 0.5	D3	3	56	3380003053
M4 x 0.7	D4		63	3380004074
M5 x 0.8	D4		70	3380005084
M6 x 1.0	D5		80	3380006105
M6 x 0.75	D5		80	3380006755
M8 x 1.25	D5		90	3380008255
M8 x 1.0	D5		90	3380008105
M10 x 1.5	D6		100	3380010156
M10 x 1.25	D5		100	3380010255
M12 x 1.75	D6		110	3380012756
M12 x 1.5	D6		100	3380012156

Packed: 1 pc.
Available HR coating only.

EP

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (5P) HR
M14 x 2.0	D7	3	110	3380014207
M14 x 1.5	D6		100	3380014156
M16 x 2.0	D7		110	3380016207
M16 x 1.5	D6		100	3380016156
M18 x 2.5	D7		125	3380018257
M18 x 1.5	D6		110	3380018156
M20 x 2.5	D8		140	3380020258
M20 x 1.5	D6		125	3380020156
M22 x 2.5	D8		140	3380022258
M22 x 1.5	D6		125	3380022156
M24 x 3.0	D8	4	160	3380024308
M24 x 1.5	D6		140	3380024156

Packed: 1 pc.
Available HR coating only.

EP

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
338Ni								▢				▣				▢	
SFM								8-20				8-15				8-12	

▢ good ▣ best

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List 312Ti

Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) V
2 - 56 UNC	H2	3	1105610108
4 - 40 UNC	H2		1105610208
6 - 32 UNC	H2		1105610408
	H3		1105610508
6 - 40 UNF	H2		1105610608
8 - 32 UNC	H2		1105610708
	H3		1105610808
8 - 36 UNF	H2		1105610908
10 - 24 UNC	H3		1105611008
10 -32 UNF	H2		1105611108
	H3		1105611208
1/4 - 20 UNC	H3		1105611308
	H5		1105611408
1/4 - 28 UNF	H3		1105611508
	H4		1105611608
5/16 - 18 UNC	H3		1105611708
	H5		1105611808
5/16 - 24 UNF	H3		1105611908
	H4		1105612008
3/8 - 16 UNC	H3		1105612108
	H5		1105612208
3/8 - 24 UNF	H3		1105612308

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) V
3/8 - 24 UNF	H4	3	1105612408
7/16 - 14 UNC	H3		1105612508
	H5		1105612608
7/16 - 20 UNF	H3		1105612708
	H5		1105612808
1/2 - 13 UNC	H3		1105612908
	H5		1105613008
1/2 - 20 UNF	H3		1105613108
	H5		1105613208
9/16 - 18 UNF	H3		1105613308
	H5		1105613408
5/8 - 11 UNC	H3		1105613508
5/8 - 18 UNF	H3		1105613608
	H5		1105613708
3/4 - 10 UNC	H5	4	1105613808
3/4 - 16 UNF	H3		1105613908
	H5		1105614008
7/8 - 9 UNC	H3		1105614208
	H5		1105614308
7/8 - 14 UNF	H3		1105614408
	H5		1105614508
1 - 8 UNC	H5		1105614108

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
312Ti				○				○				◎	◎	○	○		
SFM				15-30				8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 344Ti

Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) V
M3 x 0.3	D3	3	1115810108
M4 x 0.7	D4		1115810208
M5 x 0.8	D4		1115810308
M6 x 1.0	D5		1115810408

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) V
M8 x 1.25	D5	3	1115810508
M10 x 1.5	D6		1115810708
M10 x 1.25	D5		1115810608
M12 x 1.75	D6		1115810808

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														
	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
344Ti				○				◎				◎	◎	○	○		
SFM				15-30				8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 312Ni

EXOTAP | VC10 | V | S/O

Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) S/O	EDP Number Plug (4.5P-5.5P) V
2 - 56 UNC	H2	2	1772201	–
4 - 40 UNC	H2	3	1776201	1776208
	H3		1776301	–
	H4	2	1772001	–
4 - 48 UNF	H2	2	1772101	–
6 - 32 UNC	H2	3	1771501	–
	H3		1706301	1706308
	H5		1706401	–
	H7		1771601	–
8 - 32 UNC	H3		1706501	1706508
	H4		1771701	–
	H5		1706601	–
10 - 24 UNC	H3		1706701	1706708
	H5		1706801	–
10 - 32 UNF	H2		1771801	–
	H3		1706901	1706908
	H4		1771901	–
	H5		1707001	–
1/4 - 20 UNC	H3		1707101	1707108
	H5		1707201	–
	H7		1772301	–
1/4 - 28 UNF	H3		1707301	1707308
	H4		1772401	–
	H5		1707401	–
5/16 - 18 UNC	H3		1707501	1707508
	H5		1707601	–
5/16 - 24 UNF	H3		1707701	1707708

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) S/O	EDP Number Plug (4.5P-5.5P) V
5/16 - 24 UNF	H5	3	1707801	–
3/8 - 16 UNC	H3		1707901	1707908
	H5		1708001	–
3/8 - 24 UNF	H3		1708101	1708108
	H5		1708201	–
7/16 -14 UNC	H3		1708301	–
	H5		1708401	–
7/16 - 20 UNF	H3		1708501	1708508
	H5		1708601	–
1/2 - 13 UNC	H3		1708701	1708708
	H5		1708801	–
1/2 -20 UNF	H3		1708901	1708908
	H5		1709001	–
9/16 - 18 UNC	H3		1717201	–
	H5		1717301	–
5/8 - 11 UNC	H3		1717401	–
5/8 - 18 UNF	H3		1717501	–
	H5		1717601	–
3/4 - 10 UNC	H3		1772501	–
	H5	4	1717701	–
3/4 - 16 UNF	H3		1717801	–
	H5		1717901	–
7/8 - 9 UNC	H3		1718101	–
	H5		1718201	–
7/8 - 14 UNF	H3		1718301	–
	H5		1718401	–
1 - 8 UNC	H5		1718001	–

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														
	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
312Ni								▢				◻	▢	▢	▢		
SFM								8-20				8-15	8-15	15-35	10-20		

▢ good ◻ best

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List 344Ni

Plug (4.5P-5.5P)

EXOTAP VC10 V S/O



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P)	
			S/O	V
M2.5 x 0.45	D3	2	1115710001	1115710008
M3 x 0.5	D3	3	1115710101	1115710108
M4 x 0.7	D4		1115710201	1115710208
M5 x 0.8	D4		1115710301	1115710308
M6 x 1.0	D5		1115710401	1115710408

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P)	
			S/O	V
M8 x 1.25	D5	3	1115710501	1115710508
M10 x 1.25	D5		1115710601	1115710608
M10 x 1.5	D6		1115710701	1115710708
M12 x 1.75	D6		1115710801	1115710808

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
344Ni								▢				▣	▢	▢	▢		
SFM								8-20				8-15	8-15	15-35	10-20		

▢ good ▣ best

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List 312

Plug (4.5P-5.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) S/O	V
2 - 56 UNC	H2	2	1759001	1759008
4 - 40 UNC	H2		1757001	1757008
	H3		1759101	1759108
	H4		1759201	1759208
	H5		1759301	1759308
5 - 40 UNC	H2	3	1757101	1757108
6 - 32 UNC	H2		1759401	1759408
	H3		1757201	1757208
	H4		1759501	1759508
	H5		1759601	1759608
	H6		1759701	1759708
8 - 32 UNC	H2		1759801	1759808
	H3		1757301	1757308
	H4		1759901	1759908
	H5		1760001	1760008
	H6		1760101	1760108
10 - 24 UNC	H3		1757401	1757408
	H5		1760201	1760208
10 - 32 UNF	H2		1760301	1760308
	H3		1757501	1757508
	H4		1760401	1760408
	H5		1760501	1760508
	H6		1760601	1760608
1/4 - 20 UNC	H3		1757601	1757608
	H5		1700201	1700208
1/4 - 28 UNF	H3		1757701	1757708
	H4		1700301	1700308

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P) S/O	V
1/4 - 28 UNF	H5	3	1700401	1700408
	H6		1700501	1700508
5/16 - 18 UNC	H3		1757801	1757808
	H5		1700601	1700608
5/16 - 24 UNF	H3		1757901	1757908
	H4		1700701	1700708
	H5		1700801	1700808
	H6		1700901	1700908
3/8 - 16 UNC	H3		1758001	1758008
	H5		1701001	1701008
3/8 - 24 UNF	H3		1758101	1758108
	H4		1701101	1701108
	H5		1701201	1701208
	H6		1701301	1701308
7/16 - 14 UNC	H3		1758201	1758208
	H5		1701401	1701408
7/16 - 20 UNF	H3		1758301	1758308
	H5		1701501	1701508
1/2 - 13 UNC	H3		1758401	1758408
	H5		1701601	1701608
1/2 - 20 UNF	H3		1758501	1758508
	H5		1701701	1701708
5/8 - 11 UNC	H3		1758601	1758608
5/8 - 18 UNF	H3		1758701	1758708
	H5		1701801	1701808
3/4 - 10 UNC	H3	4	1758801	1758808
3/4 - 16 UNF	H3		1758901	1758908

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																		
	P					M			K	N			S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum			Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High															
	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
312				◎	○		○	◎					○	○	◎	○		
SFM				15-30	10-25		12-45	8-20					8-15	8-15	15-35	10-20		

○ good ◎ best

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List 344

Plug (4.5P-5.5P)

EXOTAP | VC10 | V | S/O



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P)	
			S/O	V
M3 x 0.5	D3	3	1702201	1702208
M4 x 0.7	D4		1702301	1702308
M5 x 0.8	D4		1702401	1702408
M6 x 1.0	D5		1702501	1702508

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P-5.5P)	
			S/O	V
M8 x 1.25	D5	3	1702601	1702608
M10 x 1.5	D6		1702801	1702808
M10 x 1.25	D5		1702701	1702708
M12 x 1.75	D6		1702901	1702908

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
344				◎	○		○	◎				○	○	◎	○		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

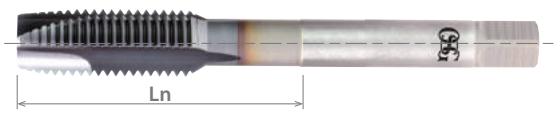
○ good ◎ best

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List 16515 NEW SIZES

DIN Overall Length, Plug (3.5P-4.5P)

EXOTAP VC10 V



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
2 - 56 UNC	H2	2	45	13	1651505608
2 - 64 UNF	H2		45	13	1651505708
3 - 48 UNC	H2		50	14	1651505808
3 - 56 UNF	H2		50	14	1651505908
4 - 40 UNC	H2		56	19	1651500108
4 - 48 UNF	H2		56	19	1651500208
5 - 40 UNC	H2		56	19	1651500308
5 - 44 UNF	H2		56	19	1651500408
6 - 32 UNC	H2		56	21	1651500608
	H3				1651500508
6 - 40 UNF	H2		56	21	1651500708
8 - 32 UNC	H2		63	22	1651500908
	H3				1651500808
8 - 36 UNF	H2		63	22	1651501008
10 - 24 UNC	H3		70	26	1651501108
10 - 32 UNF	H2		70	26	1651501308
	H3				1651501208
12 - 24 UNC	H3		80	32	1651501408
12 - 28 UNF	H3		80	32	1651501508
12 - 32 UNEF	H3		80	32	1651506008
1/4 - 20 UNC	H3	3	80	32	1651501708
	H5				1651501608
1/4 - 28 UNF	H3		80	32	1651501908
	H4				1651501808
1/4 - 32 UNEF	H3		80	32	1651506108
5/16 - 18 UNC	H3		90	38	1651502108
	H5				1651502008
5/16 - 24 UNF	H3		90	38	1651502308
	H4				1651502208
5/16 - 32 UNEF	H3		80	38	1651506208
3/8 - 16 UNC	H3		100	43	1651502508
	H5				1651502408
3/8 - 24 UNF	H3		90	39	1651502708
	H5				1651502608
3/8 - 32 UNEF	H3		90	39	1651506308
7/16 - 14 UNC	H3		100	32	1651502908
	H5				1651502808

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
7/16 - 20 UNF	H3	3	100	32	1651503108
	H5				1651503008
7/16 - 28 UNEF	H4		90	32	1651506408
1/2 - 13 UNC	H3		110	34	1651503308
	H5				1651503208
1/2 - 20 UNF	H3		100	34	1651503508
	H5				1651503408
1/2 - 28 UNEF	H4		100	34	1651506508
9/16 - 12 UNC	H3		110	37	1651503708
	H5				1651503608
9/16 - 18 UNF	H3		100	37	1651503908
	H5				1651503808
9/16 - 24 UNEF	H4		100	37	1651506608
5/8 - 11 UNC	H3		110	39	1651504108
	H5				1651504008
5/8 - 18 UNF	H3		100	39	1651504308
	H5				1651504208
5/8 - 24 UNEF	H4		100	39	1651506708
11/16 - 24 UNEF	H4		110	43	1651506808
3/4 - 10 UNC	H3		125	43	1651504508
	H5				1651504408
3/4 - 16 UNF	H3		110	43	1651504708
	H5				1651504608
3/4 - 20 UNEF	H5		110	43	1651506908
13/16 - 20 UNEF	H5		125	43	1651507008
7/8 - 9 UNC	H4		140	47	1651504908
	H6				1651504808
7/8 - 14 UNF	H4		125	47	1651505108
	H6				1651505008
7/8 - 20 UNEF	H5		125	47	1651507108
15/16 - 20 UNEF	H5		140	53	1651507208
1 - 8 UNC	H4		160	53	1651505308
	H6				1651505208
1 - 12 UNF	H4		140	53	1651505508
	H6				1651505408
1 - 20 UNEF	H5		140	53	1651507308

Packed: 1 pc.
Available V coating only.

EXT

Work Material

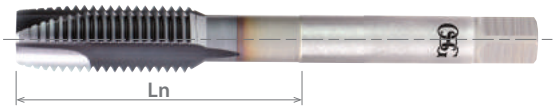
List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)	~35 HRC	35-45 HRC	45-50 HRC	50-70 HRC
16515	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 16510 NEW SIZES

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
M1.4 x 0.3	D2	2	40	9	1651003008
M1.6 x 0.35	D3		40	9	1651003108
M1.7 x 0.35	D3		40	11	1651003208
M2 x 0.4	D3		45	12	1651003408
M2 x 0.25	D2		45	12	1651003308
M2.2 x 0.45	D3		45	13	1651003608
M2.2 x 0.25	D2		45	13	1651003508
M2.3 x 0.4	D3		45	13	1651003708
M2.5 x 0.45	D3		50	14	1651003908
M2.5 x 0.35	D3		50	14	1651003808
M2.6 x 0.45	D3		50	14	1651004008
M3 x 0.5	D3	3	56	19	1651000108
M3 x 0.35	D3		56	19	1651004108
M3.5 x 0.6	D3		56	21	1651004308
M3.5 x 0.35	D3		56	21	1651004208
M4 x 0.7	D4		63	22	1651000308
M4 x 0.5	D3		63	22	1651000208
M4.5 x 0.75	D4		70	27	1651004508
M4.5 x 0.5	D3		70	27	1651004408
M5 x 0.8	D4		70	27	1651000508
M5 x 0.5	D3		70	27	1651000408
M5.5 x 0.5	D3		70	32	1651004608
M6 x 1.0	D5		80	32	1651000808
M6 x 0.75	D4		80	32	1651000708
M6 x 0.5	D3		80	32	1651000608
M7 x 1.0	D5		80	33	1651004808
M7 x 0.75	D4		80	33	1651004708
M8 x 1.25	D5		90	38	1651001008
M8 x 1.0	D5		90	38	1651000908
M8 x 0.75	D4		90	33	1651004908
M9 x 1.25	D5		90	39	1651005208
M9 x 1.0	D5		90	39	1651005108
M9 x 0.75	D4		90	39	1651005008
M10 x 1.5	D6		100	43	1651001308
M10 x 1.25	D5		100	43	1651001208
M10 x 1.0	D5		90	43	1651001108

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
M10 x 0.75	D4	3	90	40	1651005308
M11 x 1.5	D6		100	29	1651005608
M11 x 1.0	D5		90	29	1651005508
M11 x 0.75	D4		90	29	1651005408
M12 x 1.75	D6		1100	32	1651001708
M12 x 1.5	D6		100	32	1651001608
M12 x 1.25	D6		100	32	1651001508
M12 x 1.0	D5		100	32	1651001408
M14 x 2.0	D7		110	36	1651001908
M14 x 1.5	D6	4	100	36	1651001808
M14 x 1.25	D6		100	36	1651005808
M14 x 1.0	D5		100	36	1651005708
M15 x 1.5	D6		100	36	1651006008
M15 x 1.0	D5		100	36	1651005908
M16 x 2.0	D7	3	110	36	1651002108
M16 x 1.5	D6	4	100	36	1651002008
M16 x 1.0	D5		100	36	1651006108
M17 x 1.5	D6		100	36	1651006308
M17 x 1.0	D5		100	36	1651006208
M18 x 2.5	D7	3	125	43	1651002308
M18 x 2.0	D7	4	125	43	1651006508
M18 x 1.5	D6		110	43	1651002208
M18 x 1.0	D5		110	43	1651006408
M20 x 2.5	D7	3	140	44	1651002508
M20 x 2.0	D7	4	140	44	1651006708
M20 x 1.5	D6		125	44	1651002408
M20 x 1.0	D5		125	44	1651006608
M22 x 2.5	D7	3	140	44	1651002708
M22 x 2.0	D7	4	140	44	1651006908
M22 x 1.5	D6		125	44	1651002608
M22 x 1.0	D5		125	44	1651006808
M24 x 3.0	D8	3	160	51	1651002908
M24 x 2.0	D7	4	140	51	1651007108
M24 x 1.5	D6		140	51	1651002808
M24 x 1.0	D5		140	51	1651007008

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
16510	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢			
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

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List 16555 NEW!

Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
1/4 - 20 UNC	H5	3	80	30	1655500108
1/4 - 28 UNF	H4		80	30	1655500208
5/16 - 18 UNC	H5		90	35	1655500308
5/16 - 24 UNF	H4		90	35	1655500408
3/8 - 16 UNC	H5		100	39	1655500508
3/8 - 24 UNF	H4		90	35	1655500608
7/16 - 14 UNC	H5		100	32	1655500708
7/16 - 20 UNF	H5		100	32	1655500808
1/2 - 13 UNC	H5		110	34	1655500908
1/2 - 20 UNF	H5		100	34	1655501008

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
9/16 - 12 UNC	H5	3	110	37	1655501108
9/16 - 18 UNF	H5		100	37	1655501208
5/8 - 11 UNC	H5		110	39	1655501308
5/8 - 18 UNF	H5		100	39	1655501408
3/4 - 10 UNC	H5		125	43	1655501508
3/4 - 16 UNF	H5		110	43	1655501608
7/8 - 9 UNC	H6		140	47	1655501708
7/8 - 14 UNF	H6		125	47	1655501808
1 - 8 UNC	H6		160	53	1655501908
1 - 12 UNF	H6		140	53	1655502008

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														
	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
16555	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
SFM	100-200	100-200	100-200	50-120	45-110	40-120	40-120	40-100	80160	90-220	90-220			60-120			

○ good ◎ best

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List 16550 NEW!

Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
M6 x 1.0	D5	3	80	30	1655000208
M6 x 0.75	D4		80	30	1655000108
M7 x 1.0	D5		80	30	1655000308
M8 x 1.25	D5		90	35	1655000608
M8 x 1.0	D5		90	35	1655000508
M8 x 0.75	D4		80	30	1655000408
M9 x 1.25	D5		90	35	1655000708
M10 x 1.5	D6		100	39	1655001008
M10 x 1.25	D5		100	39	1655000908
M10 x 1.0	D5		90	35	1655000808
M11 x 1.5	D5		100	29	1655001108
M12 x 1.75	D6		110	32	1655001508
M12 x 1.5	D6		100	32	1655001408
M12 x 1.25	D6		100	32	1655001308
M12 x 1.0	D5		100	32	1655001208
M14 x 2.0	D7		110	36	1655001708

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
M14 x 1.5	D6	4	100	36	1655001608
M15 x 1.5	D6		100	36	1655001808
M16 x 2.0	D7	3	110	36	1655002008
M16 x 1.5	D6	4	100	36	1655001908
M17 x 1.5	D6		100	36	1655002108
M18 x 2.5	D7	3	125	43	1655002308
M18 x 1.5	D6	4	110	43	1655002208
M20 x 2.5	D7	3	140	44	1655002508
M20 x 1.5	D6	4	125	44	1655002408
M22 x 2.5	D7	3	140	44	1655002808
M22 x 2.0	D7	4	140	44	1655002708
M22 x 1.5	D6		125	44	1655002608
M24 x 3.0	D8	3	160	51	1655003108
M24 x 2.0	D7	4	140	51	1655003008
M24 x 1.5	D6		140	51	1655002908

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														
	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
16550	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
SFM	100-200	100-200	100-200	50-120	45-110	40-120	40-120	40-100	80160	90-220	90-220			60-120			

○ good ◎ best

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List 16535 NEW!

Long Shank, Plug (3.5P-4.5P)

EXOTAP | A | VC10 | V



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
6 - 32 UNC	H3	3	120	21	1653501008
6 - 40 UNF	H2		100	21	1653501108
8 - 32 UNC	H3		120	22	1653501308
8 - 36 UNF	H2		100	22	1653501408
10 - 24 UNC	H3		125	26	1653501508
10 - 32 UNF	H3		150	27	1653501708
12 - 24 UNC	H3		125	32	1653501808
12 - 28 UNF	H3		125	32	1653501908
1/4 - 20 UNC	H5		150	34	1653502108
1/4 - 28 UNF	H4		150	34	1653502308
5/16 - 18 UNC	H5		150	41	1653502508
5/16 - 24 UNF	H4		150	41	1653502708
3/8 - 16 UNC	H5		150	48	1653502908
3/8 - 24 UNF	H4		150	48	1653503108

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

EXT

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
7/16 - 14 UNC	H5	3	150	60	1653503308
7/16 - 20 UNF	H5		150	60	1653503508
1/2 - 13 UNC	H5		180	72	1653503708
1/2 - 20 UNF	H5		180	72	1653503908
9/16 - 12 UNC	H5		180	72	1653504108
9/16 - 18 UNF	H5		180	72	1653504308
5/8 - 11 UNC	H5		180	72	1653504508
5/8 - 18 UNF	H5		180	72	1653504708
3/4 - 10 UNC	H5		200	80	1653504908
3/4 - 16 UNF	H5		200	80	1653505108
7/8 - 9 UNC	H6		200	80	1653505308
7/8 - 14 UNF	H6		200	80	1653505508
1 - 8 UNC	H6		200	80	1653505708
1 - 12 UNF	H6		200	80	1653505908

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

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														
	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
16535	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 16530 NEW!

Long Shank, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
M3 x 0.5	D3	3	100	21	1653001308
M3 x 0.35	D3		100	21	1653001208
M3.5 x 0.6	D3		100	24	1653001508
M3.5 x 0.35	D3		100	24	1653001408
M4 x 0.7	D4		100	28	1653001708
M4 x 0.5	D3		100	28	1653001608
M4.5 x 0.75	D4		100	32	1653001908
M4.5 x 0.5	D4		100	32	1653001808
M5 x 0.8	D4		125	35	1653002108
M5 x 0.5	D3		125	35	1653002008
M5.5 x 0.5	D3		125	38	1653002208
M6 x 1.0	D5		150	42	1653002708
M6 x 0.75	D4		150	42	1653002508
M6 x 0.5	D3		125	42	1653002308
M8 x 1.25	D5		150	55	1653003708
M8 x 1.0	D5		150	55	1653003508
M8 x 0.75	D4		150	47	1653003308
M10 x 1.5	D6		150	64	1653005108
M10 x 1.25	D5		150	64	1653004908
M10 x 1.0	D5		150	64	1653004708
M10 x 0.75	D4		150	64	1653004508
M12 x 1.75	D6		180	72	1653006708
M12 x 1.5	D6		180	72	1653006508
M12 x 1.25	D6		180	72	1653006308
M12 x 1.0	D5		180	72	1653006108
M14 x 2.0	D7		150	60	1653007108

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

EXT

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	V
M14 x 1.5	D6	4	150	60	1653007008
M14 x 1.25	D6		150	60	1653006908
M14 x 1.0	D5		150	60	1653006808
M15 x 1.5	D6		160	64	1653007308
M15 x 1.0	D5		160	64	1653007208
M16 x 2.0	D7	3	180	72	1653007708
M16 x 1.5	D6		160	64	1653007508
M16 x 1.0	D4		160	64	1653007408
M18 x 2.5	D7		180	72	1653008308
M18 x 2.0	D7	4	180	72	1653008208
M18 x 1.5	D6		180	72	1653008108
M18 x 1.0	D5		180	72	1653008008
M20 x 2.5	D7	3	200	80	1653008708
M20 x 2.0	D7	4	200	80	1653008608
M20 x 1.5	D6		200	80	1653008508
M20 x 1.0	D5		200	80	1653008408
M22 x 2.5	D7	3	200	80	1653009108
M22 x 2.0	D7	4	200	80	1653009008
M22 x 1.5	D6		200	80	1653008908
M22 x 1.0	D5		200	80	1653008808
M24 x 3.0	D8	3	200	80	1653009508
M24 x 2.0	D7	4	200	80	1653009408
M24 x 1.5	D6		200	80	1653009308
M24 x 1.0	D5		200	80	1653009208

Packed: 1 pc.
Available V coating only.
Shank diameter is standard ANSI.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
16530	◎	◎	◎	◎	○	◎	◎	◎	○	○	○			◎			
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

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List 300

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) S/O	TiN	V
2 - 56 UNC	H2	2	1734601	–	1734608
	H3		1734701	–	1734708
	H4		1725501	–	–
3 - 48 UNC	H2		1725601	–	–
4 - 40 UNC	H2		1730001	1730005	1730008
	H3		1734801	–	1734808
	H4		1725801	–	–
	H5		1734901	–	1734908
	H6		1726801	–	–
4 - 48 UNF	H2		1726901	–	–
	H4		1727001	–	–
5 - 40 UNC	H2		1730101	–	1730108
6 - 32 UNC	H2		1735801	–	1735808
	H3		1730201	–	1730208
	H3	3	1739801	1739805	1739808
	H4		1727101	–	–
	H5		1737101	–	1737108
	H7		1727201	–	–
6 - 40 UNF	H2		1727301	–	–
	H3		1727401	–	–
8 - 32 UNC	H2		1735901	–	1735908
	H3		1730301	1730305	1730308
	H4		1727501	–	–
	H5		1737201	–	1737208
	H7		1727601	–	–
8 - 36 UNF	H2		1727701	–	–
10 - 24 UNC	H3		1730401	1730405	1730408
	H4		1727801	–	–
	H5		1727901	–	–
10 - 32 UNF	H2		1736501	–	1736508
	H3		1730501	1730505	1730508
	H4		1776401	–	1776408
	H5		1737301	–	1737308
	H6		1728001	–	–
	H7		1728101	–	–
12 - 24 UNC	H3		1728201	–	–
12 - 28 UNF	H3		1728301	–	–
1/4 - 20 UNC	H2		1736601	–	1736608
	H3		1730601	1730605	1730608
	H5		1737401	–	1737408
	H7		1728401	–	–
1/4 - 28 UNF	H2		1736701	–	1736708
	H3		1730701	1730705	1730708

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, TiN or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) S/O	TiN	V
1/4 - 28 UNF	H4	3	1736801	–	1736808
	H5		1728501	–	–
	H6		1728601	–	–
	H7		1728701	–	–
5/16 - 18 UNC	H3		1730801	1730805	1730808
	H5		1738301	–	1738308
	H7		1728801	–	–
5/16 - 24 UNF	H3		1730901	1730905	1730908
	H4		1736901	–	1736908
	H5		1728901	–	–
	H6		1729001	–	–
	H7		1729101	–	–
3/8 - 16 UNC	H3		1731001	1731005	1731008
	H5		1738401	–	1738408
	H7		1729201	–	–
3/8 - 24 UNF	H3		1731101	1731105	1731108
	H4		1737001	–	1737008
	H5		1729301	–	–
	H7		1729401	–	–
7/16 - 14 UNC	H3		1731201	1731205	1731208
	H5		1738501	–	1738508
7/16 - 20 UNF	H3		1731301	1731305	1731308
	H5		1738601	–	1738608
1/2 - 13 UNC	H3		1731401	1731405	1731408
	H5		1738701	–	1738708
	H7		1729501	–	–
1/2 - 20 UNF	H3		1731501	1731505	1731508
	H5		1738801	–	1738808
9/16 - 12 UNC	H3		1725001	1725005	1725008
9/16 - 18 UNF	H3		1725101	1725105	1725108
5/8 - 11 UNC	H3		1731601	1731605	1731608
	H5		1738901	–	1738908
	H7		1729601	–	–
5/8 - 18 UNF	H3		1731701	1731705	1731708
	H5		1729701	–	–
	H7		1729801	–	–
3/4 - 10 UNC	H3		1731801	1731805	1731808
3/4 - 16 UNF	H3		1731901	1731905	1731908
7/8 - 9 UNC	H4		1725201	1725205	1725208
7/8 - 14 UNF	H4		1725301	1725305	1725308
1 - 8 UNC	H4		1725401	1725405	1725408
1 - 12 UNF	H4		1729901	–	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, TiN or V coatings as shown above.

EXT

Work Material

List No.	P Carbon Steels Low 1010 1018	P Carbon Steels Med. 1035 1045	P Carbon Steels High 1065	P Alloy Steels 4140 4340	P Die Steels	M Stainless Steels 300	M Stainless Steels 400	M Stainless Steels 17-4 PH	K Cast Iron	N Aluminum 6061 7075	N Aluminum Casting	S Nickel Alloy Inconel	S Titanium 6Al4V (30 HRC)	H Hardened Steels ~35 HRC	H Hardened Steels 35-45 HRC	H Hardened Steels 45-50 HRC	H Hardened Steels 50-70 HRC
300	▣	▢	▢			▣	▣	▢									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

▢ good ▣ best

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List 342

Plug (3.5P-4.5P)

HSSE | V | TiN | S/O



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)		
			S/O	TiN	V
M3 x 0.5	D3	3	1750101	–	1750108
M3.5 x 0.6	D4		1772901	–	–
M4 x 0.7	D4		1750401	1750405	1750408
M5 x 0.8	D4		1750701	1750705	1750708
M6 x 1.0	D5		1751001	1751005	1751008
M7 x 1.0	D5		1773401	–	–
M8 x 1.25	D5		1751301	1751305	1751308
M8 x 1.0	D5		1773201	–	–
M10 x 1.5	D6		1751601	1751605	1751608

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, TiN or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)		
			S/O	TiN	V
M10 x 1.25	D5	3	1773101	–	–
M12 x 1.75	D6		1751901	1751905	1751908
M12 x 1.25	D5		1772701	–	–
M14 x 2.0	D7		1772601	–	–
M14 x 1.5	D6		1772801	–	–
M16 x 1.5	D6		1773001	–	–
M16 x 2.0	D7		1773501	–	–
M18 x 1.5	D6		1773301	–	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide, TiN or V coatings as shown above.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
342	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 397

Long Shank, Plug (3.5P-4.5P)

EXOTAP HSSE S/0



Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	S/O
4 - 40 UNC	H2	2	4	0.843	1764001
			6		1766201
6 - 32 UNC	H3		4	1.031	1764101
			6		1764201
8 - 32 UNC	H3	3	4	1.125	1764301
			6		1764401
10 - 24 UNC	H3		4	1.312	1764501
			6		1764601
10 - 32 UNF	H3		4	1.312	1764701
			6		1764801
1/4 - 20 UNC	H3		4	1.5	1764901
			6		1765001

Packed: 1 pc.
Available Steam Oxide finish only.
Note: Neck length is designed for reaching 50% deeper holes than ANSI standard taps.
Shank diameter is standard ANSI.

EXT

Tap Size	Thread Limit	No. of Flutes	Overall Length	Neck Length	EDP Number Plug (3.5P - 4.5P)
				Ln	S/O
1/4 - 28 UNF	H3	3	6	1.687	1765101
5/16 - 18 UNC	H3		6	1.687	1765201
5/16 - 24 UNF	H3		6	1.875	1765701
3/8 - 16 UNC	H3		6	1.875	1765301
3/8 - 24 UNF	H3		6	-	1765801
7/16 - 14 UNC	H3		6	-	1765401
7/16 - 20 UNF	H3		6	-	1765901
1/2 - 13 UNC	H3		6	-	1765501
1/2 - 20 UNF	H3		6	-	1766001
5/8 - 11 UNC	H3		6	-	1765601

Packed: 1 pc.
Available Steam Oxide finish only.
Note: Neck length is designed for reaching 50% deeper holes than ANSI standard taps.
Shank diameter is standard ANSI.

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														
	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
397	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 320

Plug (3.5P-4.5P)

EXOTAP HSSE TiN



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) TiN
4 - 40 UNC	H2	2	1740005
5 - 40 UNC	H2		1740105
6 - 32 UNC	H3		1740205
	H5		1742005
	H7		1742105
8 - 32 UNC	H3	3	1740305
10 - 24 UNC	H3		1740405
10 - 32 UNF	H3		1740505
	H5		1742205
	H7		1742305
1/4 - 20 UNC	H3		1740605
1/4 - 28 UNF	H3		1740705
	H5		1742405
	H7		1742505
5/16 - 18 UNC	H3		1740805

Packed: 1 pc.
Available TiN coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) TiN
5/16 - 24 UNF	H3	3	1740905
	H5		1742605
	H7		1742705
3/8 - 16 UNC	H3		1741005
3/8 - 24 UNF	H3		1741105
	H5		1742805
7/16 - 14 UNC	H3		1741205
7/16 - 20 UNF	H3		1741305
1/2 - 13 UNC	H3		1741405
1/2 - 20 UNF	H3		1741505
5/8 - 11 UNC	H3		1741605
5/8 - 18 UNF	H3		1741705
3/4 - 10 UNC	H3		1741805
3/4 - 16 UNF	H3		1741905

Packed: 1 pc.
Available TiN coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
320	▢	▢	▣	▣	▣	▢	▢	▢	▢	▢	▢			▢			
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

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List 250

HY-PRO HSSE S/O

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
4 - 40 UNC	2B	2	56	2511401
6 - 32 UNC		2	56	2512401
8 - 32 UNC		3	63	2517801
10 - 24 UNC		3	70	2513401
10 - 32 UNF		3	70	2518801
1/4 - 20 UNC		3	80	2530001
1/4 - 28 UNF		3	80	2530401
5/16 - 18 UNC		3	90	2530801
5/16 - 24 UNF		3	90	2531201
3/8 - 16 UNC		3	100	2531601

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
3/8 - 24 UNF	2B	3	100	2531801
7/16 - 14 UNC		3	100	2532001
7/16 - 20 UNF		3	100	2532201
1/2 - 13 UNC		3	110	2532401
1/2 - 20 UNF		3	100	2532601
5/8 - 11 UNC		3	110	2533201
5/8 - 18 UNF		3	100	2533401
3/4 - 10 UNC		3	125	2533601
3/4 - 16 UNF		3	110	2533801

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
250	▢	▢	▣	▣	▢	▢	▢	▢	▢					▢			
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75					15-35			

▢ good ▣ best

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List 259

DIN Overall Length, Plug (3.5P-4.5P)

HY-PRO HSSE S/O



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
M3 x 0.5	6H	3	56	2590401
M4 x 0.7		3	63	2590601
M5 x 0.8		3	70	2590801
M6 x 1.0		3	80	2591001
M8 x 1.25		3	90	2591401
M10 x 1.5		3	100	2591801
M10 x 1.25		3	100	2591701
M12 x 1.75		3	110	2592301
M12 x 1.5		3	100	2592201

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
M12 x 1.25	6H	3	100	2592101
M14 x 2.0		3	110	2592601
M14 x 1.5		3	100	2592501
M16 x 2.0		3	110	2592901
M16 x 1.5		3	100	2592801
M18 x 2.5		3	125	2593201
M18 x 1.5		3	110	2593001
M20 x 2.5		3	140	2593601
M20 x 1.5		3	125	2593401

Packed: 1 pc.
Available Steam Oxide finish only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
259	○	○	◎	◎	○	○	○	○	○					○			
SFM	25-80	20-50	20-45	20-50	15-30	20-45	20-40	15-20	25-75					15-35			

○ good ◎ best

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List 260

HY-PRO | COOLANT THROUGH | HSSE | TiN

Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) TiN
1/4 - 20 UNC	2B	3	80	2630005
1/4 - 28 UNF			80	2630405
5/16 - 18 UNC			90	2630805
5/16 - 24 UNF			90	2631205
3/8 - 16 UNC			100	2631605
3/8 - 24 UNF			100	2631805
7/16 - 14 UNC			100	2632005
7/16 - 20 UNF			100	2632205
1/2 - 13 UNC			110	2632405

Packed: 1 pc.
Available TiN coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) TiN
1/2 - 20 UNF	2B	3	100	2632605
9/16 - 18 UNC			100	2633005
5/8 - 11 UNC			110	2633205
5/8 - 18 UNF			100	2633405
3/4 - 10 UNC			125	2633605
3/4 - 16 UNF			110	2633805
7/8 - 9 UNC			140	2634005
7/8 - 14 UNF			125	2634205
1 - 8 UNC			160	2634405

Packed: 1 pc.
Available TiN coating only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
260	▢	▢	▣	▣	▣	▢	▢	▢	▢	▢	▢			▢			
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

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List 269

Coolant-Through, DIN Overall Length, Plug (3.5P-4.5P)

HY-PRO | COOLANT THROUGH | HSSE | TiN



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) TiN
M6 x 1.0	6H	3	80	2691005
M8 x 1.25			90	2691405
M10 x 1.5			100	2691805
M10 x 1.25			100	2691705
M12 x 1.75			110	2692305
M12 x 1.5			100	2692205
M12 x 1.25			100	2692105
M14 x 2.0			110	2692605

Packed: 1 pc.
Available TiN coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) TiN
M14 x 1.5	6H	3	100	2692505
M16 x 2.0			110	2692905
M16 x 1.5			100	2692805
M18 x 2.5			125	2693205
M18 x 1.5			110	2693005
M20 x 2.5			140	2693605
M20 x 1.5			125	2693405

Packed: 1 pc.
Available TiN coating only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
269	▢	▢	▣	▣	▣	▢	▢	▢	▢	▢	▢			▢			
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

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List 11015

HY-PRO HSS-CO TiN

Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
4 - 40 UNC	H3	3	1101500105
	H4		1101505605
	H5		1101500305
	H6		1101500205
	H7		1101505705
	H8		1101515505
4 - 48 UNF	H3		1101515605
	H4		1101515705
	H5		1101515805
	H6		1101515905
	H7		1101506505
	H8		1101506605
6 - 32 UNC	H3		1101500405
	H4		1101505805
	H5		1101500505
	H6		1101500605
	H7		1101500705
	H8		1101500805
	H9		1101506705
	H10		1101506805
	H11		1101506905
6 - 40 UNF	H3		1101507005
	H4		1101507105
	H5		1101507205
	H6		1101507305
	H7		1101507405
	H8		1101507505
	H9		1101507605
	H10		1101507705
	H11		1101507805
8 - 32 UNC	H3		1101500905
	H4		1101501005
	H5		1101501105
	H6		1101501205
	H7		1101501305
	H8		1101501405
	H9		1101507905
	H10		1101508005
	H11		1101508105
8 - 36 UNF	H3		1101508205
	H4		1101508305
	H5		1101508405
	H6		1101508505
	H7		1101508605
	H8		1101508705
	H9		1101508805
	H10		1101508905
	H11		1101509005

Packed: 1 pc.
Available TiN coating only.

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
10 - 24 UNC	H3	3	1101509105
	H4		1101509205
	H5		1101509305
	H6		1101509405
	H7		1101509505
	H8		1101509605
	H9		1101509705
	H10		1101509805
	H11		1101509905
10 - 32 UNF	H3		1101501505
	H4		1101501605
	H4		1101516005
	H5		1101501705
	H6		1101501805
	H7		1101501905
	H8		1101502005
	H9		1101502105
	H10		1101506005
	H11		1101506105
	H12		1101506205
12 - 28 UNC	H3		1101516105
	H4		1101516205
	H5		1101516305
	H6		1101516405
	H7		1101516505
	H8		1101516605
	H9		1101516705
	H10		1101516805
	H11		1101516905
1/4 - 20 UNC	H3		1101510005
	H4		1101510105
	H5		1101510205
	H6		1101510305
	H7		1101510405
	H8		1101510505
	H9		1101510605
	H10		1101510705
	H11		1101510805
1/4 - 28 UNF	H3		1101502205
	H4		1101505505
	H5		1101502305
	H6		1101502405
	H7		1101502505
	H8		1101502605
	H9		1101502705
	H10		1101502805
	H11		1101506305
	H12		1101506405

Packed: 1 pc.
Available TiN coating only.

HYT

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List 11015 (Continued)

HY-PRO HSS-CO TiN

Plug (4P-5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
5/16 - 18 UNC	H3	3	1101510905
	H4		1101511005
	H5		1101511105
	H6		1101511205
	H7		1101511305
	H8		1101511405
	H9		1101511505
	H10		1101511605
	H11		1101511705
5/16 - 24 UNF	H3		1101502905
	H4		1101505905
	H5		1101503005
	H6		1101503105
	H7		1101503205
	H8		1101503305
	H9		1101503405
	H10		1101503505
	H11		1101511805
3/8 - 16 UNC	H3		1101511905
	H4		1101512005
	H5		1101512105
	H6		1101512205
	H7		1101512305
	H8		1101512405
	H9		1101512505
	H10		1101512605
	H11		1101512705
	H12		1101512805
3/8 - 24 UNF	H3		1101503605
	H4		1101512905
	H5		1101503705
	H6		1101503805
	H7		1101503905
	H8		1101504005
	H9		1101504105
	H10		1101504205
	H11		1101513005
7/16 - 14 UNC	H3		1101513105
	H4		1101513205
	H5		1101513305
	H6		1101513405
	H7		1101513505
	H8		1101513605
	H9		1101513705
	H10		1101513805
	H11		1101513905

Packed: 1 pc.
Available TiN coating only.

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
7/16 - 20 UNF	H3	3	1101504305
	H4		1101514005
	H5		1101504405
	H6		1101504505
	H7		1101504605
	H8		1101504705
	H9		1101504805
	H10		1101514105
	H11		1101514205
1/2 - 13 UNC	H3		1101514305
	H4		1101514405
	H5		1101514505
	H6		1101514605
	H7		1101514705
	H8		1101514805
	H9		1101514905
	H10		1101515005
	H11		1101515105
1/2 - 20 UNF	H3		1101504905
	H4		1101515205
	H5		1101505005
	H6		1101505105
	H7		1101505205
	H8		1101505305
	H9		1101505405
	H10		1101515305
	H11		1101515405
9/16 - 18 UNC	H3	4	1101517005
	H5		1101517105
	H6		1101517205
	H7		1101517305
	H8		1101517405
	H9		1101517505
5/8 - 11 UNC	H3		1101517605
	H5		1101517705
5/8 - 18 UNF	H3		1101517805
	H5		1101517905
	H6		1101518005
	H7		1101518105
	H8		1101518205
	H9		1101518305
	H10		1101518405
	H11		1101518505

Packed: 1 pc.
Available TiN coating only.

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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	Med.	High														
	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
11015	◎	◎	◎	○	○	◎	◎	○	○	○	○	○	○	○			
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

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List 11015 (Continued)

HY-PRO HSS-CO TiN

Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
3/4 - 10 UNC	H3	4	1101518605
	H5		1101518705
3/4 - 16 UNF	H3		1101518805
	H5		1101518905
	H6		1101519005
	H7		1101519105
	H8		1101519205
	H9		1101519305
	H10		1101519405
	H11		1101519505

Packed: 1 pc.
Available TiN coating only.

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
7/8 - 9 UNC	H6	5	1101519605
7/8 - 14 UNF	H6		1101519705
	H7		1101519805
	H8		1101519905
	H9		1101520005
	H10		1101520105
	H11		1101520205
	H12		1101520305
1 - 12 UNF	H6		1101520405
	H7		1101520505
	H8		1101520605
	H9		1101520705
	H10		1101520805
	H11		1101520905
	H12		1101521005

Packed: 1 pc.
Available TiN coating only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
11015	◎	◎	◎	○	○	◎	◎	○	○	○	○	○	○	○			
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

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List 11115

HY-PRO HSS-CO TiN

Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
M3 x 0.5	H3	3	1111500105
	H5		1111500205
	H4		1111500905
	H6		1111501005
	H7		1111501105
	H8		1111501205
	H9		1111501305
	H10		1111501405
	H11		1111501505
M4 x 0.7	H4		1111500305
	H5		1111500405
	H6		1111501605
	H7		1111501705
	H8		1111501805
	H9		1111501905
	H10		1111502005
	H11		1111502105
M5 x 0.8	H4		1111500505
	H5		1111500605
	H6		1111502205
	H7		1111502305
	H8		1111502405
	H9		1111502505
	H10		1111502605
	H11		1111502705
M6 x 1.0	H5		1111500705
	H6		1111502805
	H7		1111502905
	H8		1111503005
	H9		1111503105
	H10		1111503205
	H11		1111503305
	H12		1111503405

Packed: 1 pc.
Available TiN coating only.
Note: List 11115 metric taps are manufactured to H-limits rather than D-limits.

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
M8 x 1.25	H5	3	1111500805
	H6		1111503505
	H7		1111503605
	H8		1111503705
	H9		1111503805
	H10		1111503905
	H11		1111504005
	H12		1111504105
M8 x 1.0	H5		1111507005
	H6		1111507105
	H7		1111507205
	H8		1111507305
	H9		1111507405
	H10		1111507505
	H11		1111507605
M10 x 1.5	H5		1111504905
	H6		1111505005
	H7		1111505105
	H8		1111505205
	H9		1111505305
	H10		1111505405
	H11		1111505505
	H12		1111505605
M10 x 1.25	H5		1111504205
	H6		1111504305
	H7		1111504405
	H8		1111504505
	H9		1111504605
	H10		1111504705
	H11		1111504805
M12 x 1.75	H6		1111507705
	H7		1111507805
	H8		1111507905
	H9		1111508005
	H10		1111508105
	H11		1111508205

Packed: 1 pc.
Available TiN coating only.
Note: List 11115 metric taps are manufactured to H-limits rather than D-limits.

continued on next page

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
11115	◎	◎	◎	○	○	◎	◎	○	○	○	○	○	○	○			
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

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List 11115 (Continued)

HY-PRO HSS-CO TiN

Plug (4P-5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
M12 x 1.5	H6	3	1111506405
	H7		1111506505
	H8		1111506605
	H9		1111506705
	H10		1111506805
	H11		1111506905

Packed: 1 pc.
Available TiN coating only.
Note: List 11115 metric taps are manufactured to H-limits rather than D-limits.

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 5P) TiN
M12 x 1.25	H5	3	1111505705
	H6		1111505805
	H7		1111505905
	H8		1111506005
	H9		1111506105
	H10		1111506205
	H11		1111506305
M14 x 1.5	H6	4	1111508305
	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.

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	Med.	High														
	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
11115	◎	◎	◎	○	○	◎	◎	○	○	○	○	○	○	○			
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

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List 13118

HSSE | V | LHS | 15°

DIN Overall Length & Extended Length, Plug (4.5P-5.5P),
RHC/LHS for Through Holes



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (4P - 5P) TiN
M16 x 2.0	D7	4	110	1311802408
			180	1311802508
	D17 (6H +0.005")		110	1311802308
M20 x 2.5	D8	5	140	1311800108
			200	1311800208
	D18 (6H +0.005")		160	1311801608
M24 x 3.0	D9		160	1311800408
			200	1311800508
	D19 (6H +0.005")		160	1311801708
M27 x 3.0	D9		160	1311800608
			200	1311800708
	D19 (6H +0.005")		160	1311801808

Packed: 1 pc.
Available V coating only.
Note: +0.005" available for threads that will be heat treated after tapping.

HYL

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (4P - 5P) TiN
M30 x 3.5	D10	5	180	1311800808
			250	1311800908
	D20 (6H +0.005")		180	1311801908
M33 x 3.5	D10		180	1311801008
			250	1311801108
	D20 (6H +0.005")		180	1311802008
M36 x 4.0	D11	6	180	1311801208
			250	1311801308
	D21 (6H +0.005")		200	1311802108
M42 x 4.5	D11		200	1311801408
			300	1311801508
	D21 (6H +0.005")		200	1311802208

Packed: 1 pc.
Available V coating only.
Note: +0.005" available for threads that will be heat treated after tapping.

HYL

Work Material

List No.	P					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 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
13118	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	○		
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

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List 13059

HY-PRO | HSSE | V | LHS | 20°

Synchronized, Plug (5.5P-6.5P), RHC/LHS for Through Holes



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (5.5P - 6.5P) V
6 - 32 UNC	2B	2	1305900108
8 - 32 UNC			1305900208
10 - 24 UNC			1305900308
10 - 32 UNF			1305900408
1/4 - 20 UNC			1305900508
1/4 - 28 UNF			1305900608

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (5.5P - 6.5P) V
5/16 - 18 UNC	2B	2	1305900708
5/16 - 24 UNF			1305900808
3/8 - 16 UNC			1305900908
3/8 - 24 UNF			1305901008
1/2 - 13 UNC			1305901108
1/2 - 13 UNF			1305901208

Packed: 1 pc.
Available V coating only.

HYT

List 13159

HY-PRO | HSSE | V | LHS | 20°

Synchronized, Plug (5.5P-6.5P), RHC/LHS for Through Holes



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (5.5P - 6.5P) V
M3 x 0.5	6H	2	1315900108
M4 x 0.7			1315900208
M5 x 0.8			1315900308
M6 x 1.0			1315900408
M8 x 1.25			1315900508

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (5.5P - 6.5P) V
M10 x 1.5	6H	2	1315900708
M10 x 1.25			1315900608
M12 x 1.75			1315900908
M12 x 1.5			1315900808

Packed: 1 pc.
Available V coating only.

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	Med.	High														
	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
13059										▢	▢						
13159										▢	▢						
SFM										300-800	200-700						

▢ good ▢ best

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List 11016

HY-PRO HSSE N

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) N
2 - 56 UNC	H2	2	45	1101600103
4 - 40 UNC	H2		56	1101600203
6 - 32 UNC	H3	3	56	1101600303
8 - 32 UNC	H3		63	1101600403
10 - 24 UNC	H3		70	1101600503
10 - 32 UNF	H3		70	1101600603
1/4 - 20 UNC	H3		80	1101600703
	H5			1101600803
1/4 - 28 UNF	H3		80	1101600903
5/16 - 18 UNC	H3		90	1101601003
	H5			1101601103

Packed: 1 pc.
Available Nitride treatment only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) N
5/16 - 24 UNF	H3	3	90	1101601203
3/8 - 16 UNC	H3		100	1101601303
	H5			1101601403
3/8 - 24 UNF	H3		100	1101601503
7/16 - 14 UNC	H3		100	1101601603
	H5			1101601703
7/16 - 20 UNF	H3		100	1101601803
1/2 - 13 UNC	H3		110	1101601903
	H5			1101602003
1/2 - 20 UNF	H3		110	1101602103

Packed: 1 pc.
Available Nitride treatment only.

HYT

List 11116

HY-PRO HSSE N

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) N
M3 x 0.5	D3	3	56	1111600103
M4 x 0.7	D4		63	1111600303
M5 x 0.8	D4		70	1111600403
M6 x 1.0	D5		80	1111600503
M8 x 1.25	D5		90	1111600803

Packed: 1 pc.
Available Nitride treatment only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) N
M10 x 1.5	D6	3	100	1111601003
M10 x 1.25	D5		100	1111600903
M12 x 1.75	D6		110	1111601303
M12 x 1.5	D5		100	1111601203
M12 x 1.25	D5		100	1111601103

Packed: 1 pc.
Available Nitride treatment only.

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	Med.	High														
	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
11016										▢ best	▢ best						
11116										▢ best	▢ best						
SFM										40-80	40-65						

▢ good ▢ best

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List 11017

HY-PRO HSSE V

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) V
4 - 40 UNC	H2	2	56	1101700108
6 - 32 UNC	H3		56	1101700208
8 - 32 UNC	H3	3	63	1101700308
10 - 24 UNC	H3		70	1101700408
10 - 32 UNF	H3		70	1101700508
1/4 - 20 UNC	H3		80	1101700608
1/4 - 28 UNF	H3		80	1101700708
5/16 - 18 UNC	H3		90	1101700808

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) V
5/16 - 24 UNF	H3	3	90	1101700908
3/8 - 16 UNC	H3		100	1101701008
3/8 - 24 UNF	H3		100	1101701108
7/16 - 14 UNC	H3		100	1101701208
7/16 - 20 UNF	H3		100	1101701308
1/2 - 13 UNC	H3		110	1101701408
1/2 - 20 UNF	H3		110	1101701508

Packed: 1 pc.
Available V coating only.

HYT

List 11117

HY-PRO HSSE V

DIN Overall Length, Plug (3.5P-4.5P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) V
M3 x 0.5	D3	3	56	1111700108
M4 x 0.7	D4		63	1111700308
M5 x 0.8	D4		70	1111700408
M6 x 1.0	D5		80	1111700508

Packed: 1 pc.
Available V coating only.

HYT

Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) V
M8 x 1.25	D5	3	90	1111700808
M10 x 1.5	D6		100	1111701008
M12 x 1.75	D6		110	1111701308

Packed: 1 pc.
Available V coating only.

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
11017	◎	◎	◎	◎	◎	◎	◎	○	◎					○			
11117	◎	◎	◎	◎	◎	◎	◎	○	◎					○			
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

○ good ◎ best

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List 280

Plug (3.5P-4.5P)

HY-PRO HSSE TiCN S/O BR



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright	S/O	TiCN
2 - 56 UNC	H2	2	2805600	2805601	2805608
3 - 48 UNC	H2		2806000	2806001	2806008
4 - 40 UNC	H2		2806400	2806401	2806408
	H3		2811400	2811401	2811408
	H4		2816300	2816301	2816308
	H5		2816400	2816401	2816408
4 - 48 UNF	H2		2816500	2816501	2816508
5 - 40 UNC	H2		2807000	2807001	2807008
6 - 32 UNC	H2		2807400	2807401	2807408
	H3		2812400	2812401	2812408
	H4		2812500	2812501	2812508
	H5		2817400	2817401	2817408
	H6		2817500	2817501	2817508
	H7		2817600	2817601	2817608
	H11		2817700	2817701	2817708
6 - 40 UNF	H2		2807600	2807601	2807608
8 - 32 UNC	H2	3	2807800	2807801	2807808
	H3		2812800	2812801	2812808
	H4		2812900	2812901	2812908
	H5		2817800	2817801	2817808
	H6		2817900	2817901	2817908
	H7		2818000	2818001	2818008
	H11		2818100	2818101	2818108
8 - 36 UNF	H2		2808000	2808001	2808008
10 - 24 UNC	H3		2813400	2813401	2813408
	H5		2818400	2818401	2818408
	H11		2823400	2823401	2823408
10 - 32 UNF	H2		2808800	2808801	2808808
	H3		2813800	2813801	2813808
	H4		2813900	2813901	2813908
	H5		2818800	2818801	2818808
	H6		2818900	2818901	2818908
	H7		2819000	2819001	2819008
	H11		2819100	2819101	2819108
12 - 24 UNC	H2		2809000	2809001	2809008
12 - 28 UNF	H3		2809200	2809201	2809208
1/4 - 20 UNC	H2		2809400	2809401	2809408
	H3		2830000	2830001	2830008
	H5		2840000	2840001	2840008

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																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
280	○	◎	◎	◎	○	○	○	○	○					○			
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

○ good ◎ best

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List 280 (Continued)

HY-PRO | HSSE | TiCN | S/O | BR

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Plug (3.5P - 4.5P)		
			Bright	S/O	TiCN
1/4 - 20 UNC	H7	3	2854800	2854801	2854808
	H11		2855000	2855001	2855008
1/4 - 28 UNF	H2		2809600	2809601	2809608
	H3		2830400	2830401	2830408
	H4		2835400	2835401	2835408
	H5		2840400	2840401	2840408
	H6		2840500	2840501	2840508
	H7		2840600	2840601	2840608
	H11		2840700	2840701	2840708
5/16 - 18 UNC	H3		2830800	2830801	2830808
	H5		2840800	2840801	2840808
	H7		2855600	2855601	2855608
	H11		2855800	2855801	2855808
5/16 - 24 UNF	H2		2826400	2826401	2826408
	H3		2831200	2831201	2831208
	H4		2836200	2836201	2836208
	H5		2841200	2841201	2841208
	H6		2841300	2841301	2841308
	H7		2841400	2841401	2841408
	H11		2841500	2841501	2841508
3/8 - 16 UNC	H3		2831600	2831601	2831608
	H5		2841600	2841601	2841608
	H7		2856400	2856401	2856408
	H11		2856600	2856601	2856608
3/8 - 24 UNF	H2		2826800	2826801	2826808
	H3		2831800	2831801	2831808
	H4		2836800	2836801	2836808
	H5		2841800	2841801	2841808
	H6		2841900	2841901	2841908
	H7		2841700	2841701	2841708
	H11		2856800	2856801	2856808
7/16 - 14 UNC	H3		2832000	2832001	2832008
	H5		2842000	2842001	2842008
	H7		2842100	2842101	2842108
	H11		2842300	2842301	2842308
7/16 - 20 UNF	H3		2832200	2832201	2832208
	H5		2842200	2842201	2842208
	H7		2842500	2842501	2842508
	H11		2843000	2843001	2843008
1/2 -13 UNC	H3		2832400	2832401	2832408
	H5		2842400	2842401	2842408
	H7		2842800	2842801	2842808
	H11		2857400	2857401	2857408
1/2 - 20 UNF	H2		2827600	2827601	2827608
	H3		2832600	2832601	2832608
	H5		2842600	2842601	2842608
	H7		2842700	2842701	2842708
	H11		2842900	2842901	2842908
9/16 - 12 UNC	H3		2857600	2857601	2857608
9/16 - 18 UNF	H3		2857800	2857801	2857808
5/8 - 11 UNC	H3		2833200	2833201	2833208
	H5		2843200	2843201	2843208

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

HYT

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List 280 (Continued)

HSSE | TiCN | S/O | BR

Plug (3.5P-4.5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number		
			Plug (3.5P - 4.5P)		
			Bright	S/O	TiCN
5/8 - 18 UNF	H3	3	2833400	2833401	2833408
	H5		2843400	2843401	2843408
	H7		2858000	2858001	2858008
3/4 - 10 UNC	H3		2833600	2833601	2833608
	H5		2843600	2843601	2843608
3/4 - 16 UNF	H3		2833800	2833801	2833808
	H5		2843800	2843801	2843808
7/8 - 9 UNC	H5		2844000	2844001	2844008
7/8 - 14 UNF	H4		2839200	2839201	2839208
1 - 8 UNC	H5	4	2844400	2844401	2844408
1 - 12 UNF	H4		2839600	2839601	2839608
1,1/8 - 7 UNC	H6		–	2849801	–
1,1/8 - 8 UNS	H6		–	2850201	–
1,1/8 - 12 UNF	H5		–	2845001	–
1,1/4 - 7 UNC	H6		–	2850401	–
1,1/4 - 8 UNS	H6		–	2850801	–
1,1/4 - 12 UNF	H5		–	2845601	–
1,3/8 - 6 UNC	H6		–	2851001	–
1,3/8 - 8 UNS	H6		–	2851401	–
1,3/8 - 12 UNF	H5		–	2846201	–
1,1/2 - 6 UNC	H6		–	2851601	–
1,1/2 - 8 UNS	H6		–	2852001	–
1,1/2 - 12 UNF	H5		–	2846801	–

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

HYT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
280	▢	▣	▣	▣	▢	▢	▢	▢	▢					▢			
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

▢ good ▣ best

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List 289

HY-PRO | HSSE | TiCN | S/O | BR

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)		
			Bright	S/O	TiCN
M3 x 0.5	D3	3	2890400	2890401	2890408
	D11		–	2893101	2893108
M3.5 x 0.6	D4		2890500	2890501	2890508
	D11		–	2893301	2893308
M4 x 0.7	D4		2890600	2890601	2890608
	D11		–	2893501	2893508
M5 x 0.8	D4		2890800	2890801	2890808
	D11		–	2893701	2893708
M6 x 1.0	D5		2891000	2891001	2891008
	D11		–	2893901	2893908
M7 x 1.0	D5		2891100	2891101	2891108
	D11		–	2894101	2894108
M8 x 1.25	D5		2891400	2891401	2891408
	D11		–	2894501	2894508
M8 x 1.0	D5		2891300	2891301	2891308
	D11		–	2894301	2894308
M10 x 1.5	D6		2891800	2891801	2891808
	D11		–	2895101	2895108
M10 x 1.25	D5		2891700	2891701	2891708
	D11		–	2894901	2894908
M10 x 1.0	D5		2891600	2891601	2891608
	D11		–	2894701	2894708
M12 x 1.75	D6		2892300	2892301	2892308
	D11		–	2895701	2895708
M12 x 1.5	D6		2892200	2892201	2892208
	D11		–	2895501	2895508
M12 x 1.25	D5		2892100	2892101	2892108
	D11		–	2895201	2895208
M14 x 2.0	D7		–	2892601	2892608
M14 x 1.5	D6		–	2892501	2892508
M16 x 2.0	D7		–	2892901	2892908
M16 x 1.5	D6		–	2892801	2892808
M18 x 2.5	D7		–	2893201	2893208
M18 x 1.5	D6		–	2893001	2893008
M20 x 2.5	D8		–	2893601	2893608
M20 x 1.5	D6		–	2893401	2893408
M22 x 2.5	D8		–	2894001	–
M22 X 1.5	D6		–	2893801	–
M24 X 3.0	D8	4	–	2894401	–
M24 x 1.5	D6		–	2894201	–
M27 x 3.0	D8		–	2894801	–
M27 x 1.5	D6		–	2894601	–
M30 x 3.5	D9		–	2895301	–
M30 x 1.5	D6		–	2895001	–

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

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	Med.	High														
	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
289	○	◎	◎	◎	○	○	○	○	○					○			
SFM	50-90	40-80	40-60	40-80	20-60	40-80	40-80	30-50	30-80					20-60			

○ good ◎ best

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List 287

HY-PRO HSS TiN S/O BR

Plug (4.5P-5.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)		
			Bright	S/O	TiN
0 - 80 UNC	2B	2	2884100	2884101	2884105
1 - 64 UNC	2B		2884200	2884201	2884205
1 - 72 UNF	2B		2884300	2884301	2884305
2 - 56 UNC	2B		2884400	2884401	2884405
3 - 48 UNC	2B		2884500	2884501	2884505
3 - 56 UNF	2B		2884600	2884601	2884605
4 - 40 UNC	2B		2885000	2885001	2885005
	3B		2880000	2880001	2880005
4 - 48 UNF	2B		2886400	2886401	2886405
5 - 40 UNC	2B		2886500	2886501	2886505
6 - 32 UNC	2B		2885200	2885201	2885205
	3B		2880200	2880201	2880205
6 - 40 UNF	2B		2886600	2886601	2886605
8 - 32 UNC	2B		2885300	2885301	2885305
	3B		2880300	2880301	2880305
8 - 36 UNF	2B		2886700	2886701	2886705
10 - 24 UNC	2B		2885400	2885401	2885405
	3B		2880400	2880401	2880405
10 - 32 UNF	2B		2885500	2885501	2885505
	3B		2880500	2880501	2880505

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

HY7

Tap Size	Class of Fit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)		
			Bright	S/O	TiN
12 - 24 UNC	2B	2	2886800	2886801	2886805
1/4 - 20 UNC	2B		2885600	2885601	2885605
	3B		2880600	2880601	2880605
1/4 - 28 UNC	2B	3	2885700	2885701	2885705
	3B		2880700	2880701	2880705
5/16 - 18 UNC	2B	2	2885800	2885801	2885805
	3B		2880800	2880801	2880805
5/16 - 24 UNF	2B	3	2885900	2885901	2885905
	3B		2880900	2880901	2880905
3/8 - 16 UNC	2B		2886000	2886001	2886005
	3B		2881000	2881001	2881005
3/8 - 24 UNF	2B		2886100	2886101	2886105
	3B		2881100	2881101	2881105
7/16 - 14 UNC	2B		2886900	2886901	2886905
7/16 - 20 UNF	2B		2887000	2887001	2887005
1/2 - 13 UNC	2B		2886200	2886201	2886205
	3B		2881200	2881201	2881205
1/2 - 20 UNF	2B		2886300	2886301	2886305
	3B		2881300	2881301	2881305

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

HY7

List 288

HY-PRO HSS TiN S/O BR

Plug (4.5P-5.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)		
			Bright	S/O	TiN
M3 x 0.5	6H	2	2888000	2888001	2888005
M4 x 0.7			2888100	2888101	2888105
M5 x 0.8			2888200	2888201	2888205

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

HY7

Tap Size	Class of Fit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)		
			Bright	S/O	TiN
M6 x 1.0	6H	3	2888300	2888301	2888305
M8 x 1.25			2888400	2888401	2888405
M10 x 1.5			2888500	2888501	2888505
M12 x 1.75			2888600	2888601	2888605

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

HY7

Work Material

List 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
287	◎	◎								○	○						
288	◎	◎								○	○						
SFM	50-90	40-80								30-80	30-80						

○ good ◎ best

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List 105

HSS | TiCN | TiN | S/O | BR

No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number							
			Plug (4.5P - 5.5P)				Plug (3.5P - 4.5P)			
			Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN
0 - 80 UNF	H1	2	1200000	1200001	–	1200008	–	–	–	–
	H2		1205000	1205001	1205005	1205008	–	–	–	–
	H3		1210000	1210001	–	1210008	–	–	–	–
1 - 64 UNC	H1		1200200	1200201	–	1200208	–	–	–	–
	H2		1205200	1205201	–	1205208	–	–	–	–
1 - 72 UNF	H1		1200400	1200401	–	1200408	–	–	–	–
	H2		1205400	1205401	1205405	1205408	–	–	–	–
2 - 56 UNC	H1		1200600	–	1200605	1200608	–	–	–	–
	H2		1205600	1205601	1205605	1205608	–	–	–	–
	H3		1210600	1210601	–	1210608	–	–	–	–
	H5		1215600	1215601	–	1215608	–	–	–	–
2 - 64 UNF	H1		1200800	–	–	1200808	–	–	–	–
	H2		1205800	1205801	1205805	1205808	–	–	–	–
3 - 48 UNC	H1		1201000	–	–	1201008	–	–	–	–
	H2		1206000	1206001	1206005	1206008	–	–	–	–
	H3		1211000	1211001	–	1211008	–	–	–	–
	H5		2002100	–	–	2002108	–	–	–	–
3 - 56 UNF	H1		1201200	–	–	1201208	–	–	–	–
	H2		1206200	1206201	1206205	1206208	–	–	–	–
4 - 36 UNS	H2		1206800	1206801	–	–	–	–	–	–
4 - 40 UNC	H1		1201400		1201405	1201408	–	–	–	–
	H2		1206400	1206401	1206405	1206408	–	–	–	–
	H3		1211400	1211401	–	1211408	–	–	–	–
	H5		1216400	1216401	–	1216408	–	–	–	–
4 - 48 UNF	H1		1201600	–	–	–	–	–	–	–
	H2		1206600	1206601	1206605	1206608	–	–	–	–
5 - 40 UNC	H1		1202000	–	–	1202008	–	–	–	–
	H2		1207000	1207001	1207005	1207008	–	–	–	–
	H5		2003300	–	–	2003308	–	–	–	–
5 - 44 UNF	H2		1207200	1207201	1207205	1207208	–	–	–	–
6 - 32 UNC	H1		1202400	–	1202405	1202408	–	–	–	–
	H2		1207400	1207401	1207405	1207408	–	–	–	–
	H3		1212400	1212401	1212405	1212408	–	–	–	–
		3	–	–	–	1212608	–	–	–	–
	H4	2	2003900	–	2003905	2003908	–	–	–	–
	H5		1217400	1217401	–	1217408	–	–	–	–
6 - 40 UNF	H1		1202600	–	–	–	–	–	–	–
	H2		1207600	1207601	1207605	1207608	–	–	–	–
	H5		2004200	–	–	2004208	–	–	–	–
8 - 32 UNC	H1	2	–	–	–	–	1202800	–	1202805	1202808
	H2		–	–	–	–	1207800	1207801	1207805	1207808
	H3		–	–	–	–	1212800	1212801	1212805	1212808
	H4		–	–	–	–	2005000	–	2005005	2005008
		3	–	–	–	–	–	1213201	–	–
	H5	2	–	–	–	–	1217800	1217801	–	1217808
8 - 36 UNF	H1		–	–	–	–	1203200	–	–	1203208
	H2		–	–	–	–	1208200	1208201	1208205	1208208
10 - 24 UNC	H1	2	–	–	–	–	1203400	–	1203405	1203408
		3	–	–	–	–	–	1213601	–	–
	H2	2	–	–	–	–	1208400	1208401	1208405	1208408
	H3		–	–	–	–	1213400	1213401	1213405	1213408
	H4		–	–	–	–	2006500	–	–	2006508
	H5		–	–	–	–	2006600	–	2006605	2006608

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

STT

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List 105 (Continued)

HSS | TiCN | TiN | S/O | BR

No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)

Tap Size	Thread Limit	No. of Flutes	EDP Number							
			Plug (4.5P - 5.5P)				Plug (3.5P - 4.5P)			
			Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN
10 - 32 UNF	H1	2	–	–	–	–	1203800	–	1203805	1203808
		3	–	–	–	–	–	1214001	–	–
	H2	2	–	–	–	–	1208800	1208801	–	1208808
	H3		–	–	–	–	1213800	1213801	1213805	1213808
	H4		–	–	–	–	2006000	–	–	2006008
	H5		–	–	–	–	1218800	1218801	–	1218808
12 - 24 UNC	H1		–	–	–	–	1204200	–	–	–
	H3		–	–	–	–	1214200	1214201	1214205	1214208
12 - 28 UNF	H3		–	–	–	–	1214400	1214401	1214405	1214408
1/4 - 20 UNC	H1		–	–	–	–	1220000	1220001	1220005	1220008
	H2		–	–	–	–	1225000	1225001	1225005	1225008
	H3	2	–	–	–	–	1230000	1230001	1230005	1230008
		3	–	–	–	–	1230200	1230201	1230205	1230208
	H5	2	–	–	–	–	1240000	1240001	1240005	1240008
		3	–	–	–	–	1240200	–	–	1240208
1/4 - 28 UNF	H1	2	–	–	–	–	1220400	–	–	1220408
	H2		–	–	–	–	1225400	–	1225405	1225408
		3	–	–	–	–	1225600	–	1225605	1225608
	H3	2	–	–	–	–	1230400	1230401	1230405	1230408
	H4		–	–	–	–	1235400	–	–	1235408
		3	–	–	–	–	1235600	–	–	1235608
5/16 - 18 UNC	H1	2	–	–	–	–	1220800	–	1220805	1220808
	H2		–	–	–	–	1225800	–	1225805	1225808
	H3		–	–	–	–	1230800	1230801	1230805	1230808
		3	–	–	–	–	1231000	1231001	1231005	1231008
	H5	2	–	–	–	–	1240800	–	1240805	1240808
		3	–	–	–	–	1241000	1241001	1241005	1241008
5/16 - 24 UNF	H1	2	–	–	–	–	1221200	–	–	1221208
	H2		–	–	–	–	1226200	–	1226205	1226208
		3	–	–	–	–	1226400	–	1226405	1226408
	H3	2	–	–	–	–	1231200	1231201	1231205	1231208
	H4		–	–	–	–	1236200	–	–	1236208
		3	–	–	–	–	1236400	–	–	1236408
3/8 - 16 UNC	H1		–	–	–	–	1221600	–	–	1221608
	H2		–	–	–	–	1226600	1226601	1226605	1226608
	H3		–	–	–	–	1231600	1231601	1231605	1231608
	H5		–	–	–	–	1241600	1241601	1241605	1241608
3/8 - 24 UNF	H1	3	–	–	–	–	1221800	–	–	1221808
	H2		–	–	–	–	1226800	–	1226805	1226808
	H3		–	–	–	–	1231800	1231801	1231805	1231808
	H4		–	–	–	–	1236800	–	1236805	1236808
7/16 - 14 UNC	H2		–	–	–	–	1227000	–	–	1227008
	H3		–	–	–	–	1232000	1232001	1232005	1232008
	H5		–	–	–	–	1242000	–	1242005	1242008

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

STT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
105	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▢ best

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List 105 (Continued)

HSS | TiCN | TiN | S/O | BR

No. 0 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number							
			Plug (4.5P - 5.5P)				Plug (3.5P - 4.5P)			
			Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN
7/16 - 20 UNF	H2	3	–	–	–	–	1227200	–	–	1227208
	H3		–	–	–	–	1232200	1232201	1232205	1232208
	H5		–	–	–	–	1242200	–	1242205	1242208
1/2 - 13 UNC	H1		–	–	–	–	1222400	–	–	1222408
	H2		–	–	–	–	1227400	–	1227405	1227408
	H3		–	–	–	–	1232400	1232401	1232405	1232408
	H5		–	–	–	–	1242400	–	1242405	1242408
1/2 - 20 UNF	H1		–	–	–	–	1222600	–	–	1222608
	H2		–	–	–	–	1227600	–	–	1227608
	H3		–	–	–	–	1232600	1232601	1232605	1232608
	H5		–	–	–	–	1242600	–	–	1242608
5/8 - 11 UNC	H3		–	–	–	–	1233200	1233201	1233205	1233208
	H5		–	–	–	–	1243200	–	1243205	1243208
5/8 - 18 UNF	H3		–	–	–	–	1233400	1233401	1233405	1233408
	H5		–	–	–	–	2013000	–	2013005	2013008
3/4 - 10 UNC	H3		–	–	–	–	1233600	1233601	1233605	1233608
	H5		–	–	–	–	1243600	–	1243605	1243608
3/4 - 16 UNF	H3		–	–	–	–	1233800	1233801	–	1233808
	H5		–	–	–	–	2013400	–	2013405	2013408

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

STT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
105	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 105B

HSS | S/O | BR

Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P)	
			Bright	S/O
0 - 80 UNF	H1	2	1200100	–
	H2		3000100	–
1 - 64 UNC	H2		1205300	–
1 - 72 UNC	H1		1200500	–
	H2		1205500	–
2 - 56 UNC	H1		1200700	–
	H2		1205700	1205701
3 - 48 UNC	H2		1206100	1206101
3 - 56 UNF	H2		1206300	–
4 - 40 UNC	H2		1206500	1206501
4 - 48 UNF	H2		1206700	–
5 - 40 UNC	H2		1207100	1207101
5 - 44 UNF	H2		1207300	–
6 - 32 UNC	H2		1207500	–
	H3		1212500	1212501
	H7		3003100	–
6 - 40 UNF	H2		1207700	1207701

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P)	
			Bright	S/O
8 - 32 UNC	H2	2	1207900	–
	H3		1212900	1212901
	H7		1214700	–
8 - 36 UNF	H2		1208300	–
10 - 24 UNC	H2		1208500	–
	H3		1213500	1213501
10 - 32 UNF	H1		1200900	–
	H2		1208900	–
	H3		1213900	1213901
12 - 24 UNC	H3		1214300	1214301
12 - 28 UNF	H3		1214500	1214501
1/4 - 20 UNC	H3		1230100	1230101
1/4 - 28 UNF	H2		1225500	–
	H3		1230500	1230501
5/16 - 18 UNC	H3		1230900	1230901
5/16 - 24 UNF	H3		1231300	1231301
	H4		1236500	–
3/8 - 16 UNC	H3	3	1231700	1231701
7/16 - 14 UNC	H3		1232100	–

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
105B	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 105A

HSS | S/O | BR

Assembly Type Tap, Plug (4P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P)	
			Bright	S/O
4 - 40 UNC	H2	2	1605400	1605401
5 - 40 UNC	H2		1606000	–
6 - 32 UNC	H3		1611400	1611401
8 - 32 UNC	H3		1611800	1611801
10 - 24 UNC	H3		1612200	1612201
10 - 32 UNF	H3		1612400	1612401

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P)	
			Bright	S/O
12 - 24 UNC	H3	2	1612600	1612601
1/4 - 20 UNC	H3		1630000	1630001
5/16 - 18 UNC	H3		1630400	–
3/8 - 16 UNC	H3	3	1630800	–
1/2 - 13 UNC	H3		1631600	–

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

STT

List 105+ (H7)

HSS | TiN | BR

No. 4 ~ No. 6 (4.5P-5.5P), >No. 8 (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)		Plug (3.5P - 4.5P)	
			Bright	TiN	Bright	TiN
4 - 40 UNC	H7	2	2003100	–	–	–
6 - 32 UNC	H7		1720800	1720805	–	–
8 - 32 UNC	H7		–	–	1721200	1721205
10 - 24 UNC	H7		–	–	1721600	–
10 - 32 UNF	H7		–	–	1721800	1721805

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
105A	▢	▢	▢						▢	▢	▢						
105+	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 105H

HSS | TiCN | S/O | BR

+.005" Oversize, Plug (4P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P)		
			Bright	S/O	TiCN
6 - 32 UNC	+0.005	2	1592000	1592001	1592008
8 - 32 UNC			1592800	1592801	1592808
10 - 24 UNC			1593400	1593401	1593408
10 - 32 UNF			1593600	1593601	1593608
1/4 - 20 UNC			1590000	1590001	1590008
1/4 - 28 UNF			1590200	1590201	1590208
5/16 - 18 UNC			1590800	1590801	1590808
5/16 - 24 UNF			1591200	–	1591208

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4P - 4.5P)		
			Bright	S/O	TiCN
3/8 - 16 UNC	+0.005	3	1591600	1591601	1591608
3/8 - 24 UNF			1591800	1591801	1591808
7/16 - 14 UNC			1594000	1594001	1594008
7/16 - 20 UNF			1594200	1594201	1594208
1/2 - 13 UNC			1592400	1592401	1592408
1/2 - 20 UNF			1592600	1592601	1592608
5/8 - 11 UNC			1593200	1593201	1593208
3/4 - 10 UNF			1593800	1593801	1593808

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

STT

List 142H

HSS | BR

+.005" Oversize, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5 - 4.5P)
			Bright
M4 x 0.7	+0.005"	2	1101200100
M5 x 0.8			1101200300
M6 x 1.0			1101200500

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5 - 4.5P)
			Bright
M8 x 1.25	+0.005"	3	1101200700
M10 x 1.5			1101200900
M12 x 1.75			1101201100

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

STT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
105H	▢	▢	▢						▢	▢	▢						
142H	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 142

HSS | S/O | BR | TiCN | TiN

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright	S/O	TiN	TiCN
M1.6 x 0.35	D3	2	1981500	–	–	–
M2 x 0.4	D3		1982000	1982001	–	–
M2.5 x 0.45	D3		1982100	1982101	–	–
M3 x 0.5	D3		1980100	1980101	1980105	1980108
M3.5 x 0.6	D4		1982200	1982201	–	–
M4 x 0.7	D4		1980400	1980401	1980405	1980408
M4.5 x 0.75	D4		1982300	1982301	–	–
M5 x 0.8	D4		1980700	1980701	1980705	–
M6 x 1.0	D5		1981000	1981001	1981005	1981008
M7 x 1.0	D5		1982400	1982401	–	–
M8 x 1.25	D5		1981300	1981301	1981305	1981308
			1981400	1981401	–	–
M8 x 1.0	D5		1982500	1982501	–	–
M10 x 1.5	D6		1981600	1981601	1981605	1981608
M10 x 1.25	D5		1982700	1982701	–	–
M10 x 1.0	D5		1982600	1982601	–	–
M12 x 1.75	D6		1981900	1981901	1981905	1981908
M12 x 1.5	D6		1982900	–	–	–
M12 x 1.25	D5	3	1982800	1982801	–	–
M14 x 2.0	D7		1983100	1983101	–	–
M14 x 1.5	D6		1983800	–	–	–
M14 x 1.25	D5		1983000	1983001	–	–
M16 x 2.0	D7		1983300	–	–	–
M16 x 1.5	D6		1983200	1983201	–	–
M18 x 2.5	D7		1983500	–	–	–
M18 x 1.5	D6		1983400	1983401	–	-
M20 x 2.5	D7	3	1983700	–	–	–
		4	1983900	–	–	–
M20 x 1.5	D6	3	1983600	–	–	–

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
142	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 122

HSSE | S/O | BR

JIS, Plug (4.5P-5.5P)



Tap Size	Class of Fit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)	
			Bright	S/O
M3 x 0.5	JIS 2	3	15368	16710
M4 x 0.7			15386	16714
M5 x 0.8			15401	–
M6 x 1.0			15413	16722
M8 x 1.25			15431	16728
M10 x 1.5			15456	16734
M10 x 1.25			15460	–
M12 x 1.75			15480	–
M12 x 1.5			15483	–
M14 x 2.0			15509	–
M14 x 1.5			15512	–
M16 x 2.0			15557	–
M16 x 1.5			15560	–
M18 x 2.5			15593	–
M18 x 1.5			15601	–
M20 x 2.5			15629	–
M20 x 1.5			15637	–
M22 x 2.5			15645	–
M24 x 3.0			15673	–

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
122	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 917

HSS | S/O | BR

Long Shank*, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) Bright	EDP Number Plug (3.5P - 4.5P) S/O
4 - 40 UNC	H2	2	4″	1294000	–
6 - 32 UNC	H3	2	4"	1294100	–
		2	6"	1294200	1294201
8 - 32 UNC	H3	2	4"	1294300	1294301
		2	6"	1294400	1294401
10 - 24 UNC	H3	2	4"	1294500	1294501
		2	6"	1294600	1294601
10 - 32 UNF	H3	2	4"	1294700	1294701
		2	6"	1294800	1294801
1/4 - 20 UNC	H3	2	4"	1294900	1294901
		2	6"	1295000	1295001
1/4 - 28 UNF	H3	2	4″	–	1293901
		2	6"	1295100	1295101
5/16 - 18 UNC	H3	2	4"	2103000	–
		2	6"	1295200	–
		3	4"	–	1293501
		3	6"	–	1293701
5/16 - 24 UNF	H3	2	4"	–	1295701
		2	6"	2103600	–
		3	6"	–	1293301
3/8 - 16 UNC	H3	3	4"	2103800	2103801
		3	6"	1295300	1295301
3/8 - 24 UNF	H3	3	4"	–	1295801
		3	6"	2104400	2104401
7/16 - 14 UNC	H3	3	6"	1295400	1295401
7/16 - 20 UNF	H3	3	6"	2105200	–
1/2 - 13 UNC	H3	3	4"	–	1299401
		3	6"	1295500	1295501
1/2 - 20 UNF	H3	3	6"	2106000	–
5/8 - 11 UNC	H3	3	6"	1295600	–

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request.
Specify treatment at time of order.
*Shank diameter is standard ANSI

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														
	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
917	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 11118

HSS S/0

Extended Length, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
M4 x 0.7	D4	2	4"	1111800201
			6"	1111800301
M5 x 0.8	D4		4"	1111800401
			6"	1111800501
M6 x 1.0	D5		4"	1111800601
			6"	1111800701

Packed: 1 pc.
Available Steam Oxide coating only.

STT

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
M8 x 1.25	D5	3	4"	1111800801
			6"	1111800901
M10 x 1.5	D6		4"	1111801001
			6"	1111801101
M12 x 1.75	D6		4"	1111801201
			6"	1111801301

Packed: 1 pc.
Available Steam Oxide coating only.

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
11118	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List S111

HSS BR

Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
00 - 90 UNS	H1	2	1050000
	H2		1320000

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
00 - 96 UNS	H1	2	1080000
	H2		2056000

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

STT

Specifications & Dimensions

Tap Size	Basic O.D.	Basic P.D.	Overall Length	Thread Length	Square Length	Shank Diameter	Square Size
00-90	0.047	0.0398	1-9/16	1/4	3/16	0.141	0.110
00-96	0.047	0.0402	1-9/16	1/4	3/16	0.141	0.110
000-120	0.034	0.0286	1-1/2	3/16	3/16	0.141	0.110

Suggested Hole Size Limits for Different Lengths of Engagement

Tap Size	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	0.0373	0.0385	0.0380	0.0392	0.0388	0.0400
00-96	0.0379	0.0393	0.0388	0.0406	0.0397	0.0415
000-120	0.0260	0.0270	0.0270	0.0280	0.0275	0.0285

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
S111	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 10051

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
6 - 32 UNC	H3	4	1005110508
8 - 32 UNC	H3		1005110808
10 - 24 UNC	H3		1005111008
10 - 32 UNF	H3		1005111208
1/4 - 20 UNC	H5		1005111408
1/4 - 28 UNF	H4		1005111608

Packed: 1 pc.
Available V coating only.

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
5/16 - 18 UNC	H5	5	1005111808
5/16 - 24 UNF	H4		1005112008
3/8 - 16 UNC	H5		1005112208
3/8 - 24 UNF	H4		1005112408
1/2 - 13 UNC	H5		1005113008
1/2 - 20 UNF	H5		1005113208

Packed: 1 pc.
Available V coating only.

List 11051

Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
M3 x 0.5	D3	4	1105100108
M4 x 0.7	D4		1105100208
M5 x 0.8	D4		1105100308
M6 x 1.0	D5		1105100408
M8 x 1.25	D5	5	1105100508
M8 x 1.0	D5		1105100608

Packed: 1 pc.
Available V coating only.

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) V
M10 x 1.5	D6	5	1105100708
M10 x 1.25	D5		1105100808
M10 x 1.0	D5		1105100908
M12 x 1.75	D6		1105101008
M12 x 1.5	D6		1105101108
M12 x 1.25	D6		1105101208

Packed: 1 pc.
Available V coating only.

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
10051				▢												▣	
11051				▢												▣	
SFM				15-20												8-15	

▢ good ▣ best

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List 305

Plug (3.5P-4.5P)

EXOTAP HSS-CO BR



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
4 - 40 UNC	H2	3	1745000
6 - 32 UNC	H3		1745100
8 - 32 UNC	H3		1745200
10 - 24 UNC	H3		1745300
10 - 32 UNF	H3		1745400
1/4 - 20 UNC	H3		1745500
	H3	4	1734000
1/4 - 28 UNF	H3	3	1745600
	H3	4	1739000
5/16 - 18 UNC	H3		1734100
5/16 - 24 UNF	H3		1739100

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

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
3/8 - 16 UNC	H3	4	1734200
3/8 - 24 UNF	H3		1739200
7/16 - 14 UNC	H3		1739600
7/16 - 20 UNF	H3		1739700
1/2 - 13 UNC	H3		1734300
1/2 - 20 UNF	H3		1739300
5/8 - 11 UNC	H3		1734400
5/8 - 18 UNF	H3		1739400
3/4 - 10 UNC	H3		1734500
3/4 - 16 UNF	H3		1739500

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

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
305				○	◎									◎	○		
SFM				20-40	15-20									15-35	8-15		

○ good ◎ best

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List 10052

DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Modified Bottom (1.5P - 2P) V
1/4" - 20 UNC	H3	4	80	1005200108
	H5			1005200208
1/4 - 28 UNF	H3		80	1005200308
5/16 - 18 UNC	H3		90	1005200408
	H5			1005200508
5/16 - 24 UNF	H3		90	1005200608
3/8 - 16 UNC	H3		100	1005200708
	H5			1005200808
3/8 - 24 UNF	H3		100	1005200908
7/16 - 14 UNC	H3		100	1005201008
	H5			1005201108
7/16 - 20 UNF	H3		100	1005201208
	H5			1005201308
1/2 - 13 UNC	H3		110	1005201408
	H5			1005201508
1/2 - 20 UNF	H3		100	1005201608
	H5			1005201708
9/16 - 12 UNC	H3	5	110	1005201808
	H5			1005201908
9/16 - 18 UNF	H3		100	1005202008
	H5			1005202108
5/8 - 11 UNC	H3		110	1005202208
	H5			1005202308
5/8 - 18 UNF	H3		100	1005202408
	H5			1005202508
3/4 - 10 UNC	H3		125	1005202608
	H5			1005202708
3/4 - 16 UNF	H3		110	1005202808
	H5			1005202908
7/8 - 9 UNC	H3		140	1005203008
	H5			1005203108
7/8 - 14 UNF	H3		125	1005203208
	H5			1005203308
1 - 8 UNC	H3		160	1005203408
	H5			1005203508

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
10052									◎		◎						
SFM									25-75		40-65						

○ good ◎ best

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List 11052

DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) V
M6 x 1.0	D5	3	80	1105200108
M8 x 1.25	D5	4	90	1105200208
M10 x 1.5	D6		100	1105200508
M10 x 1.25	D6		100	1105200408
M10 x 1.0	D5		90	1105200308
M12 x 1.75	D6		110	1105200808
M12 x 1.5	D6		100	1105200708
M12 x 1.25	D6		100	1105200608
M14 x 2.0	D7	5	110	1105201008
M14 x 1.5	D7		100	1105200908
M16 x 2.0	D7		110	1105201208
M16 x 1.5	D6		110	1105201108
M18 x 2.5	D7		125	1105201508
M18 x 2.0	D7		125	1105201408
M18 x 1.5	D6		110	1105201308
M20 x 2.5	D7		140	1105201808
M20 x 2.0	D7		140	1105201708
M20 x 1.5	D6		125	1105201608
M22 x 2.5	D8		140	1105202108
M22 x 2.0	D8		140	1105202008
M22 x 1.5	D6		125	1105201908
M24 x 3.0	D8		160	1105202408
M24 x 2.0	D8		140	1105202308
M24 x 1.5	D6		140	1105202208

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
11052									◎		◎						
SFM									25-75		40-65						

○ good ◎ best

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List 10053

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) V
1/4 - 20 UNC	H3	4	80	1005300108
	H5			1005300208
1/4 - 28 UNF	H3		80	1005300308
5/16 - 18 UNC	H3		90	1005300408
	H5			1005300508
5/16 - 24 UNF	H3		90	1005300608
3/8 - 16 UNC	H3		100	1005300708
	H5			1005300808
3/8 - 24 UNF	H3		100	1005300908
7/16 - 14 UNC	H3		100	1005301008
	H5			1005301108
7/16 - 20 UNF	H3		100	1005301208
	H5			1005301308
1/2 - 13 UNC	H3		110	1005301408
	H5			1005301508
1/2 - 20 UNF	H3		100	1005301608
	H5			1005301708
9/16 - 12 UNC	H3	5	110	1005301808
	H5			1005301908
9/16 - 18 UNF	H3		100	1005302008
	H5			1005302108
5/8 - 11 UNC	H3		110	1005302208
	H5			1005302308
5/8 - 18 UNF	H3		100	1005302408
	H5			1005302508
3/4 - 10 UNC	H3		125	1005302608
	H5			1005302708
3/4 - 16 UNF	H3		110	1005302808
	H5			1005302908
7/8 - 9 UNC	H3		140	1005303008
	H5			1005303108
7/8 - 14 UNF	H3		125	1005303208
	H5			1005303308
1 - 8 UNC	H3		160	1005303408
	H5			1005303508

Packed: 1 pc.
Available V coating only.

EXT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
10053									◎		◎						
SFM									40-100		50-110						

○ good ◎ best

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List 11053

Coolant-Through, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) V
M6 x 1.0	D5	3	80	1105300108
M8 x 1.25	D5	4	90	1105300208
M10 x 1.5	D6		100	1105300408
M10 x 1.25	D6		100	1105300308
M12 x 1.75	D6		110	1105300608
M12 x 1.5	D6		100	1105300508
M12 x 1.25	D6		100	1105302508
M14 x 2.0	D7	5	110	1105300808
M14 x 1.5	D7		100	1105300708
M16 x 2.0	D7		110	1105301208
M16 x 1.5	D6		110	1105301108
M18 x 2.5	D7		125	1105301508
M18 x 2.0	D7		125	1105301408
M18 x 1.5	D6		110	1105301308
M20 x 2.5	D7		140	1105301808
M20 x 2.0	D7		140	1105301708
M20 x 1.5	D6		125	1105301608
M22 x 2.5	D8		140	1105302108
M22 x 2.0	D8		140	1105302008
M22 x 1.5	D6		125	1105301908
M24 x 3.0	D8		160	1105302408
M24 x 2.0	D8		140	1105302308
M24 x 1.5	D6		140	1105302208

Packed: 1 pc.
Available V coating only.

EXT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
11053									◎		◎						
SFM									40-100		50-110						

○ good ◎ best

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List 11054

DIN Shank, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Shank Diameter	EDP Number Bottom (1.5P - 2P) V
M6 x 1.0	D5	3	80	6	1105400108
M8 x 1.25	D5	4	90	8	1105400208
M10 x 1.5	D6		100	10	1105400308

Packed: 1 pc.
Available V coating only.

EXT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened 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													
11054									◎		◎						
SFM									25-75		40-65						

○ good ◎ best

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List 11055

Coolant-Through, DIN Shank, DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	Shank Diameter	EDP Number Bottom (1.5P - 2P) V
M6 x 1.0	D5	3	80	6	1105500108
M8 x 1.25	D5	4	90	8	1105500208
M10 x 1.5	D6		100	10	1105500308
M12 x 1.75	D6		110	9	1105500408

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
11055									◎		◎						
SFM									40-100		50-110						

○ good ◎ best

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List 10056

Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
1/4 - 20 UNC	H3	4	1005600108
	H5		1005600208
1/4 - 28 UNF	H3		1005600308
5/16 - 18 UNC	H3		1005600408
	H5		1005600508
5/16 - 24 UNF	H3		1005600608
3/8 - 16 UNC	H3		1005600708
	H5		1005600808
3/8 - 24 UNF	H3		1005600908
7/16 - 14 UNC	H3		1005601008
	H5		1005601108
7/16 - 20 UNF	H3		1005601208
	H5		1005601308
1/2 - 13 UNC	H3		1005601408
	H5		1005601508

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
1/2 - 20 UNF	H3	4	1005601608
	H5		1005601708
9/16 - 12 UNC	H3	5	1005601808
	H5		1005601908
9/16 - 18 UNF	H3		1005602008
	H5		1005602108
5/8 - 11 UNC	H3		1005602208
	H5		1005602308
5/8 - 18 UNF	H3		1005602408
	H5		1005602508
3/4 - 10 UNC	H3		1005602608
	H5		1005602708
3/4 - 16 UNF	H3		1005602808
	H5		1005602908

Packed: 1 pc.
Available V coating only.

EXT

List 11056

Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
M6 x 1.0	D5	3	1105600108
M8 x 1.25	D5	4	1105600208
M10 x 1.5	D6		1105600508
M10 x 1.25	D6		1105600408
M10 x 1.0	D5		1105600308

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
M12 x 1.75	D6	4	1105600808
M12 x 1.5	D6		1105600708
M12 x 1.25	D6		1105600608
M14 x 2.0	D7	5	1105601008
M14 x 1.5	D7		1105600908

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														
	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
10056									◎		◎						
11056									◎		◎						
SFM									25-75		40-65						

○ good ◎ best

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List 10057

Coolant-Through, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
1/4 x 20 UNC	H3	4	1005700108
	H5		1005700208
1/4 x 28 UNF	H3		1005700308
5/16 x 18 UNC	H3		1005700408
	H5		1005700508
5/16 x 24 UNF	H3		1005700608
3/8 x 16 UNC	H3		1005700708
	H5		1005700808
3/8 x 24 UNF	H3		1005700908

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
7/16 x 14 UNC	H3	4	1005701008
	H5		1005701108
7/16 x 20 UNF	H3		1005701208
	H5		1005701308
1/2 x 13 UNC	H3		1005701408
	H5		1005701508
1/2 x 20 UNF	H3		1005701608
	H5		1005701708

Packed: 1 pc.
Available V coating only.

EXT

List 11057

Coolant-Through, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
M6 x 1.0	D5	3	1105700108
M8 x 1.25	D5	4	1105700208
M10 x 1.5	D6		1105700408
M10 x 1.25	D6		1105700308

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) V
M12 x 1.75	D6	4	1105700608
M12 x 1.5	D6		1105700508
M14 x 2.0	D7	5	1105700808
M14 x 1.5	D7		1105700708

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														
	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
10057									▢		▢						
11057									▢		▢						
SFM									40-100		50-110						

▢ good ▢ best

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List 240

HSSE | N | BR

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number			
			Bottom (1.5P - 2P)		Plug (3.5P - 4.5P)	
			Bright	Nitride	Bright	Nitride
2 - 56 UNC	H2	3	2492900	–	2492800	–
4 - 40 UNC	H2		2493100	–	2493000	–
5 - 40 UNC	H3		–	2401203	–	2401103
6 - 32 UNC	H3		–	2401603	–	2401503
8 - 32 UNC	H3		–	2493203	–	2401903
10 - 24 UNC	H3		–	2402403	–	2402303
10 - 32 UNF	H3		–	2402803	–	2402703
1/4 - 20 UNC	H3		–	2403203	–	2493303
	H5		–	2403603	–	2493403
1/4 - 28 UNF	H3		–	2493603	–	2493503
5/16 - 18 UNC	H3	4	–	2404403	–	2404303
	H5		–	2493803	–	2493703
5/16 - 24 UNF	H3		–	2494003	–	2493903
3/8 - 16 UNC	H3		–	2494203	–	2494103
	H5		–	2494403	–	2494303
3/8 - 24 UNF	H3		–	2406403	–	2406303
7/16 - 14 UNC	H3		–	2494603	–	2494503
7/16 - 20 UNF	H3		–	2494803	–	2494703
1/2 - 13 UNC	H3		–	2407603	–	2407503
1/2 - 20 UNF	H3		–	2408003	–	2407903

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

HYT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
240									◎	○	◎						
SFM									25-75	40-80	40-65						

○ good ◎ best

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List 241

HY-PRO HSSE N

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Nitride	Nitride
M3 x 0.5	D3	3	2410203	2494903
M4 x 0.7	D4		2495003	2410303
M5 x 0.8	D5		2410603	2495103
M6 x 1.0	D5		2410803	2495203
M8 x 1.25	D5	4	2411203	2411103
M10 x 1.5	D6		2495403	2411703
M10 x 1.25	D5		2411603	2495303
M12 x 1.75	D6		2495503	2412103

Packed: 1 pc.
Available Nitride treatment only.

HYT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
241									◎	○	◎						
SFM									25-75	40-80	40-65						

○ good ◎ best

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List 101C

HSS | N | S/O

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Nitride-S/O	Nitride-S/O
1/4 - 20 UNC	H3	4	1600207	1600107
	H5		1600407	1600307
1/4 - 28 UNF	H3		1600607	1600507
5/16 - 18 UNC	H3		1600807	1600707
	H5		1601007	1600907
5/16 - 24 UNF	H3		1601207	1601107
3/8 - 16 UNC	H3		1601407	1601307
	H5		1601607	1601507
3/8 - 24 UNF	H3		1601807	1601707
7/16 - 14 UNC	H3		1602007	1601907
	H5		1602207	1602107
7/16 - 20 UNF	H3		1602407	1602307
	H5		1602607	1602507
1/2 - 13 UNC	H3		1602807	1602707
	H5		1603007	1602907

Packed: 1 pc.
Available Nitride/Steam Oxide treatment only.

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Nitride-S/O	Nitride-S/O
1/2 - 20 UNF	H3	4	1603207	1603107
	H5		1603407	1603307
9/16 - 12 UNC	H3		1603607	1603507
9/16 - 18 UNF	H3		1603807	1603707
	H5		1600007	–
5/8 - 11 UNC	H3		1604007	1603907
	H5		1604807	1604707
5/8 - 18 UNF	H3		1604207	1604107
	H5		1605207	–
3/4 - 10 UNC	H3		1604407	1604307
3/4 - 16 UNF	H3		1604607	1604507
	H5		1605007	1604907

Packed: 1 pc.
Available Nitride/Steam Oxide treatment only.

STT

List 141C

HSS | N | S/O

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Nitride-S/O	Nitride-S/O
M6 x 1.0	D5	3	1608207	1608107
M8 x 1.25	D5	4	1608407	1608307

Packed: 1 pc.
Available Nitride/Steam Oxide treatment only.

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Nitride-S/O	Nitride-S/O
M10 x 1.5	D6	4	1608607	1608507
M12 x 1.75	D6		1608807	1608707

Packed: 1 pc.
Available Nitride/Steam Oxide treatment only.

STT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
101C									◎		◎						
141C									◎		◎						
SFM									25-75		40-65						

○ good ◎ best

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List 101

HSS | TiCN | TiN | S/O | BR

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number									
			Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)				Taper (5P and up)		
			Bright	S/O	TiCN	Bright	S/O	TiN	TiCN	Bright	S/O	TiCN
1/4 - 20 UNC	H1	4	1100200	–	1100208	1100100	–	–	1100108	1100000	–	1100008
	H2		1110200	–	1110208	1110100	–	–	1110108	1110000	–	1110008
	H3		1120200	1120201	1120208	1120100	1120101	1120105	1120108	1120000	1120001	1120008
	H5		1140200	–	1140208	1140100	–	–	1140108	–	–	–
1/4 - 28 UNF	H1		1100500	–	–	1100400	–	–	–	–	–	–
	H2		1110500	–	1110508	1110400	–	–	–	–	–	–
	H3		1120500	1120501	1120508	1120400	1120401	1120405	1120408	1120300	–	1120308
	H4		1130500	–	–	1130400	–	–	–	–	–	–
5/16 - 18 UNC	H1		1100800	–	–	1100700	–	–	–	–	–	–
	H2		1110800	–	–	1110700	–	–	1110708	1008800	–	–
	H3		1120800	1120801	1120808	1120700	1120701	1120705	1120708	1120600	1120601	1120608
	H5		1140800	–	1140808	1140700	–	–	1140708	–	–	–
5/16 - 24 UNF	H1		1101100	–	–	1101000	–	–	–	–	–	–
	H2		1111100	–	1111108	1111000	–	–	–	–	–	–
	H3		1121100	1121101	1121108	1121000	1121001	1121005	1121008	1120900	1120901	1120908
	H4		1131100	–	1131108	1131000	–	–	–	–	–	–
3/8 - 16 UNC	H1		1101400	–	–	1101300	–	–	–	–	–	–
	H2		1111400	–	–	1111300	–	–	–	–	–	–
	H3		1121400	1121401	1121408	1121300	1121301	1121305	1121308	1121200	1121201	1121208
	H5		1141400	–	1141408	1141300	–	–	1141308	–	–	–
3/8 - 24 UNF	H1		1101700	–	1101708	1101600	–	–	–	–	–	–
	H2		1111700	–	–	1111600	–	–	1111608	–	–	–
	H3		1121700	1121701	1121708	1121600	1121601	1121605	1121608	1121500	1121501	1121508
	H4		1131700	–	1131708	1131600	–	–	1131608	–	–	–
7/16 - 14 UNC	H2		–	–	–	1051600	–	–	1051608	–	–	–
	H3		1122000	–	1122008	1121900	–	–	1121908	1121800	–	1121808
	H5		1142000	–	–	1141900	–	–	–	–	–	–
7/16 - 20 UNF	H2		–	–	–	1112200	–	–	–	–	–	–
	H3		1122300	1122301	1122308	1122200	1122201	1122205	1122208	1122100	1122101	1122108
	H5		1142300	–	1142308	1142200	–	–	1142208	–	–	–
1/2 - 13 UNC	H1		1102600	–	–	1102500	–	–	–	–	–	–
	H2		1112600	–	–	1112500	–	–	–	–	–	–
	H3		1122600	1122601	1122608	1122500	1122501	1122505	1122508	1122400	1122401	1122408
	H5		1142600	–	–	1142500	–	–	1142508	–	–	–
1/2 - 20 UNF	H1		1102900	–	–	1102800	–	–	–	–	–	–
	H3		1122900	1122901	1122908	1122800	1122801	1122805	1122808	1122700	1122701	1122708
	H5		1142900	–	1142908	1142800	–	–	–	–	–	–
9/16 - 12 UNC	H3		1123200	1123201	1123208	1123100	1123101	–	1123108	1123000	1123001	1123008
	H5		1061100	–	1061108	1143100	–	–	1143108	–	–	-
9/16 - 18 UNF	H2		–	–	–	1113400	–	–	–	–	–	–
	H3		1123500	1123501	1123508	1123400	1123401	–	1123408	1123300	1123301	1123308
	H5		1143500	–	1143508	1143400	–	–	1143408	–	–	–
5/8 - 11 UNC	H1		–	–	–	1103700	–	–	–	–	–	–
	H2		1063200	–	–	1113700	–	–	–	–	–	–
	H3		1123800	1123801	1123808	1123700	1123701	1123705	1123708	1123600	1123601	1123608
	H5		1143800	–	1143808	1143700	–	–	1143708	–	–	–
5/8 - 18 UNF	H1		–	–	–	1104000	–	–	–	–	–	–
	H2		–	–	–	1114000	–	–	–	–	–	–
	H3		1124100	1124101	1124108	1124000	1124001	1124005	1124008	1123900	1123901	1123908
	H5		1144100	–	1144108	1144000	–	–	1144008	–	–	–
11/16 - 11 UNS	H3		1124400	–	1124408	1124300	–	–	1124308	1124200	–	–

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

STT

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List 101

HSS | TiCN | TiN | S/O | BR

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)

Tap Size	Thread Limit	No. of Flutes	EDP Number									
			Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)				Taper (5P and up)		
			Bright	S/O	TiCN	Bright	S/O	TiN	TiCN	Bright	S/O	TiCN
11/16 - 16 UNS	H3	4	1124700	–	1124708	1124600	–	–	1124608	1124500	–	1124508
3/4 - 10 UNC	H1		1066500	–	–	1008900	–	–	–	–	–	–
	H2		–	–	–	1114900	–	–	–	–	–	–
	H3		1125000	1125001	1125008	1124900	1124901	1124905	1124908	1124800	–	1124808
	H5		1145000	–	1145008	1144900	–	–	1144908	–	–	–
3/4 - 16 UNF	H1		–	–	–	1105200	–	–	1105208	–	–	–
	H2		–	–	–	1115200	–	–	–	–	–	–
	H3		1125300	1125301	1125308	1125200	1125201	1125205	1125208	1125100	–	1125108
	H5		1145300	–	1145308	1145200	–	–	1145208	–	–	–
7/8 - 9 UNC	H1		1069200	–	–	–	–	–	–	–	–	–
	H2		–	–	–	1009000	–	–	–	–	–	–
	H4		1135600	1135601	1135608	1135500	1135501	1135505	1135508	1135400	–	1135408
	H6		1145500	–	1145508	–	–	–	–	–	–	–
7/8 - 14 UNF	H2		–	–	–	1115800	–	–	–	–	–	–
	H4		1135900	1135901	1135908	1135800	1135801	1135805	1135808	1135700	–	1135708
	H6		–	–	–	1145800	–	–	1145808	–	–	–
1 - 8 UNC	H1		1071900	–	–	1071800	–	–	1071808	–	–	–
	H2		–	–	–	1116100	–	–	–	–	–	–
	H4		1136200	1136201	1136208	1136100	1136101	1136105	1136108	1136000	1136001	1136008
	H6		–	–	–	1146100	–	–	1146108	–	–	–
1 - 12 UNF	H4		1136500	–	1136508	1136400	–	–	1136408	1136300	–	1136308
1 - 14 UNS	H2		–	–	–	1116700	–	–	1116708	–	–	–
	H4		1136800	1136801	1136808	1136700	1136701	–	1136708	1136600	1136601	1136608
1, 1/8 - 7 UNC	H4		1137100	1137101	1137108	1137000	1137001	–	1137008	1136900	–	1136908
1,1/8 - 12 UNF	H4		1137400	1137401	1137408	1137300	1137301	–	1137308	1137200	1137201	1137208
1,1/4 - 7 UNC	H4		1137700	1137701	1137708	1137600	–	–	1137608	1137500	–	1137508
1,1/4 - 12 UNF	H4	6	1138000	1138001	1138008	1137900	1137901	–	1137908	1137800	–	1137808
1,3/8 - 6 UNC	H4		1138300	–	1138308	1138200	–	–	1138208	1138100	1138101	–
1,3/8 - 12 UNF	H4		1138600	1138601	1138608	1138500	1138501	–	1138508	1138400	1138401	1138408
1,1/2 - 6 UNC	H4		1138900	1138901	1138908	1138800	1138801	–	1138808	1138700	1138701	1138708
1,1/2 - 12 UNF	H4		1139200	1139201	1139208	1139100	1139101	–	1139108	1139000	1139001	1139008

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

STT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
101	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▢ best

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List 101H

HSS | TiCN | S/O | BR

+.005" Oversize, Plug (3.5P-4.5P), Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number				
			Modified Bottom (2.5P - 3P)		Plug (3.5P - 4.5P)		
			Bright	TiCN	Bright	S/O	TiCN
1/4 - 20 UNC	+ 0.005	4	1009100	1009108	1590100	1590101	1590108
1/4 - 28 UNF			–	–	1590300	1590301	1590308
5/16 - 18 UNC			1009200	1009208	1590700	1590701	1590708
5/16 - 24 UNF			–	–	1591100	–	1591108
3/8 - 16 UNC			1009300	1009308	1591300	–	1591308
3/8 - 24 UNF			–	–	1591500	–	1591508
7/16 - 14 UNC			–	–	1591900	–	–
7/16 - 20 UNF			–	–	1592100	–	–
1/2 - 13 UNC			1009400	1009408	1592500	–	1592508
1/2 - 20 UNF			–	–	1592700	–	1592708
5/8 - 11 UNC			1125700	–	1593700	–	1593708
5/8 - 18 UNF			–	1125708	1125900	1125901	1125908
3/4 - 10 UNC			–	–	1594700	–	1594701

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
101H	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 102

HSS | TiCN | TiN | S/O | BR

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number											
			Bottom (1.5P - 2P)				Plug (3.5P - 4.5P)				Taper (5P and up)			
			Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN
0 - 80 UNF	H1	2	1000200	1000201	1000205	1000208	1000100	1000101	1000105	1000108	1000000	1000001	–	1000008
	H2		1010200	–	–	1010208	1010100	–	1010105	1010108	–	–	–	–
1 - 64 UNC	H1		1000500	1000501	–	–	1000400	1000401	–	–	1000300	–	–	–
	H2		1008000	–	–	1008008	1010400	–	–	1010408	–	–	–	–
1 - 72 UNF	H1		1000800	1000801	–	–	1000700	1000701	–	–	1000600	1000601	–	1000608
	H2		1010800	–	–	1010808	1010700	–	–	1010708	–	–	–	–
2 - 56 UNC	H1	3	1001100	–	–	1001108	1001000	–	–	–	1000900	–	–	–
	H2		1011100	1011101	1011105	1011108	1011000	1011001	1011005	1011008	1010900	1010901	–	1010908
2 - 64 UNF	H1		1001400	–	–	–	1001300	–	–	–	–	–	–	–
	H2		1011400	1011401	–	–	1011300	1011301	–	–	1011200	–	–	–
3 - 48 UNC	H1		–	–	–	–	1001600	–	–	–	–	–	–	–
	H2		1011700	1011701	–	1011708	1011600	1011601	–	1011608	1011500	1011501	–	1011508
3 - 56 UNF	H1		–	–	–	–	1001900	–	–	–	–	–	–	–
	H2		1012000	1012001	–	1012008	1011900	1011901	–	1011908	1011800	1011801	–	–
4 - 36 UNS	H2		1012900	1012901	–	–	1012800	–	–	–	1012700	–	–	–
4 - 40 UNC	H1		1002300	–	–	–	1002200	–	–	–	1002100	–	–	–
	H2		1012300	1012301	1012305	1012308	1012200	1012201	1012205	1012208	1012100	1012101	–	1012108
4 - 48 UNF	H1		–	–	–	–	1002500	–	–	–	–	–	–	–
	H2		1012600	1012601	–	1012608	1012500	1012501	–	1012508	1012400		–	1012408
5 - 40 UNC	H1		1003200	–	–	–	1003100	–	–	–	–	–	–	–
	H2		1013200	1013201	1013205	1013208	1013100	1013101	1013105	1013108	1013000	1013001	–	1013008
5 - 44 UNF	H1		1003400	–	–	1003408	–	–	–	–	–	–	–	–
	H2		1013500	1013501	–	1013508	1013400	1013401	–	1013408	1013300	1013301	–	1013308
6 - 32 UNC	H1		1003800	–	–	–	1003700	–	–	–	1003600	–	–	–
	H2		1013800	–	1013805	1013808	1013700	–	1013705	1013708	1013600	–	–	1013608
	H3		1023800	1023801	1023805	1023808	1023700	1023701	1023705	1023708	1023600	1023601	–	1023608
6 - 40 UNF	H2	2	–	–	–	–	–	–	1068105	–	–	–	–	–
		3	1014100	1014101	1014105	–	1014000	1014001	1014005	–	1013900	–	–	1013908

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

STT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened 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													
102	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 102 (Continued)

HSS | TiCN | TiN | S/O | BR

Taper (5P and up), Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number											
			Bottom (1.5P - 2P)				Plug (3.5P - 4.5P)				Taper (5P and up)			
			Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN	Bright	S/O	TiN	TiCN
8 - 32 UNC	H1	4	1004400	–	–	–	1004300	–	–	1004308	1004200	–	–	1004208
	H2		1014400	–	1014405	–	1014300	–	1014305	1014308	1014200	–	–	–
	H3		1024400	1024401	1024405	1024408	1024300	1024301	1024305	1024308	1024200	1024201	–	1024208
	H7		1019900	–	–	–	1019800	–	–	–	–	–	–	–
8 - 36 UNF	H1		–	–	–	–	1004600	–	–	–	–	–	–	–
	H2		1014700	1014701	1014705	–	1014600	1014601	1014605	–	1014500	1014501	–	–
10 - 24 UNC	H1		1005000	1005001	–	–	1004900	–	–	–	1004800	–	–	
	H2		1015000	–	–	1015008	1014900	–	–	–	1014800	–	1014805	1014808
	H3		1025000	1025001	1025005	1025008	1024900	1024901	1024905	1024908	1024800	1024801	–	–
	H7		1008700	–	–	–	1008600	–	–	–	–	–	–	–
10 - 32 UNF	H1		1005300	–	–	–	1005200	–	–	–	1005100	–	–	–
	H2		1015300	–	1015305	1015308	1015200	–	–	1015208	1015100	–	1015105	–
	H3		1025300	1025301	1025305	1025308	1025200	1025201	1025205	1025208	1025100	1025101	1025105	1025108
	H7		1028600	–	–	–	1028500	–	–	–	–	–	–	–
12 - 24 UNC	H1		–	–	–	–	1005500	–	–	–	–	–	–	–
	H3		1025600	1025601	–	1025608	1025500	1025501	1025505	1025508	1025400	1025401	–	1025408
12 - 28 UNF	H1		–	–	–	–	1005800	–	–	–	–	–	–	–
	H3		1025900	1025901	1025905	1025908	1025800	1025801	–	1025808	1025700	1025701	–	1025708

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

STT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
102	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 102H

HSS | S/O | BR

+.005" Oversize, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			Bright	S/O
6 - 32 UNC	+ 0.005	3	1593500	–
8 - 32 UNC		4	1594300	–

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			Bright	S/O
10 - 24 UNC	+ 0.005	4	1594900	–
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.

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
102H	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▢ best

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List 103

HSS | TiN | S/O | BR

Three Flute, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number					
			Bottom (1.5P - 2P)			Plug (3.5P - 4.5P)		
			Bright	S/O	TiN	Bright	S/O	TiCN
8 - 32 UNC	H1	3	1040200	–	–	1040100	–	–
	H2		1045200	–	–	1045100	–	–
	H3		1050200	–	–	1050100	–	–
10 - 24 UNC	H1		–	–	–	1040700	–	–
	H2		–	–	–	1045700	–	–
	H3		1050800	–	–	1050700	–	–
10 - 32 UNF	H2		1046100	–	–	1046000	–	–
	H3		1051100	1051101	1051105	1051000	1051001	1051005
1/4 - 20 UNC	H1		1059300	–	–	1160100	–	–
	H2		1035600	–	–	1165100	–	–
	H3		1170200	1170201	1170205	1170100	1170101	1170105
	H5		1180200	–	–	1180100	–	–
1/4 - 28 UNF	H3		1170500	1170501	1170505	1170400	1170401	1170405
5/16 - 18 UNC	H1		–	–	–	1160700	–	–
	H3		1170800	–	–	1170700	–	1170705
	H5		1180800	–	–	1180700	–	–
5/16 - 24 UNF	H3		1171100	1171101	1171105	1171000	1171001	1171005
3/8 - 16 UNC	H1		1046200	–	–	1161300	–	–
	H3		1171400	1171401	1171405	1171300	1171301	1171305
	H5		1181400	–	–	1181300	–	–
3/8 - 24 UNF	H3		1171700	1171701	1171705	1171600	1171601	1171605
7/16 - 14 UNC	H3		1172000	–	–	1171900	–	–
7/16 - 20 UNF	H3		1054700	–	–	1172200	–	–
1/2 - 13 UNC	H3		1172600	1172601	1172605	1172500	1172501	1172505
1/2 - 20 UNF	H3		1059300	–	–	1172800	–	–

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
103	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 104

HSS | S/O | BR

Two Flute, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number			
			Bottom (1.5P - 2P)		Plug (3.5P - 4.5P)	
			Bright	S/O	Bright	S/O
2 - 56 UNC	H1	2	1060200	–	1060100	–
	H2		1065200	–	1065100	–
3 - 48 UNC	H2		1065800	–	1065700	–
4 - 40 UNC	H1		1007900	–	1061300	–
	H2		1066400	–	1066300	–
5 - 40 UNC	H2		1067300	–	1067200	–
5 - 44 UNF	H2		–	–	1067500	–
6 - 32 UNC	H1		1008100	–	1062800	–
	H2		1067900	–	1067800	–
	H3		1072900	1072901	1072800	1072801
6 - 40 UNF	H2		1016400	–	1068100	–
8 - 32 UNC	H2		1068500	–	1068400	–
	H3		1073500	1073501	1073400	1073401
10 - 24 UNC	H2		1069100	–	1069000	–
	H3		1074100	1074101	1074000	1074001
10 - 32 UNF	H1		1026200	–	1026100	–
	H2		1069400	–	1069300	–
	H3		1074400	1074401	1074300	1074301
1/4 - 20 UNC	H3		1195200	1195201	1195100	1195101
1/4 - 28 UNF	H3		1195500	1195501	1195400	1195401
5/16 - 18 UNC	H3		1195800	–	1195700	–

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

STT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
104	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 101N

HSS BR

UNEF, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
12 - 32 UNEF	H3	4	1670200	1670100
1/4 - 32 UNEF	H3		1680200	1680100
5/16 - 32 UNEF	H3		1680400	1680300
3/8 - 32 UNEF	H3		1680600	1680500
7/16 - 28 UNEF	H3		1680800	1680700
1/2 - 28 UNEF	H3		1681000	1680900
9/16 - 24 UNEF	H3		1681200	1681100
5/8 - 24 UNEF	H3	6	1681400	1681300
11/16 - 24 UNEF	H3		1681600	1681500
3/4 - 20 UNEF	H3		1681800	1681700
13/16 - 20 UNEF	H3		1682000	1681900
7/8 - 20 UNEF	H3		1682200	1682100
15/16 - 20 UNEF	H3		1682400	1682300
1 - 20 UNEF	H3		1682600	1682500

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

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														
	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
101N	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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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	EDP Number				
			Bottom (1.5P - 2P)		Plug (3.5P - 4.5P)		Taper (5P and up)
			Bright	S/O	Bright	S/O	Bright
M1.6 x 0.35	D3	3	–	–	1978800	–	–
M2 x 0.4	D3		1977400	–	1977300	–	–
M2.5 x 0.45	D3		1972300	1972301	1972200	1972201	–
M3 x 0.5	D3		1970200	1970201	1970100	1970101	1970000
M3.5 x 0.6	D4		1972600	1972601	1972500	1972501	–
M4 x 0.7	D4	4	1970500	1970501	1970400	1970401	1970300
M4.5 x 0.75	D4		1972900	1972901	1972800	1972801	–
M5 x 0.8	D4		1970800	1970801	1970700	1970701	1970600
M6 x 1.0	D5		1971100	1971101	1971000	1971001	1970900
M7 x 1.0	D5		1973200	1973201	1973100	1973101	–
M8 x 1.25	D5		1971400	1971401	1971300	1971301	1971200
M8 x 1.0	D5		1973500	1973501	1973400	1973401	–
M10 x 1.5	D6		1971700	1971701	1971600	1971601	1971500
M10 x 1.25	D6		1974100	1974101	1974000	1974001	–
M10 x 1.0	D6		1973800	1973801	1973700	1973701	–
M12 x 1.75	D6		1972000	1972001	1971900	1971901	1971800
M12 x 1.5	D6		1974700	–	1974600	–	–
M12 x 1.25	D5		1974400	1974401	1974300	1974301	–
M14 x 2.0	D7		1975300	–	1975200	1975201	1975100
M14 x 1.5	D6		1977700	–	1977600	–	–
M14 x 1.25	D5		1975000	–	1974900	–	–
M16 x 2.0	D7		1975900	1975901	1975800	1975801	1975700
M16 x 1.5	D6		1975600	1975601	1975500	1975501	–
M18 x 2.5	D7		1976500	–	1976400	1976401	–
M18 x 1.5	D6		1976200	1976201	1976100	–	–
M20 x 2.5	D7		1977100	1977101	1977000	1977001	1966900
M20 x 1.5	D6		1976800	1976801	1976700	–	–
M24 x 3.0	D8		1977200	–	1977500	–	1978000
M30 x 3.5	D9		1978200	–	1978300	–	1978400
M36 x 4.0	D9		–	–	1978600	–	1978700

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
141	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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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					
			Bottom (1.5P - 2P)		Plug (4.5P - 5.5P)		Taper (5P and up)	
			Bright	S/O	Bright	S/O	Bright	
M2 x 0.4	JIS 2	3	233	–	232	–	–	
M2.3 x 0.4			293	–	292	–	–	
M2.6 x 0.45			353	–	352	–	–	
M3 x 0.5			393	22606	392	22605	391	
M3.5 x 0.6			413	–	412	–	411	
M4 x 0.7			453	22612	452	22611	451	
M4.5 x 0.75			–	–	482	–	–	
M5 x 0.8			513	22618	512	22617	511	
M6 x 1.0			583	22622	582	22621	581	
M6 x 0.75			593	–	592	–	591	
M7 x 1.0		4	–	–	612	–	–	
M8 x 1.25			643	22628	642	22627	641	
M8 x 1.0			653	–	652	–	651	
M8 x 0.75			–	–	662	–	–	
M9 x 1.25			–	–	692	–	–	
M10 x 1.5			733	22634	732	22633	731	
M10 x 1.25			743	22638	742	22637	741	
M10 x 1.0			753	–	752	–	751	
M11 x 1.5			–	–	792	–	–	
M12 x 1.75			853	22644	852	22643	851	
M12 x 1.5			–	–	862	–	–	
M12 x 1.25			873	–	872	–	871	
M12 x 1.0			883	–	882	–	881	
M14 x 2.0			983	–	982	–	981	

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number				
			Bottom (1.5P - 2P)		Plug (4.5P - 5.5P)		Taper (5P and up)
			Bright	S/O	Bright	S/O	Bright
M14 x 1.5	JIS 2	4	993	–	992	–	991
M14 x 1.25			1003	–	1002	–	1001
M16 x 2.0			1113	–	1112	–	1111
M16 x 1.5			1123	–	1122	–	1121
M16 x 1.0			–	–	1142	–	–
M18 x 2.5			1253	–	1252	–	1251
M18 x 2.0			–	–	1262	–	–
M18 x 1.5			1273	–	1272	–	1271
M20 x 2.5			1393	–	1392	–	1391
M20 x 1.5			1413	–	1412	–	1411
M22 x 2.5			1503	–	1502	–	1501
M22 x 1.5			1523	–	1522	–	–
M24 x 3.0			1603	–	1602	–	1601
M24 x 1.5			–	–	1632	–	–
M26 x 3.0			1713	–	1712	–	1711
M26 x 1.5			1733	–	1732	–	1731
M28 x 1.5			1823	–	1822	–	1821
M30 x 3.5			1843	–	1842	–	1841
M30 x 1.5			1873	–	1872	–	1871
M32 x 1.5			1933	–	1932	–	1931
M33 x 1.5			1983	–	1982	–	1981
M34 x 1.5			2033	–	2032	–	2031
M36 x 1.5			2143	–	2142	–	2141

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

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														
	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
121	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 916

HSS | S/O

Long Shank, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
1/4 - 20 UNC	H3	4	6	1290001
			8	1290201
5/16 - 18 UNC			6	1290401
			8	1290601
3/8 - 16 UNC			6	1290801
			8	1291001
			10	1291201
7/16 - 14 UNC			6	1291401
			8	1291601

Packed: 1 pc.
Available Steam Oxide finish only.

STT

Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Plug (3.5P - 4.5P) S/O
1/2 - 13 UNC	H3	4	6	1292001
			8	1292201
			10	1292401
			12	1292601
5/8 - 11 UNC			6	1292801
			8	1293001
			10	1293201
			12	1293401
3/4 - 10 UNC			10	1293601
			12	1293801

Packed: 1 pc.
Available Steam Oxide finish only.

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														
	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
916	▢	▢	▢						▢								
SFM	25-80	20-50	20-45						25-75								

▢ good ▣ best

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List S110

SPEED FEED P22 | HSS | BR

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
000 - 120 UNC	H1	2	1020000	1010000
	H2		–	1929000
00 - 90 UNC	H1		1040000	1030000
	H2		2055000	3370000

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
00 - 96 UNC	H1	2	1070000	1060000
	H2		1322000	3380000

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

STT

Specifications & Dimensions

Tap Size	Basic O.D.	Basic P.D.	Overall Length	Thread Length	Square Length	Shank Diameter	Square Size
00-90	0.047	0.0398	1-9/16	1/4	3/16	0.141	0.110
00-96	0.047	0.0402	1-9/16	1/4	3/16	0.141	0.110
000-120	0.034	0.0286	1-1/2	3/16	3/16	0.141	0.110

Suggested Hole Size Limits for Different Lengths of Engagement

Tap Size	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	0.0373	0.0385	0.0380	0.0392	0.0388	0.0400
00-96	0.0379	0.0393	0.0388	0.0406	0.0397	0.0415
000-120	0.0260	0.0270	0.0270	0.0280	0.0275	0.0285

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
S110	▢	▢	▢						▢	▢	▢							
SFM	25-80	20-50	20-45						25-75	40-80	40-65							

▢ good ▣ best

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List 114

SPEED FEED P22 | HSS-CO | N

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Nitride	EDP Number Plug (3.5P - 4.5P) Nitride
2 - 56 UNC	2B+	3	3141903	3141803
	H7		3141303	3141203
4 - 40 UNC	2B+	4	3142903	3142803
	H7		3142303	3142203
6 - 32 UNC	2B+		3144903	3144803
	H7		3144303	3144203
8 - 32 UNC	2B+		3145903	3145803
	H7		3145303	3145203

Packed: 1 pc.
Available Nitride coating only.

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Nitride	EDP Number Plug (3.5P - 4.5P) Nitride
10 - 24 UNC	2B+	4	3146903	3146803
	H7		3146303	3146203
10 - 32 UNF	2B+		3146503	3146403
	H7		3146703	3146603
1/4 - 20 UNC	2B+		3147903	3147803
	H7		3147303	3147203

Packed: 1 pc.
Available Nitride coating only.

STT

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																
	P					M			K	N		S		Other	
List No.	Carbon Steels Low	Carbon Steels Med.	Carbon Steels High	Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Thermo Plastics	Thermosetting Plastics
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)		
114														▢	▢
SFM														33-66	33-66

▢ good ▢ best

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List 180

HSS BR

Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
1,1/8 - 8	H5	4	1690200	1690100
1,1/4 - 8	H5		1690500	1690400
1,3/8 - 8	H5	6	1690800	1690700
1,1/2 - 8	H5		1691100	1691000

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
1,5/8 - 8	H6	6	1691400	1691300
1,3/4 - 8	H6		1691700	1691600
2 - 8	H6		1692300	1692200
2,1/4 - 8	H6		8020000	8019000

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

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														
	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
180	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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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	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
6 - 32 UNC	H3	3	1650200	1650100
6 - 40 UNF	H2		1650400	1650300
8 - 32 UNC	H3		1650600	1650500
8 - 36 UNF	H2		1650800	1650700
10 - 24 UNC	H3		1651000	1650900
10 - 32 UNF	H3		1651200	1651100
1/4 - 20 UNC	H3		1660200	1660100
1/4 - 28 UNF	H3	4	1660400	1660300
5/16 - 18 UNC	H3		1660600	1660500
5/16 - 24 UNF	H3		1660800	1660700
3/8 - 16 UNC	H3		1661000	1660900
3/8 - 24 UNF	H3		1661200	1661100
7/16 - 14 UNC	H3		1661400	1661300

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
7/16 - 20 UNF	H3	4	1661600	1661500
1/2 - 13 UNC	H3		1661800	1661700
1/2 - 20 UNF	H3		1662000	1661900
9/16 - 12 UNC	H3		1662200	1662100
9/16 - 18 UNF	H3		1662400	1662300
5/8 - 11 UNC	H3		1662600	1662500
5/8 - 18 UNF	H3		1662800	1662700
3/4 - 10 UNC	H3		1663400	1663300
3/4 - 16 UNF	H3		1663600	1663500
7/8 - 9 UNC	H4		1663800	1663700
7/8 - 14 UNF	H4		1664000	1663900
1 - 8 UNC	H4		1664200	1664100
1 - 12 UNF	H4		1664400	1664300

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

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														
	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
101L	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 311

CARBIDE V

DIN Overall Length, Modified Bottom (2.5P-3P)

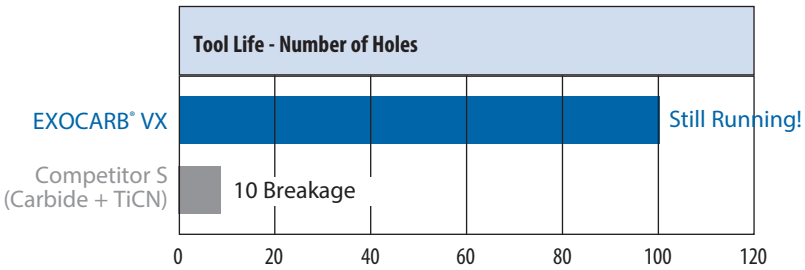


Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) V	Recommended WH-70 Drill Size
4 - 40 UNC	2B	4	56	3110108	2.3mm
6 - 32 UNC			56	3110208	2.8mm
8-32 UNC			63	3110308	3.5mm
10 - 24 UNC			70	3110408	4.0mm
10 - 32 UNF			70	3110508	4.2mm
1/4 - 20 UNC		5	80	3110608	5.3mm
1/4 - 28 UNF			80	3110708	5.6mm
5/16 - 18 UNC			90	3110808	6.8mm
5/16 - 24 UNF			90	3110908	7.1mm
3/8 - 16 UNC			100	3111008	8.2mm
3/8 - 24 UNF			100	3111108	8.7mm
7/16 - 14 UNC			100	3111208	9.6mm
7/16 - 20 UNC			100	3111308	10.1mm
1/2 - 13 UNC			110	3111408	11.1mm
1/2 - 20 UNF			110	3111508	11.7mm

Packed: 1 pc.
Available V coating only.

HTE

EXOCARB® VX Tap Performance:	
Tool:	List 311 1/4-20 NC
Material:	D2 (55HRC)
Speed:	100 RPM
Depth:	1.5D
Coolant:	Cutting Oil
Drill used:	EXOCARB® SH-DRL



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.

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
311																○	◎
SFM																3-10	3-10

○ good ◎ best

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List 341

CARBIDE V

JIS, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) V	Recommended WH-70 Drill Size
M2.6 x 0.45	OH3	4	44	8330049	2.2mm
M3 x 0.5	OH3		46	8330055	2.6mm
M4 x 0.7	OH3		52	8330061	3.4mm
M5 x 0.8	OH3		60	8330067	4.3mm
M6 x 1.0	OH3	5	62	8330073	5.2mm
M8 x 1.25	OH3		70	8330085	7.0mm
M8 x 1.0	OH3		70	8330087	7.2mm
M10 x 1.5	OH3		75	8330097	8.8mm
M10 x 1.25	OH3		75	8330099	9.0mm
M10 x 1.0	OH3		70	8330101	9.2mm
M12 x 1.75	OH3		82	8330115	10.6mm
M12 x 1.5	OH3		82	8330117	10.8mm
M12 x 1.25	OH4		80	8330119	11.0mm
M12 x 1.0	OH3		70	8330121	11.2mm
M14 x 2.0	OH4	6	88	8330123	12.4mm
M14 x 1.5	OH3		88	8330125	12.8mm
M16 x 2.0	OH4		95	8330131	14.4mm
M16 x 1.5	OH3		95	8330133	14.8mm
M18 x 2.5	OH4		95	8330139	16.0mm
M18 x 1.5	OH4		95	8330141	16.8mm
M20 x 2.5	OH4		100	8330147	18.0mm
M20 x 1.5	OH4		95	8330149	18.8mm

Packed: 1 pc.
Available V coating only.

HTE

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.

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
341																○	◎
SFM																3-10	3-10

○ good ◎ best

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List 329

CARBIDE DIA

UNJC, UNJF, DIN Overall Length, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) Diamond
4 - 40 UNC	2B	3	56	3297016
	3B			3291216
6 - 32 UNC	2B		56	3297116
	3B			3291316
8 - 32 UNC	2B		63	3297216
	3B			3291416
10 - 24 UNC	2B	4	70	3297316
	3B			3291516
10 - 32 UNF	2B		70	3297416
	3B			3291616
1/4 - 20 UNC	2B		80	3297516
	3B			3291716
1/4 - 28 UNF	2B		80	3297616
	3B			3291816
5/16 - 18 UNC	2B		90	3297716
	3B		80	3298516
5/16 - 24 UNF	2B		90	3297816
	3B			3298616
3/8 - 16 UNC	2B		100	3297916
	3B		90	3298716
3/8 - 24 UNF	2B		100	3298016
	3B			3298816
7/16 - 14 UNC	2B	5	100	3298116
	3B			3298916
7/16 - 20 UNF	2B		100	3298216
	3B			3299016
1/2 - 13 UNC	2B		110	3298316
	3B			3299116
1/2 - 20 UNF	2B		110	3298416
	3B			3299216

Packed: 1 pc.
Available Diamond coating only.
*3B fit taps conform to UNJ Aerospace internal threading applications.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
329										◎	◎			◎	○	◎	
SFM										60-160	55-120			30-60	40-80	30-60	

○ good ◎ best

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List 359

CARBIDE DIA

JIS, Modified Bottom (2.5P-3P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Modified Bottom (2.5P - 3P) Diamond
M3 x 0.5	6H	3	46	3590116
M4 x 0.7		4	52	3590216
M5 x 0.8			60	3590316
M6 x 1.0			62	3590416
M8 x 1.25	6H	4	70	3590516
M10 x 1.5		5	75	3590616
M12 x 1.75			82	3590716

Packed: 1 pc.
Available Diamond coating only.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
359										◎	◎			◎	○	◎	
SFM										60-160	55-120			30-60	40-80	30-60	

○ good ◎ best

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List 379

Synchronized, Coolant-Through, JIS, Bottom (1.5P-2P)

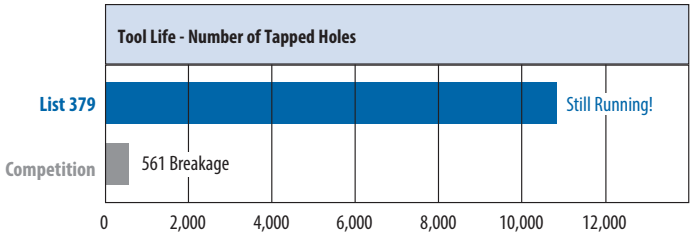


Tap Size	Thread Limit	No. of Flutes	Overall Length	Shank Diameter	EDP Number Bottom (1.5P-2P) EXO®
M6 x 1.0	OH3	3	100	6	8315722
M8 x 1.25	OH4	4		8	8315728
M10 x 1.5	OH4			8	8315734
M10 x 1.25	OH4			8	8315736
M12 x 1.75	OH4			10	8315739
M12 x 1.5	OH4			10	8315742
M12 x 1.25	OH4			10	8315745

Packed: 1 pc.
Available EXO® coating only.

HTE

List 379 Tap Performance:	
Tool:	List 379 M8x1.25
Material:	Cast Iron
Speed:	3,000 RPM (246 SFM)
Depth:	1 inch
Coolant:	Water soluble oil



Recommended Tapping Conditions for List 379:			
Material	Speed (SFM)		
Aluminum Alloy Casting	250 - 1,000		
Cast Iron	150 - 330		
Brass, Brass Casting	150 - 330		
Magnesium Alloy Casting	250 - 1,000		

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
379									◎	◎	◎				◎		◎
SFM									150-330	250-1,000	250-1,000				150-330		30-60

○ good ◎ best

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List 319

CARBIDE | BR

DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) Bright
4 - 40 UNC	2B	3	56	3190000
6 - 32 UNC			56	3190100
8 - 32 UNC			63	3190200
10 - 24 UNC			70	3190300
10 - 32 UNF			70	3190400
1/4 - 20 UNC			80	3190500
1/4 - 28 UNF			80	3190600
5/16 - 18 UNC		4	90	3190700
5/16 - 24 UNF			90	3191500
3/8 - 16 UNF			100	3190900
3/8 - 24 UNF			100	3191000
7/16 - 14 UNC			100	3191100
7/16 - 24 UNF			100	3191200
1/2 - 13 UNC			110	3191300
1/2 - 20 UNF			110	3191400

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

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
319									◎	◎	◎				◎	○	◎
SFM									40-90	60-160	55-120				40-80	30-60	15-40

○ good ◎ best

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List 10059

CARBIDE BR

Bottom (1.5P-2P)



Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (1.5P - 2P) Bright
10 - 24 UNC	2B	4	1005910100
10 - 32 UNF			1005910200
12 - 24 UNC			1005910300
1/4 - 20 UNC			1005910400
1/4 - 28 UNF			1005910500

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

HTE

Tap Size	Class of Fit	No. of Flutes	EDP Number Modified Bottom (1.5P - 2P) Bright
5/16 - 18 UNC	2B	4	1005910600
5/16 - 24 UNF			1005910700
3/8 - 16 UNC			1005910800
3/8 - 24 UNF			1005910900

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

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
10059									◎	◎	◎				◎	○	◎
SFM									40-90	60-160	55-120				40-80	30-60	15-40

○ good ◎ best

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List 10061

CARBIDE BR

DIN Overall Length, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number	
				Bottom (1.5P - 2P)	Plug (4P - 4.5P)
				Bright	Bright
M3 x 0.5	D3	3	1 15/16	1006101100	1006100100
M4 x 0.7	D4	4	2 1/8	1006101300	1006100300
M5 x 0.8	D4		2 3/8	1006101400	1006100400
M6 x 1.0	D5		2 1/2	1006101500	1006100500
M8 x 1.25	D5		2 23/32	1006101800	1006100800
M8 x 1.0	D5		2 23/32	1006101700	1006100700
M10 x 1.5	D6		2 15/16	1006102000	1006101000
M10 x 1.25	D5		2 15/16	1006101900	1006100900

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

HTE

Work Material																		
	P					M			K	N		S		Other			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
10061									◎	◎	◎				◎	○	◎
SFM									40-90	60-160	55-120				40-80	30-60	15-40

○ good ◎ best

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List 349

CARBIDE BR

JIS, Modified Bottom (2.5P-3.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number	
				Bottom (1.5P - 2P)	Modified Bottom (2.5P - 3P)
				Bright	Bright
M1.4 x 0.3	OH2	3	34	22800	24000
M1.6 x 0.35	OH3		36	22801	24001
M1.7 x 0.35	OH3		36	22802	24002
M1.8 x 0.35	OH3		36	22803	24003
M2 x 0.4	OH3		40	22804	24004
M2.3 x 0.4	OH3		42	22806	24006
M2.5 x 0.45	OH3		44	22807	24007
M2.6 x 0.45	OH3		44	22808	24008
M3 x 0.5	OH3		46	22810	24010
M4 x 0.7	OH3		52	22814	24014
M5 x 0.8	OH3		60	22817	24017
M6 x 1.0	OH3		62	22820	24020
M8 x 1.25	OH4	4	70	22830	24030
M8 x 1.0	OH3		70	22831	24031
M10 x 1.5	OH4		75	22833	24033
M10 x 1.25	OH4		75	22834	24034
M10 x 1.0	OH3		75	22835	24035
M12 x 1.75	OH5		82	22837	24037
M12 x 1.5	OH4		82	22839	24039
M12 x 1.25	OH4		80	22840	24040
M12 x 1.0	OH3		80	22841	24041
*M14 x 2.0	OH4		88	24046	24045
*M14 x 1.5	OH4		88	24048	24047
*M16 x 2.0	OH5		95	24052	24051
*M16 x 1.5	OH4		95	24054	24053
*M18 x 2.5	OH5		100	24056	24055
*M18 x 1.5	OH4		95	24060	24059
*M20 x 2.5	OH5		105	24062	24061
*M20 x 1.5	OH4		95	24066	24065
*M22 x 2.5	OH5		115	24068	24067
*M22 x 1.5	OH4		95	24072	24071
*M24 x 3.0	OH5		120	24074	24073
*M24 x 1.5	OH4		95	24078	24077

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

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
349									◎	◎	◎				◎	○	◎
SFM									40-90	60-160	55-120				40-80	30-60	15-40

○ good ◎ best

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List 356

CARBIDE BR

JIS, Long Shank, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	Overall Length	EDP Number Bottom (1.5P - 2P) Bright
M6 x 1.0	OH3	3	100	22929
M8 x 1.25	OH4	4	150	22933
M10 x 1.5	OH4		150	22941
M10 x 1.25	OH4		150	22945
M10 x 1.0	OH4		150	22949
M12 x 1.75	OH4		150	22953

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

HTE

Work Material																		
	P					M			K	N			S		Other			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum			Nickel Alloy	Titanium	MMC	Copper Alloys	Fiberglass	Cobalt-Chrome
	Low	Med.	High															
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting		Inconel	6Al4V (30 HRC)				
356									◎	◎	◎					◎	○	◎
SFM									40-90	60-160	55-120					40-80	30-60	15-40

○ good ◎ best

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List 16260

HSS-CO | V | STI

DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	Overall Length	EDP Number	Tap Drill Size		Class of Fit	
				V	Min	Max	2B	3B
2 - 56 UNC	2.5P	H1 H2	56	1626000108 1626000208	0.0994	0.1013	H2	H1
4 - 40 UNC		H2 H3	63	1626000308 1626000408	0.1309	0.1333	H3	H2
4 - 48 UNF		H2 H3	56	1626000508 1626000608	0.1281	0.1299	H3	H2
6 - 32 UNC		H2 H3	70	1626000708 1626000808	0.1613	0.1637	H3	H2
6 - 40 UNF		H2 H3	70	1626000908 1626001008	0.1569	0.1590	H3	H2
8 - 32 UNC		H2 H3	80	1626001108 1626001208	0.1873	0.1895	H3	H2
8 - 36 UNF		H2 H3	80	1626001308 1626001408	0.1849	0.1870	H3	H2
10 - 24 UNC		H3 H4	80	1626001508 1626001608	0.2210	0.2238	H4	H3
10 - 32 UNF		H3 H4	80	1626001708 1626001808	0.2138	0.2160	H4	H3
1/4 - 20 UNC		H3 H4	90	1626001908 1626002008	0.2868	0.2899	H4	H3
1/4 - 28 UNF		H3 H4	90	1626002108 1626002208	0.2769	0.2879	H4	H3
5/16 - 18 UNC		H4 H5	100	1626002308 1626002408	0.3537	0.2568	H5	H4
5/16 - 24 UNF		H4 H5	90	1626002508 1626002608	0.3440	0.3462	H5	H4
3/8 - 16 UNC		H5 H6	100	1626002708 1626002808	0.4215	0.4248	H6	H5
3/8 - 24 UNF		H5 H6	90	1626002908 1626003008	0.4070	0.4091	H6	H5
7/16 - 14 UNC		H5 H7	110	1626003108 1626003208	0.4907	0.4938	H7	H5
7/16 - 20 UNF		H5 H7	100	1626003308 1626003408	0.4758	0.4777	H7	H5
1/2 - 13 UNC		H5 H7	110	1626003508 1626003608	0.5570	0.5600	H7	H5
1/2 - 20 UNF		H5 H7	100	1626003708 1626003808	0.5383	0.5402	H7	H5
9/16 - 12 UNC		H7 H9	110	1626003908 1626004008	0.6251	0.6282	H9	H7
9/16 - 18 UNF		H7 H9	100	1626004108 1626004208	0.6057	0.6077	H9	H7
5/8 - 11 UNC		H7 H9	125	1626004308 1626004408	0.6928	0.6961	H9	H7
5/8 - 18 UNF		H7 H9	110	1626004508 1626004608	0.6682	0.6702	H9	H7
3/4 - 10 UNC		H7 H9	140	1626004708 1626004808	0.8241	0.8276	H9	H7
3/4 - 16 UNF		H7 H9	125	1626004908 1626005008	0.7980	0.8002	H9	H7

Packed: 1 pc.
Available V coating only.

EP

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List 16260

HSS-CO | V | STI

DIN Overall Length, Modified Bottom (2.5P)

Tap Size	Lead	Thread Limit	Overall Length	EDP Number	Tap Drill Size		Class of Fit	
				V	Min	Max	2B	3B
7/8 - 9 UNC	2.5P	H7	160	1626005108	0.9573	0.9606	H10	H7
		H10		1626005208				
7/8 - 14 UNF		H7	140	1626005308	0.9297	0.9316	H10	H7
		H10		1626005408				
1 - 8 UNC		H8	180	1626005508	1.0925	1.0966	H11	H8
		H11		1626005608				
1 - 12 UNF		H8	140	1626005708	1.0636	1.0658	H11	H8
		H11		1626005808				

Packed: 1 pc.
Available V coating only.

EP

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened 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													
16260	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	30-Oct		65-115	65-90	8-12	8-15	50-100	12-25		

*For Stainless Steel, please use non-water-soluble coolant.

○ good ◎ best

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List 16360

HSS-CO | V | STI

DIN Overall Length, Modified Bottom (2.5P)



Tap Size	Lead	Thread Limit	Overall Length	EDP Number	Tap Drill Size	
				V	Min	Max
M2 x 0.4	2.5P	D3	50	1636000108	2.32	2.35
M2.5 x 0.45		D3	56	1636000208	2.85	2.89
M3 x 0.5		D3	63	1636000308	3.39	3.43
M4 x 0.7		D4	70	1636000408	4.54	4.59
M5 x 0.8		D4	80	1636000508	5.61	5.67
M6 x 1.0		D5	90	1636000608	6.76	6.83
M8 x 1.25		D6	100	1636000708	8.95	9.03
M10 x 1.5		D8	100	1636000808	11.15	11.23
M12 x 1.75		D9	110	1636000908	13.33	13.43
M14 x 2.0		D10	110	1636001008	15.52	15.63
M16 x 2.0		D10	125	1636001108	17.52	17.63
M18 x 2.5		D10	140	1636001208	19.87	20.00
M20 x 2.5		D10	160	1636001308	21.87	22.00
M22 x 2.5		D10	160	1636001408	23.87	24.00
M24 x 3.0		D11	160	1636001508	26.23	26.38

Packed: 1 pc.
Available V coating only.

EP

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
16360	◎	◎	◎	◎	◎	◎*	◎*	◎*		◎	◎	○	○	◎	○		
SFM	50-115	50-115	50-85	50-85	20-65	15-40	15-35	30-Oct		65-115	65-90	8-12	8-15	50-100	12-25		

*For Stainless Steel, please use non-water-soluble coolant.

○ good ◎ best

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List 315Ti NEW!

Spiral Fluted, Modified Bottom (2.5P)

EXOTAP VC10 V STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P) V
2 - 56 UNC	H2	3	31540108
4 - 40 UNC	H2		31540208
6 - 32 UNC	H3		31540308
8 - 32 UNC	H3		31540408
10 - 32 UNF	H3		31540508

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P) V
1/4 - 28 UNF	H3	3	31540608
5/16 - 24 UNF	H3		31540708
3/8 - 24 UNF	H3		31540808
7/16 - 20 UNF	H4		31540908
1/2 - 20 UNF	H4		31541008

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														
	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
315Ti				▢				▢				▢	▣	▢	▢		
SFM				15-30				8-20				8-15	8-15	15-35	10-20		

▢ good ▣ best

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List 315Ni NEW!

Spiral Fluted, Modified Bottom (2.5P)

EXOTAP | VC10 | V | STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P) V
2 - 56 UNC	H2	3	31520108
4 - 40 UNC	H2		31520208
6 - 32 UNC	H3		31520308
8 - 32 UNC	H3		31520408
10 - 32 UNF	H3		31520508

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P) V
1/4 - 28 UNF	H3	3	31520608
5/16 - 24 UNF	H3		31520708
3/8 - 24 UNF	H3		31520808
7/16 - 20 UNF	H4		31520908
1/2 - 20 UNF	H4		31521008

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														
	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
315Ni								▢				◻	▢	▢	▢		
SFM								8-20				8-15	8-15	15-35	10-20		

▢ good ◻ best

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List 315

Spiral Fluted, Modified Bottom (2.5P-3P)

EXOTAP | VC10 | V | S/O | STI | 15°



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) S/O	V
2 - 56 UNC	H2	2	1715701	1715708
3 - 48 UNC	H2		31500101	31500108
4 - 40 UNC	H2		1715801	1715808
4 - 48 UNF	H2		31500201	31500208
6 - 32 UNC	H2	3	1715901	1715908
	H3		1716001	1716008
6 - 40 UNF	H2		31500301	31500308
8 - 32 UNC	H2		1716101	1716108
	H3		1716201	1716208
8 - 36 UNF	H2		31500401	31500408
10 - 24 UNC	H2		31500501	31500508
	H3		31500601	31500608
10 - 32 UNF	H2		1716301	1716308
	H3		1716401	1716408
1/4 - 20 UNC	H2		31500701	31500708
	H3		31500801	31500808
1/4 - 28 UNF	H2		1716501	1716508
	H3		1716601	1716608
5/16 - 18 UNC	H3		31500901	31500908
	H4		31501001	31501008
5/16 - 24 UNF	H2		31501101	31501108
	H3		1716701	1716708
3/8 - 16 UNC	H3		31501201	31501208
	H4		31501301	31501308
3/8 - 24 UNF	H2		31501401	31501408
	H3		31501501	31501508
7/16 - 14 UNC	H3		31501601	31501608
	H4		31501701	31501708

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) S/O	V
7/16 - 20 UNF	H3	3	31501801	31501808
	H4		31501901	31501908
1/2 - 13 UNC	H3		31502001	31502008
	H4		31502101	31502108
1/2 - 20 UNF	H3		31502201	31502208
	H4		31502301	31502308
9/16 - 12 UNC	H3	4	31502401	31502408
	H4		31502501	31502508
9/16 - 18 UNF	H3		31502601	31502608
	H4		31502701	31502708
5/8 - 11 UNC	H3		31502801	31502808
	H4		31502901	31502908
5/8 - 18 UNF	H3		31503001	31503008
	H4		31503101	31503108
3/4 - 10 UNC	H3		31503201	31503208
	H5		31503301	31503308
3/4 - 16 UNF	H3		31503401	31503408
	H4		31503501	31503508
7/8 - 9 UNC	H3		31503601	31503608
	H5		31503701	31503708
7/8 - 14 UNF	H3		31503801	31503808
	H4		31503901	31503908
1 - 8 UNC	H4		31504001	31504008
	H6		31504101	31504108
1 - 12 UNF	H4		31504201	31504208
	H6		31504301	31504308

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																			
	P					M			K	N			S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum			Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High																
	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	
315				◎	○		○	◎					○	○	◎	○			
SFM				15-30	10-25		12-45	8-20					8-15	8-15	15-35	10-20			

○ good ◎ best

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List 345STI

Spiral Fluted, Modified Bottom (2.5P-3P)

EXOTAP | VC10 | V | S/O | STI | 15°



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P)	
			S/O	V
M2 x 0.4	D2	2	34500101	34500108
M2.5 x 0.45	D2		34500201	34500208
M3 x 0.5	D2	3	34500301	34500308
M4 x 0.7	D3		34500401	34500408
M5 x 0.8	D3		34500501	34500508
M6 x 1	D3		34500601	34500608
M8 x 1.25	D3		34500701	34500708
M10 x 1.5	D4		34500801	34500808

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P)	
			S/O	V
M12 x 1.75	D4	3	34500901	34500908
M14 x 2	D5	4	34501001	34501008
M16 x 2	D5		34501101	34501108
M18 x 2.5	D5		34501201	34501208
M20 x 2.5	D5		34501301	34501308
M22 x 2.5	D5		34501401	34501408
M24 x 3	D6		34501501	34501508

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														
	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
315STI				◎	○		○	◎				○	○	◎	○		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 302

Spiral Fluted, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

EXOTAP | HSSE | V | S/O | STI | 45°



Tap Size	Thread Limit	No. of Flutes	EDP Number			
			Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)	
			S/O	V	S/O	V
2 - 56 UNC	H2	2	0144701	0144708	1713501	–
3 - 48 UNC	H2		30200101	30200108	–	–
4 - 40 UNC	H2	3	0144801	0144808	1713601	–
4 - 48 UNF	H2		30200201	30200208	–	–
6 - 32 UNC	H2		0144901	0144908	1713701	–
	H3		0145001	0145008	1713801	–
6 - 40 UNF	H2		0145101	0145108	30200301	30200308
8 - 32 UNC	H2		0145201	0145208	1713901	–
	H3		0145301	0145308	1714001	–
	H4		0145401	0145408	30200401	30200408
8 - 36 UNF	H2		30200501	30200508	–	–
10 - 24 UNC	H2		0145501	0145508	30200701	30200708
	H3		0145601	0145608	30200801	30200808
10 - 32 UNF	H2		0145701	0145708	1714101	–
	H3		0145801	0145808	1714201	–
	H4		0145901	0145908	–	–
1/4 - 20 UNC	H2		0146001	30201008	30201001	0146008
	H3		0146101	0146108	30201101	30201108
1/4 - 28 UNF	H2		0146201	0146208	1714301	–
	H3		0146301	0146308	1714401	–
5/16 - 18 UNC	H3		0146401	0146408	30201201	30201208
	H4		0146501	0146508	30201301	30201308
5/16 - 24 UNF	H2		0146601	0146608	1714501	–
	H3		0146701	0146708	30201401	30201408
3/8 - 16 UNC	H3		0146801	0146808	30201501	30201508
	H4		0146901	0146908	30201601	30201608
3/8 - 24 UNF	H2		0147001	0147008	30201701	30201708
	H3		0147101	0147108	30201801	30201808
7/16 - 14 UNC	H3		0147201	0147208	30201901	30201908
	H4		0147301	0147308	30202101	30202108
7/16 - 20 UNF	H3		0147401	0147408	30202201	30202208
	H4		0147501	0147508	30202301	30202308
1/2 - 13 UNC	H3	4	0147601	30202408	30202401	0147608
	H4		0147701	0147708	30202501	30202508
1/2 - 20 UNF	H3		0147801	30202608	30202601	0147808
	H4		0147901	0147908	30202701	30202708
9/16 - 12 UNC	H3		30202901	30202908	30202801	30202808
	H4		30203201	30203208	30203101	30203108
9/16 - 18 UNF	H3		0148001	0148008	30203301	30203308
	H4		30203501	30203508	30203401	30203408

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														
	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
302	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 302

Spiral Fluted, Modified Bottom (2.5P-3P), Bottom (1.5P-2P)

EXOTAP | HSSE | V | S/O | STI | 45°



Tap Size	Thread Limit	No. of Flutes	EDP Number			
			Bottom (1.5P - 2P)		Modified Bottom (2.5P - 3P)	
			S/O	V	S/O	V
5/8 - 11 UNC	H3	4	30203701	30203708	30203601	30203608
	H4		30203901	30203908	30203801	30203808
5/8 - 18 UNF	H3		0148101	0148108	30204101	30204108
	H4		30204301	30204308	30204201	30204208
3/4 - 10 UNC	H3		30204501	30204508	30204401	30204408
	H5		30204701	30204708	30204601	30204608
3/4 - 16 UNF	H3		30204901	30204908	30204801	30204808
	H4		0148201	0148208	30205101	30205108
7/8 - 9 UNC	H3		30205301	30205308	30205201	30205208
	H5		30205501	30205508	30205401	30205408
7/8 - 14 UNF	H3		30205701	30205708	30205601	30205608
	H4		0148301	0148308	30205901	30205908
1 - 8 UNC	H4		30206301	30206308	30206201	30206208
	H6		30206501	30206508	30206401	30206408
1 - 12 UNF	H4		30206701	30206708	30206601	30206608
	H6		30206901	30206908	30206801	30206808

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
302	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 343STI

Spiral Fluted, Modified Bottom (2.5P-3P)

EXOTAP | HSSE | V | S/O | STI | 45°



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P)	
			S/O	V
M2 x 0.4	D2	2	34300101	34300108
M2.5 x 0.45	D2		34300201	34300208
M3 x 0.5	D2	3	34300301	34300308
M4 x 0.7	D3		34300401	34300408
M5 x 0.8	D3		34300501	34300508
M6 x 1.0	D3		34300601	34300608
M8 x 1.25	D3		34300701	34300708
M10 x 1.5	D4		34300801	34300808
M12 x 1.75	D4		34300901	34300908

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P)	
			S/O	V
M14 x 2.0	D5	4	34301001	34301008
M16 x 2.0	D5		34301101	34301108
M18 x 2.5	D5		34301201	34301208
M20 x 2.5	D5		34301301	34301308
M22 x 2.5	D5		34301401	34301408
M24 x 3.0	D6		34301501	34301508

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														
	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
343STI	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 13039 NEW!

HY-PRO | HSSE | V | BR | STI

Spiral Fluted, Modified Bottom (2.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P)	
			Bright	V
2 - 56 UNC	H2	2	1303900100	1303900108
4 - 40 UNC	H2		1303900200	1303900208
6 - 32 UNC	H2		1303900300	1303900308
8 - 32 UNC	H2		1303900400	1303900408
10 - 32 UNF	H2		1303900500	1303900508
1/4 - 20 UNC	H3		1303900600	1303900608
1/4 - 28 UNF	H3		1303900700	1303900708

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

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P)	
			Bright	V
5/16 - 18 UNC	H3	2	1303900800	1303900808
5/16 - 24 UNF	H3		1303900900	1303900908
3/8 - 16 UNC	H3		1303901000	1303901008
3/8 - 24 UNF	H3		1303901100	1303901108
7/16 - 20 UNF	H4		1303901200	1303901208
1/2 - 20 UNF	H4		1303901300	1303901308

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

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	Med.	High														
	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
13039										◎	◎						
SFM										40-80	40-65						

○ good ◎ best

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List S108

HSS | BR | STI | 50°

Spiral Fluted, Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Bright
2 - 56 UNC	H2	2	8003000
3 - 48 UNC	H2		10800100
4 - 40 UNC	H2		8003600
4 - 48 UNF	H2	3	10800200
6 - 32 UNC	H2		8005400
	H3		8005700
6 - 40 UNF	H2		10800300
8 - 32 UNC	H2		8006900
	H3		8007200
8 - 36 UNF	H2		10800400
10 - 24 UNC	H2		8007800
	H3		8008100
10 - 32 UNF	H2		8008700
	H3		8009000
1/4 - 20 UNC	H2		8010900
	H3		8011200
1/4 - 28 UNF	H2		8011800
	H3		8012100
5/16 - 18 UNC	H3		8013000
	H4		8013300
5/16 - 24 UNF	H2		8013600
	H3		8013700
3/8 - 16 UNC	H3		8015400
	H4		8015700
3/8 - 24 UNF	H2		8015800
	H3		8015900
7/16 - 14 UNC	H3	4	8017000
	H4		10800500

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Bottom (1.5P - 2P) Bright
7/16 - 20 UNF	H3	3	8017400
	H4		8017500
1/2 - 13 UNC	H3	4	8018000
	H4		10800600
1/2 - 20 UNF	H3		8018400
	H4		10800700
9/16 - 12 UNC	H3		10800800
	H4		10800900
9/16 - 18 UNF	H3		10801000
	H4		10801100
5/8 - 11 UNC	H3		10801200
	H4		10801300
5/8 - 18 UNF	H3		10801400
	H4		10801500
3/4 - 10 UNC	H3		10801600
	H5		10801700
3/4 - 16 UNF	H3		10801800
	H4		10801900
7/8 - 9 UNC	H3		10802000
	H5		10802100
7/8 - 14 UNF	H3		10802200
	H4		10802300
1 - 8 UNC	H4		10802400
	H6		10802500
1 - 12 UNF	H4		10802600
	H6		10802700

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
S108	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List S109

HSS | BR | STI | 50°

Spiral Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M2 x 0.4	D2	2	10900100
M2.5 x 0.45	D2		10900200
M3 x 0.5	D2	3	10900300
M4 x 0.7	D3		10900400
M5 x 0.8	D3		10900500
M6 x 1.0	D3		10900600
M8 x 1.25	D3		10900700
M10 x 1.5	D4		10900800
M12 x 1.75	D4		10900900

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M14 x 2.0	D5	4	10901000
M16 x 2.0	D5		10901100
M18 x 2.5	D5		10901200
M20 x 2.5	D5		10901300
M22 x 2.5	D5		10901400
M24 x 3.0	D6		10901500

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

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														
	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
S109	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 314Ti NEW!

Spiral Pointed, Plug (3.5P-4.5P)

EXOTAP VC10 V STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) V
2 - 56 UNC	H2	2	31440108
4 - 40 UNC	H2	3	31440208
6 - 32 UNC	H3	3	31440308
8 - 32 UNC	H3	3	31440408
10 - 32 UNF	H3	3	31440508

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) V
1/4 - 28 UNF	H3	3	31440608
5/16 - 24 UNF	H3	3	31440708
3/4 - 24 UNF	H3	3	31440808
7/16 - 20 UNF	H4	3	31440908
1/2 - 20 UNF	H4	3	31441008

Packed: 1 pc.
Available V coating only.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
314Ti				▢				▢				▢	◻	▢	▢		
SFM				15-30				8-20				8-15	8-15	15-35	10-20		

▢ good ◻ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 314Ni NEW!

Spiral Pointed, Plug (3.5P-4.5P)

EXOTAP | VC10 | V | STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) V
2 - 56 UNC	H2	2	31440108
4 - 40 UNC	H2	3	31440208
6 - 32 UNC	H3	3	31440308
8 - 32 UNC	H3	3	31440408
10 - 32 UNF	H3	3	31440508

Packed: 1 pc.
Available V coating only.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) V
1/4 - 28 UNF	H3	3	31440608
5/16 - 24 UNF	H3	3	31440708
3/4 - 24 UNF	H3	3	31440808
7/16 - 20 UNF	H4	3	31440908
1/2 - 20 UNF	H4	3	31441008

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														
	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
314Ni								▢				▣	▢	▢	▢		
SFM								8-20				8-15	8-15	15-35	10-20		

▢ good ▣ best

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List 314

Spiral Pointed, Plug (4.5P-5.5P)

EXOTAP | VC10 | V | S/O | STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)	
			S/O	V
2 - 56 UNC	H2	2	1714601	1714608
3 - 48 UNC	H2	3	31400101	31400108
4 - 40 UNC	H2		1714701	1714708
4 - 48 UNF	H2		31400201	31400208
6 - 32 UNC	H2		1714801	1714808
	H3		1714901	1714908
6 - 40 UNF	H2		31400301	31400308
8 - 32 UNC	H2		1715001	1715008
	H3		1715101	1715108
8 - 36 UNF	H2		31400401	31400408
10 - 24 UNC	H2		31400501	31400508
	H3		31400601	31400608
10 - 32 UNF	H2		1715201	1715208
	H3		1715301	1715308
1/4 - 28 UNC	H2		1715401	1715408
	H3		1715501	1715508
5/16 - 24 UNC	H3		1715601	1715608
1/4 - 20 UNC	H2		31400701	31400708
	H3		31400801	31400808
5/16 - 18 UNC	H2		31400901	31400908
	H3		31401001	31401008
5/16 - 24 UNF	H2		31401101	31401108
3/8 - 16 UNC	H3		31401201	31401208
	H4		31401301	31401308
3/8 - 24 UNF	H2		31401401	31401408
	H3		31401501	31401508
7/16 - 14 UNC	H3		31401601	31401608
	H4		31401701	31401708

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)	
			S/O	V
7/16 - 20 UNF	H3	3	31401801	31401808
	H4		31401901	31401908
1/2 - 13 UNC	H3		31402001	31402008
	H4		31402101	31402108
1/2 - 20 UNF	H3		31402201	31402208
	H4		31402301	31402308
9/16 - 12 UNC	H3	4	31402401	31402408
	H4		31402501	31402508
9/16 - 18 UNF	H3		31402601	31402608
	H4		31402701	31402708
5/8 - 11 UNC	H3		31402801	31402808
	H4		31402901	31402908
5/8 - 18 UNF	H3		31403001	31403008
	H4		31403101	31403108
3/4 - 10 UNC	H3		31403201	31403208
	H5		31403301	31403308
3/4 - 16 UNF	H3		31403401	31403408
	H4		31403501	31403508
7/8 - 9 UNC	H3		31403601	31403608
	H5		31403701	31403708
7/8 - 14 UNF	H3		31403801	31403808
	H4		31403901	31403908
1 - 8 UNC	H4		31404001	31404008
	H6		31404101	31404108
1 - 12 UNF	H4		31404201	31404208
	H6		31404301	31404308

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

STT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
314				◎	○		○	◎				○	○	◎	○		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 344STI

Spiral Pointed, Plug (4.5P-5.5P)

EXOTAP VC10 V S/O STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)	
			S/O	V
M2 X 0.4	D2	2	34400101	34400108
M2.5 X 0.45	D2		34400201	34400208
M3 X 0.5	D2	3	34400301	34400308
M4 X 0.7	D3		34400401	34400408
M5 X 0.8	D3		34400501	34400508
M6 X 1.0	D3		34400601	34400608
M8 X 1.25	D3		34400701	34400708
M10 X 1.5	D4		34400801	34400808
M12 X 1.75	D4		34400901	34400908

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (4.5P - 5.5P)	
			S/O	V
M14 X 2.0	D5	4	34401001	34401008
M16 X 2.0	D5		34401101	34401108
M18 X 2.5	D5		34401201	34401208
M20 X 2.5	D5		34401301	34401308
M22 X 2.5	D5		34401401	34401408
M24 X 3.0	D6		34401501	34401508

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
344STI				◎	○		○	◎				○	○	◎	○		
SFM				15-30	10-25		12-45	8-20				8-15	8-15	15-35	10-20		

○ good ◎ best

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List 301

Spiral Pointed, Plug (3.5P-4.5P)

EXOTAP HSSE V S/O STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			S/O	V
2 - 56 UNC	H2	2	1712401	1712408
3 - 48 UNC	H2		30100101	30100108
4 - 40 UNC	H2		1712501	1712508
4 - 48 UNF	H2		30100201	30100208
6 - 32 UNC	H2	3	1712601	1712608
	H3		1712701	1712708
6 - 40 UNF	H3		30100301	30100308
8 - 32 UNC	H2		1712801	1712808
	H3		1712901	1712908
8 - 36 UNF	H2		30100401	30100408
10 - 24 UNC	H2		30100501	30100508
	H3		30100601	30100608
10 - 32 UNF	H2		1713001	1713008
	H3		1713101	1713108
1/4 - 20 UNC	H2		30100701	30100708
	H3		30100801	30100808
1/4 - 28 UNF	H2		1713201	1713208
	H3		1713301	1713308
5/16 - 18 UNC	H3		30100901	30100908
	H4		30101101	30101108
5/16 - 24 UNF	H2		30101201	30101208
	H3		1713401	1713408
3/8 - 16 UNC	H3		30101301	30101308
	H4		30101401	30101408
3/8 - 24 UNF	H2		30101501	30101508
	H3		30101601	30101608
7/16 - 14 UNC	H3		30101701	30101708
	H4		30101801	30101808

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			S/O	V
7/16 - 20 UNF	H3	3	30101901	30101908
	H4		30102101	30102108
1/2 - 13 UNC	H3		30102201	30102208
	H4		30102301	30102308
1/2 - 20 UNF	H3		30102401	30102408
	H4		30102501	30102508
9/16 - 12 UNC	H3		30102601	30102608
	H4		30102701	30102708
9/16 - 18 UNF	H3		30102801	30102808
	H4		30102901	30102908
5/8 - 11 UNC	H3		30103101	30103108
	H4		30103201	30103208
5/8 - 18 UNF	H3		30103301	30103308
	H4		30103401	30103408
3/4 - 10 UNC	H3		30103501	30103508
	H5		30103601	30103608
3/4 - 16 UNF	H3		30103701	30103708
	H4		30103801	30103808
7/8 - 9 UNC	H3		30103901	30103908
	H5		30104101	30104108
7/8 - 14 UNF	H3		30104201	30104208
	H4		30104301	30104308
1 - 8 UNC	H4		30104401	30104408
	H6		30104501	30104508
1 - 12 UNF	H4		30104601	30104608
	H6		30104701	30104708

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
301	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 342STI

Spiral Pointed, Plug (3.5P-4P)

EXOTAP

HSSE | V | S/O | STI



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			S/O	V
M2 x 0.4	D2	2	34200101	34200108
M2.5 x 0.45	D2		34200201	34200208
M3 x 0.5	D2	3	34200301	34200308
M4 x 0.7	D3		34200401	34200408
M5 x 0.8	D3		34200501	34200508
M6 x 1.0	D3		34200601	34200608
M8 x 1.25	D3		34200701	34200708
M10 x 1.5	D4		34200801	34200808

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			S/O	V
M12 x 1.75	D4	3	34200901	34200908
M14 x 2.0	D5		34201001	34201008
M16 x 2.0	D5		34201101	34201108
M18 x 2.5	D5		34201201	34201208
M20 x 2.5	D5		34201301	34201308
M22 x 2.5	D5		34201401	34201408
M24 x 3.0	D6	4	34201501	34201508

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or V coatings as shown above.

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
342STI	◎	○	○			◎	◎	○									
SFM	25-80	20-50	20-45			20-45	20-45	8-20									

○ good ◎ best

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List 13036 NEW!

HY-PRO HSSE BR V STI

Spiral Pointed, Plug (3.5P - 4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			Bright	V
2 - 56 UNC	H2	2	1103600100	1103600108
4 - 40 UNC	H2		1103600200	1103600208
6 - 32 UNC	H2	3	1103600300	1103600308
8 - 32 UNC	H3		1103600400	1103600408
10 - 32 UNF	H3		1103600500	1103600508
1/4 - 20 UNC	H3		1103600600	1103600608
1/4 - 28 UNF	H3		1103600700	1103600708

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

HYT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P)	
			Bright	V
5/16 - 18 UNC	H3	3	1103600800	1103600808
5/16 - 24 UNF	H3		1103600900	1103600908
3/8 - 16 UNC	H3		1103601000	1103601008
3/8 - 24 UNF	H3		1103601100	1103601108
7/16 - 20 UNF	H4		1103601200	1103601208
1/2 - 20 UNF	H4		1103601300	1103601308

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

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	Med.	High														
	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
13036										◎	◎						
SFM										40-80	40-65						

○ good ◎ best

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List 125

HSS | BR | STI

Spiral Pointed, Plug (3.5P-4.5P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
2 - 56 UNC	H2	2	7002600
3 - 48 UNC	H2		7003200
4 - 40 UNC	H1		1820400
	H2		1824000
4 - 48 UNF	H2		7004400
5 - 40 UNC	H2		7005000
6 - 32 UNC	H2		1824800
	H3		1830400
6 - 40 UNF	H2		7007100
8 - 32 UNC	H2		1825200
	H3		1830800
8 - 36 UNF	H2		7008600
10 - 24 UNC	H2		1825600
	H3		7009800
10 - 32 UNF	H2		1825800
	H3		7010700
1/4 - 20 UNC	H2	3	1826400
	H3		1832000
1/4 - 28 UNF	H2		1826600
	H3		1832200
5/16 - 18 UNC	H3		7014700
	H4		7015300
5/16 - 24 UNF	H2		7015900
	H3		7016200
3/8 - 16 UNC	H3		7017100
	H4		7017400
3/8 - 24 UNF	H2		7018000
	H3		7018300

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
7/16 - 14 UNC	H3	3	12500100
	H4		12500200
7/16 - 20 UNF	H3		12500300
	H4		12500400
1/2 - 13 UNC	H3		12500500
	H4		12500600
1/2 - 20 UNF	H3		12500700
	H4		12500800
9/16 - 12 UNC	H3		12500900
	H4		12501000
9/16 - 18 UNF	H3		12501100
	H4		12501200
5/8 - 11 UNC	H3		12501300
	H4		12501400
5/8 - 18 UNF	H3		12501500
	H4		12501600
3/4 - 10 UNC	H3		12501700
	H5		12501800
3/4 - 16 UNF	H3		12501900
	H4		12502000
7/8 - 9 UNC	H3		12502100
	H5		12502200
7/8 - 14 UNF	H3		12502300
	H4		12502400
1 - 8 UNC	H4	4	12502500
	H6		12502600
1 - 12 UNF	H4		12502700
	H6		12502800

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
125	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 127

HSS BR STI

Spiral Pointed, Plug (3.5P-4P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
M2 x 0.4	D2	2	12700100
M2.5 x 0.45	D2		12700200
M3 x 0.5	D2		12700300
M4 x 0.7	D3		12700400
M5 x 0.8	D3		12700500
M6 x 1.0	D3	3	12700600
M8 x 1.25	D3		12700700
M10 x 1.5	D4		12700800

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

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Plug (3.5P - 4.5P) Bright
M12 x 1.75	D4	3	12700900
M14 x 2.0	D5		12701000
M16 x 2.0	D5		12701100
M18 x 2.5	D5		12701200
M20 x 2.5	D5		12701300
M22 x 2.5	D5		12701400
M24 x 3.0	D6	4	12701500

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

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
127	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 126

HSS BR STI

Straight Fluted, Plug (3.5P-4.5P), Bottom (1.5P-2P)



Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
No.2 - 56 UNC	H2	3	6002700	6002600
No.3 - 48 UNC	H2		6003300	6003200
No.4 - 40 UNC	H1		6004600	6004500
	H2		1804100	1804000
No.4 - 48 UNF	H2		12600200	12600100
No.5 - 40 UNC	H2		6006100	6006000
No.6 - 32 UNC	H2		6006700	6006600
	H3		1810500	1810400
No.6 - 40 UNF	H2		6007600	6007500
No.8 - 32 UNC	H2		6008200	6008100
	H3		1810900	1810800
No.8 - 36 UNF	H2		12600400	12600300
No.10 - 24 UNC	H2		1805700	1805600
	H3		6010300	6010200
No.10 - 32 UNF	H2		1805900	1805800
	H3		1811500	1811400
1/4" - 20 UNC	H2		6013300	6013200
	H3		1812100	1812000
1/4" - 28 UNF	H2		1806700	1806600
	H3		6014500	6014400
5/16" - 18 UNC	H3	4	1812500	1812400
	H4		6015700	6015600
5/16" - 24 UNF	H2		12600600	12600500
	H3		6016600	6016500
3/8" - 16 UNC	H3		1812900	1812800
	H4		12600800	12600700
3/8" - 24 UNF	H2		6018400	6018300
	H3		6018700	6018600

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

STT

Tap Size	Thread Limit	No. of Flutes	EDP Number	
			Bottom (1.5P - 2P)	Plug (3.5P - 4.5P)
			Bright	Bright
7/16" - 14 UNC	H3	4	6019600	1813200
	H4		6019900	6019800
7/16" - 20 UNF	H3		1813500	1813400
	H4		12601000	12600900
1/2" - 13 UNC	H3		6022000	1813600
	H4		12601200	12601100
1/2" - 20 UNF	H3		1813900	1813800
	H4		12601400	12601300
9/16" - 12 UNC	H3		12601600	12601500
	H4		12601800	12601700
9/16" - 18 UNF	H3		12602000	12601900
	H4		12602200	12602100
5/8" - 11 UNC	H3		12602400	12602300
	H4		12602600	12602500
5/8" - 18 UNF	H3		12602800	12602700
	H4		12603000	12602900
3/4" - 10 UNC	H3		12603200	12603100
	H5		12603400	12603300
3/4" - 16 UNF	H3		12603600	12603500
	H4		12603800	12603700
7/8" - 9 UNC	H3		12604000	12603900
	H5		12604200	12604100
7/8" - 14 UNF	H3		12604400	12604300
	H4		12604600	12604500
1" - 8 UNC	H4		12604800	12604700
	H6		12605000	12604900
1" - 12 UNF	H4		12605200	12605100
	H6		12605400	12605300

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

STT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
126	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 128

HSS BR STI

Straight Fluted, Modified Bottom (2.5P-3P)



Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M2 x 0.4	D2	2	12800100
M2.5 x 0.45	D2		12800200
M3 x 0.5	D2	3	12800300
M4 x 0.7	D3		12800400
M5 x 0.8	D3		12800500
M6 x 1.0	D3		12800600
M8 x 1.25	D3		12800700
M10 x 1.5	D4		12800800

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

EXT

Tap Size	Thread Limit	No. of Flutes	EDP Number Modified Bottom (2.5P - 3P) Bright
M12 x 1.75	D4	3	12800900
M14 x 2.0	D5		12801000
M16 x 2.0	D5		12801100
M18 x 2.5	D5	4	12801200
M20 x 2.5	D5		12801300
M22 x 2.5	D5		12801400
M24 x 3.0	D6		12801500

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

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
128	▢	▢	▢						▢	▢	▢						
SFM	25-80	20-50	20-45						25-75	40-80	40-65						

▢ good ▣ best

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List 308

NPT

EXOTAP | HSSE | TiN | S/O | 15°



Tap Size	No. of Flutes	EDP Number NPT	
		S/O	TiN
1/16 - 27	4	1735001	1735005
1/8 - 27 (Sm. Shk)		1735201	1735205
1/8 - 27 (Lg. Shk)		1735101	1735105
1/4 - 18		1735301	1735305
3/8 - 18		1735401	1735405

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or TiN coatings as shown above.

EXT

Tap Size	No. of Flutes	EDP Number NPT	
		S/O	TiN
1/2 - 14	4	1735501	1735505
3/4 - 14		–	1744805
	5	1735601	–
1 - 11,1/2	4	–	1744905
	5	1735701	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or TiN coatings as shown above.

EXT

Troubleshooting

Problem	Causes	Solutions
Chipping	• Excessive Tapping Speed • Misalignment • Hole Size is Too Small • Poor Tapping Fluid	• Increase Tapping Speed to 15-18 SFM • Adjust and Use Radial Float Tapping Head • Check Hole Size • Use a Heavy Duty Lubricant
Poor Finish (Chatter Mark)	• Excessive Tapping Speed • Excessive Hook Angle • Poor Tapping Fluid	• Reduce Tapping Speed to 10-15 SFM • Adjust Hook Angle During Regrind • Use Cutting Oil or Tapping Lubricant
Stop Mark	• Excessive Tapping Speed • Poor Tapping Head • Poor Setup	• Reduce Tapping Speed to 10-15 SFM • Use Floating Tapping Head • Special Design Taps or Threadmill

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
308	▢	▢				▣	▣	▣									
SFM	15-40	10-25				10-25	10-25	8-12									

▢ good ▣ best

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List 318

NPTF

EXOTAP® HSSE TiN S/O 15°



Tap Size	No. of Flutes	EDP Number NPT	
		S/O	TiN
1/16 - 27	4	1737501	1737505
1/8 - 27 (Sm. Shk)		1737701	1737705
1/8 - 27 (Lg. Shk)		1737601	1737605
1/4 - 18		1737801	1737805
3/8 - 18		1737901	1737905

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or TiN coatings as shown above.

EXT

Tap Size	No. of Flutes	EDP Number NPT	
		S/O	TiN
1/2 - 14	4	1738001	1738005
3/4 - 14		–	1739905
	5	1738101	–
1 - 11,1/2	4	–	1744605
	5	1738201	–

Packed: 1 pc.
EDP's listed above are stocked standard.
Available in Steam Oxide or TiN coatings as shown above.

EXT

Troubleshooting

Problem	Causes	Solutions
Chipping	• Excessive Tapping Speed • Misalignment • Hole Size is Too Small • Poor Tapping Fluid	• Increase Tapping Speed to 15-18 SFM • Adjust and Use Radial Float Tapping Head • Check Hole Size • Use a Heavy Duty Lubricant
Poor Finish (Chatter Mark)	• Excessive Tapping Speed • Excessive Hook Angle • Poor Tapping Fluid	• Reduce Tapping Speed to 10-15 SFM • Adjust Hook Angle During Regrind • Use Cutting Oil or Tapping Lubricant
Stop Mark	• Excessive Tapping Speed • Poor Tapping Head • Poor Setup	• Reduce Tapping Speed to 10-15 SFM • Use Floating Tapping Head • Special Design Taps or Threadmill

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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	
318	▢	▢				▣	▣	▣										
SFM	15-40	10-25				10-25	10-25	8-12										

▢ good ▣ best

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List 12053

NPT, Interrupted

HY-PRO | HSSE | TiCN | 10°



Tap Size	No. of Flutes	EDP Number NPT, Interrupted TiCN
1/8 - 27 (Sm. Shk)	3	1205300108
1/8 - 27 (Lg. Shk)		1205300208
1/4 - 18		1205300308

Packed: 1 pc.
Available TiCN coating only.

HYT

Tap Size	No. of Flutes	EDP Number NPT, Interrupted TiCN
3/8 - 18	5	1205300408
1/2 - 14		1205300508
3/4 - 14		1205300608
1 - 11,1/2		1205300708

Packed: 1 pc.
Available TiCN coating only.

HYT

List 12054

NPTF, Interrupted

HY-PRO | HSSE | TiCN | 10°



Tap Size	No. of Flutes	EDP Number NPTF, Interrupted TiCN
1/8 - 27 (Sm. Shk)	3	1205400108
1/8 - 27 (Lg. Shk)		1205400208
1/4 - 18		1205400308

Packed: 1 pc.
Available TiCN coating only.

HYT

Tap Size	No. of Flutes	EDP Number NPTF, Interrupted TiCN
3/8 - 18	5	1205400408
1/2 - 14		1205400508
3/4 - 14		1205400608
1 - 11,1/2		1205400708

Packed: 1 pc.
Available TiCN coating only.

HYT

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
12053	○	◎	◎	◎	◎	○	○	○	○					○	○		
12054	○	◎	◎	◎	◎	○	○	○	○					○	○		
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

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List 328

NPT, ANPT

EXOTAP HSS-CO BR



Tap Size	No. of Flutes	EDP Number NPT, ANPT Bright
1/8 - 27 (Lg. Shk)	4	1736000
1/4 - 18		1736100
3/8 - 18		1736200

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

EXT

Tap Size	No. of Flutes	EDP Number NPT, ANPT Bright
1/2 - 14	4	1736300
3/4 - 14	5	1736400

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

EXT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
328	○	○	○	◎	◎	○	○	○						◎	○		
SFM	15-40	10-25	10-20	10-25	10-15	10-25	10-25	8-12						10-20	8-12		

○ good ◎ best

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List 108

HSS | TiCN | TiN | S/O | BR

NPT, ANPT



Tap Size	No. of Flutes	EDP Number NPT, ANPT			
		Bright	S/O	TiN	TiCN
1/16 - 27	4	1310000	1310001	1310005	1310008
1/8 - 27 (Sm. Shk)		1310200	1310201	1310205	1310208
1/8 - 27 (Lg. Shk)		1310100	1310101	1310105	1310108
1/4 - 18		1310300	1310301	1310305	1310308
3/8 - 18		1310400	1310401	1310405	1310408
1/2 - 14		1310500	1310501	1310505	1310508

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

STT

Tap Size	No. of Flutes	EDP Number NPT, ANPT			
		Bright	S/O	TiN	TiCN
3/4 - 14	5	1310600	1310601	1310605	1310608
1 - 11,1/2		1310700	1310701	1310705	1310708
1,1/4 - 11,1/2		1310800	1310801	–	1310808
1,1/2 - 11,1/2	7	1310900	1310901	–	1310908
2 - 11,1/2		1311000	1311001	–	1311008

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

STT

List 108AL

HSS | BR

NPT, For Aluminum



Tap Size	No. of Flutes	EDP Number NPT
		Bright
1/8 - 27 (Lg. Shk)	4	1311100
1/4 - 18		1311200
3/8 - 18		1311400
1/2 - 14		1311800

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

STT

Tap Size	No. of Flutes	EDP Number NPT
		Bright
3/4 - 14	5	1311500
1 - 11,1/2		1311600

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
108	▢	▢	▢						▢	▢	▢						
108AL										◎	◎						
SFM	15-40	10-25	10-20						15-50	15-40	20-35						

▢ good ◎ best

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List 118

NPTF

HSS | TiCN | TiN | S/O | BR



Tap Size	No. of Flutes	EDP Number NPTF			
		Bright	S/O	TiN	TiCN
1/16 - 27	4	1312500	1312501	1312505	1312508
1/8 - 27 (Sm. Shk)		1312700	1312701	1312705	1312708
1/8 - 27 (Lg. Shk)		1312600	1312601	1312605	1312608
1/4 - 18		1312800	1312801	1312805	1312808
3/8 - 18		1312900	1312901	1312905	1312908
1/2 - 14		1313000	1313001	1313005	1313008

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

STT

Tap Size	No. of Flutes	EDP Number NPTF			
		Bright	S/O	TiN	TiCN
3/4 - 14	5	1313100	1313101	1313105	1313108
1 - 11,1/2		1313200	1313201	–	1313208
1,1/4 - 11,1/2		1313300	1313301	–	1313308
1,1/2 - 11,1/2	7	1313400	1313401	–	1313408
2 - 11,1/2		1313500	1313501	–	1313508

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
118	▢	▢	▢						▢	▢	▢						
SFM	15-40	10-25	10-20						15-50	15-40	20-35						

▢ good ▣ best

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List 108G

HSS | TiCN | S/O | BR

Interrupted Thread, NPT, NPTF, ANPT



Tap Size	No. of Flutes	EDP Number					
		NPT, ANPT, Interrupted Thread			NPTF, Interrupted Thread		
		Bright	S/O	TiCN	Bright	S/O	TiCN
1/8 - 27 (Sm. Shk)	5	1315200	1315201	1315208	3310500	3310501	3310508
1/8 - 27 (Lg. Shk)		1315100	1315101	1315108	3310100	3310101	3310108
1/4 - 18		1315300	1315301	1315308	3310900	3310901	3310908
3/8 - 18		1315400	1315401	1315408	1311300	1311301	1311308
1/2 - 14		1315500	1315501	1315508	1311700	1311701	1311708
3/4 - 14		1315600	1315601	1315608	1312100	1312101	1312108
1 - 11,1/2		1315700	1315701	1315708	3312500	3312501	3312508
1,1/4 - 11,1/2		1315800	1315801	1315808	3312900	3312901	3312908
1,1/2 - 11,1/2	7	1315900	1315901	1315908	–	–	–
2 - 11,1/2		1316000	1316001	–	–	–	–

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

STT

List S125

HSS | TiCN | S/O | BR | 15°

Short Projection, NPT, NPTF



Tap Size	No. of Flutes	Projection	EDP Number					
			NPT, ANPT, Interrupted Thread			NPTF, Interrupted Thread		
			Bright	S/O	TiCN	Bright	S/O	TiCN
1/8 - 27 (Lg. Shk)	4	0.2344	1250500	1250501	1250508	1250600	1250601	1250608
1/4 - 18		0.3750	1251300	1251301	1251308	1251400	1251401	1251408
3/8 - 18		0.3750	1251700	1251701	1251708	1251800	1251801	1251808
1/2 - 14		0.4687	1252100	1252101	1252108	1252200	1252201	1252208
3/4 - 14	5	0.4531	1252500	1252501	1252508	1252600	1252601	1252608
1 - 11,1/2		0.5781	1252900	1252901	1252908	1253000	1253001	1253008

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

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														
	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
108G	▢	▢	▢						▢	▢	▢						
S125	▢	▢	▢						▢	▢	▢						
SFM	15-40	10-25	10-20						15-50	15-40	20-35						

▢ good ▣ best

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List 12006

HSS BR

Special Short Projection, NPTF



Tap Size	No. of Flutes	Projection	EDP Number NPTF, Short Projection Bright
1/8 - 27 (Lg. Shk)	4	0.204	1200600100
		0.167	1200600600
1/4 - 18		0.306	1200600200
		0.251	1200600700
3/8 - 18		0.306	1200600300
		0.251	1200600800

Packed: 1 pc.
Available Bright finish only.

STT

Tap Size	No. of Flutes	Projection	EDP Number NPTF, Short Projection Bright
1/2 - 14	4	0.393	1200600400
		0.322	1200600900
3/4 - 14	5	0.393	1200600500
		0.322	1200601000

Packed: 1 pc.
Available Bright finish only.

STT

List 12007

HSS BR

NPT



Tap Size	No. of Flutes	EDP Number NPT Bright
1/8 - 27 (Lg. Shk)	4	1200700200
1/4 - 18		1200700400
3/8 - 18		1200700500

Packed: 1 pc.
Available Bright finish only.

STT

Tap Size	No. of Flutes	EDP Number NPT Bright
1/2 - 14	4	1200700600
3/4 - 14	5	1200700700

Packed: 1 pc.
Available Bright finish only.

STT

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
12006	▢	▢	▢						▢	▢	▢						
12007	▢	▢	▢						▢	▢	▢						
SFM	15-40	10-25	10-20						15-50	15-40	20-35						

▢ good ▢ best

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List 109

HSS | S/O | BR

NPS, NPSF



Tap Size	No. of Flutes	EDP Number			
		NPS		NPSF	
		Bright	S/O	Bright	S/O
1/8 - 27 (Sm. Shk)	4	1330200	1330201	1332700	1332701
1/8 - 27 (Lg. Shk)		1330100	1330101	1332600	1332601
1/4 - 18		1330300	1330301	1332800	1332801
3/8 - 18		1330400	1330401	1332900	1332901
1/2 - 14		1330500	1330501	1333000	1333001
3/4 - 14	5	1330600	1330601	1333100	1333101
1 - 11,1/2		1330700	1330701	1333200	1333201

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

STT

Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
109	▢	▢	▢						▢	▢	▢						
SFM	15-40	10-25	10-20						15-50	15-40	20-35						

▢ good ▢ best

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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	0.099			2723600
3 - 56 UNF				2723700

Packed: 1 pc.
Available Bright finish only.

STT

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			2724700

Packed: 1 pc.
Available Bright finish only.

STT

List 134

HSS BR

Adjustable Round Split Dies, Special Alloy Tool Steel



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
0 - 80 UNF	0.0600	13/16	1/4	2726000
1/16 - 64 UNC	0.0625	13/16	1/4	2700100
1 - 64 UNC	0.0730	13/16	1/4	2726200
1 - 72 UNF		13/16	1/4	2726300
2 - 56 UNC	0.0860	13/16	1/4	2726400
2 - 64 UNF		13/16	1/4	2726500
3/32 - 48 UNC	0.0937	13/16	1/4	2700200
3 - 48 UNC	0.0990	13/16	1/4	2726600
3 - 56 UNF		13/16	1/4	2726700
4 - 36 UNS	0.1120	13/16	1/4	2726900
4 - 40 UNC		13/16	1/4	2727000
4 - 48 UNF		13/16	1/4	2727100
5 - 40 UNC	0.1250	13/16	1/4	2727200
5 - 44 UNF		13/16	1/4	2727300
1/8 - 40 UNC	0.1250	13/16	1/4	2700300
6 - 32 UNC	0.1380	13/16	1/4	2727400
		1	3/8	2728800
6 - 40 UNF		13/16	1/4	2727600
5/32 - 32 UNC	0.1562	13/16	1/4	2700400
5/32 - 36 UNF		13/16	1/4	2700500
8 - 32 UNC	0.1640	13/16	1/4	2727700
		1	3/8	2729100
8 - 36 UNF		13/16	1/4	2727800
3/16 - 24 UNC	0.1875	13/16	1/4	2700600
		1	3/8	2702400
3/16 - 32 UNF		13/16	1/4	2700700
		1	3/8	2702500
10 - 24 UNC	0.1900	13/16	1/4	2728000
		1	3/8	2729400

Packed: 1 pc.
Available Bright finish only.

STT

Size	Major Diameter	Outside Diameter	Thickness	EDP Number
10 - 32 UNF	0.1900	13/16	1/4	2728200
		1	3/8	2729600
12 - 24 UNC	0.2160	13/16	1/4	2728300
		1	3/8	2729700
12 - 28 UNF		13/16	1/4	2728400
7/32 - 24 UNC	0.2187	13/16	1/4	2700800
1/4 - 20 UNC	0.2500	13/16	1/4	2701000
		1	3/8	2702800
		1 - 5/16	7/16	2704100
		1 - 1/2	1/2	2706100
		2	5/8	2710000
1/4 - 24 UNF		1	3/8	2702900
1/4 - 28 UNF		13/16	1/4	2701200
		1	3/8	2703000
		1 - 5/16	7/16	2704300
		1 - 1/2	1/2	2706300
		2	5/8	2710100
1/4 - 32 UNS*		1	3/8	2703100
5/16 - 18 UNC	0.3125	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		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 UNS*		1	3/8	2703400

Packed: 1 pc.
Available Bright finish only.

continued on next page

STT

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List 134

HSS BR

Adjustable Round Split Dies, Special Alloy Tool Steel



Size	Major Diameter	Outside Diameter	Thickness	EDP Number
3/8 - 16 UNC	0.3750	1	3/8	2703500
		1 - 5/16	7/16	2704800
		1 - 1/2	1/2	2706800
		2	5/8	2710700
3/8 - 24 UNF		1	3/8	2703600
		1 - 5/16	7/16	2704900
		1 - 1/2	1/2	2706900
		2	5/8	2710800
7/16 - 14 UNC	0.4375	1	3/8	2703700
		1 - 5/16	7/16	2705000
		1 - 1/2	1/2	2707000
		2	5/8	2710900
7/16 - 20 UNF		1	3/8	2703800
		1 - 5/16	7/16	2705100
		1 - 1/2	1/2	2707100
		2	5/8	2711000
1/2 - 13 UNC	0.5000	1 - 5/16	7/16	2705200
		1 - 1/2	1/2	2707200
		2	5/8	2711100
1/2 - 20 UNF		1 - 5/16	7/16	2705300
		1 - 1/2	1/2	2707300
		2	5/8	2711200
9/16 - 12 UNC	0.5625	1 - 1/2	1/2	2707400
		2	5/8	2711300
9/16 - 18 UNF		1 - 1/2	1/2	2707500
		2	5/8	2711400
5/8 - 11 UNC	0.6250	1 - 1/2	1/2	2707600
		2	5/8	2711500
		2 - 1/2	3/4	2713400

Packed: 1 pc.
Available Bright finish only.

STT

Size	Major Diameter	Outside Diameter	Thickness	EDP Number
5/8 - 18 UNF	0.6250	1 - 1/2	1/2	2707700
		2	5/8	2711600
11/16 - 11 UNS	0.06875	2	5/8	2711700
11/16 - 16 UNS		2	5/8	2711800
3/4 - 10 UNC	0.7500	2	5/8	2712000
		2 - 1/2	3/4	2713800
3/4 - 16 UNF		2	5/8	2712100
		2 - 1/2	3/4	2713900
7/8 - 9 UNC	0.8750	2	5/8	2712200
		2 - 1/2	3/4	2714000
7/8 - 14 UNF		2	5/8	2712300
		2 - 1/2	3/4	2714100
1 - 8 UNC	1.0000	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
		3	1	2715200
1,1/8 - 7 UNC	1.1250	3	1	2715300
1,1/8 - 12 UNF		3	1	2715400
1,1/4 - 7 UNC	1.2500	3	1	2715500
1,1/4 - 12 UNF		3	1	2715600
1,3/8 - 6 UNC	1.3750	3	1	2715700
1,3/8 - 12 UNF		3	1	2715800
1,1/2 - 6 UNC	1.5000	3	1	2715900
1,1/2 - 12 UNF		3	1	2716000

Packed: 1 pc.
Available Bright finish only.

STT

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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	1-1/2	1/2	2734200
	2	5/8	2734400

Packed: 1 pc.
Available Bright finish only.

STT

Size	Outside Diameter	Thickness	EDP Number
3/8 - 18	1-1/2	1/2	2734300
	2	5/8	2734500
1/2 - 14	2	5/8	2734600

Packed: 1 pc.
Available Bright finish only.

STT

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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	20	7	46015
M2.5 X 0.45	20	7	46017
M2.6 X 0.45	20	7	46020
M3 X 0.5	20	7	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	25	9	46070
M5 X 0.8	20	7	46034
M5 X 0.8	25	9	46074
M6 X 1	20	7	46038
M6 X 1.0	25	9	46079
M6 X 0.75	25	9	46080
M7 X 1.0	25	9	46082
M8 X 1.25	25	9	46085
M8 X 1.0	25	9	46086
M8 X 0.75	25	9	46087
M9 X 1.25	25	9	46089
M10 X 1.5	25	9	46093
M10 X 1.5	38	13	46142
M10 X 1.25	38	13	46143
M10 X 1.0	38	13	46144
M11 X 1.5	38	13	46147

Packed: 1 pc.
Available Bright finish only.

STT

Size	Outside Diameter	Thickness	EDP Number
M12 X 1.75	25	9	1351120
M12 X 1.75	38	13	46152
M12 X 1.5	38	13	46153
M12 X 1.25	38	13	46154
M12 X 1.0	38	13	46155
M14 X 2.0	38	13	46163
M14 X 1.5	38	13	46164
M14 X 1.25	38	13	46165
M16 X 2.0	50	16	46227
M16 X 1.5	50	16	46228
M16 X 1.0	50	16	46230
M18 X 2.5	50	16	46239
M18 X 1.5	50	16	46241
M20 X 2.5	50	16	46251
M20 X 1.5	50	16	46253
M22 X 2.5	50	16	46263
M22 X 1.5	50	16	46265
M24 X 3.0	50	16	46276
M24 X 1.5	50	16	46279
M26 X 3.0	57	20	46329
M26 X 1.5	57	20	46331
M28 X 1.5	57	20	46341
M30 X 3.5	57	20	46344
M30 X 1.5	57	20	46347

Packed: 1 pc.
Available Bright finish only.

STT

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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	Long Form*
2 - 56 UNC	2B	1/4	3/16	0.0744	0.0772	1500100100	1500100100LF
2 - 64 UNF	2B	1/4	3/16	0.0759	0.0786	1500100200	1500100200LF
3 - 48 UNC	2B	1/4	3/16	0.0855	0.0885	1500100300	1500100300LF
3 - 56 UNF	2B	1/4	3/16	0.0874	0.0902	1500100400	1500100400LF
4 - 40 UNC	2B	5/16	7/32	0.0958	0.0991	1500100500	1500100500LF
4 - 48 UNF	2B	5/16	7/32	0.0985	0.1016	1500100600	1500100600LF
5 - 40 UNC	2B	5/16	7/32	0.1088	0.1121	1500100700	1500100700LF
5 - 44 UNF	2B	5/16	7/32	0.1102	0.1134	1500100800	1500100800LF
6 - 32 UNC	2B	5/16	7/32	0.1177	0.1214	1500100900	1500100900LF
6 - 40 UNF	2B	5/16	7/32	0.1218	0.1252	1500101000	1500101000LF
8 - 32 UNC	2B	13/32	9/32	0.1437	0.1475	1500101100	1500101100LF
8 - 36 UNF	2B	13/32	9/32	0.146	0.1496	1500101200	1500101200LF
10 - 24 UNC	2B	13/32	9/32	0.1629	0.1672	1500101300	1500101300LF
10 - 32 UNF	2B	13/32	9/32	0.1697	0.1736	1500101400	1500101400LF
12 - 24 UNC	2B	13/32	9/32	0.1889	0.1933	1500101500	1500101500LF
12 - 28 UNF	2B	13/32	9/32	0.1928	0.197	1500101600	1500101600LF
1/4 - 20 UNC	2B	1/2	5/16	0.2175	0.2224	1500101700	1500101700LF
1/4 - 28 UNF	2B	1/2	5/16	0.2268	0.2311	1500101800	1500101800LF
5/16 - 18 UNC	2B	1/2	5/16	0.2764	0.2817	1500101900	1500101900LF
5/16 - 24 UNF	2B	1/2	5/16	0.2854	0.2902	1500102000	1500102000LF
3/8 - 16 UNC	2B	3/4	3/8	0.3344	0.3401	1500102100	1500102100LF
3/8 - 24 UNF	2B	3/4	3/8	0.3479	0.3528	1500102200	1500102200LF
7/16 - 14 UNC	2B	3/4	3/8	0.3911	0.3972	1500102300	1500102300LF
7/16 - 20 UNF	2B	3/4	3/8	0.405	0.4104	1500102400	1500102400LF
1/2 - 13 UNC	2B	3/4	3/8	0.45	0.4565	1500102500	1500102500LF
1/2 - 20 UNF	2B	3/4	3/8	0.4675	0.4731	1500102600	1500102600LF
9/16 - 12 UNC	2B	7/8	1/2	0.5084	0.5152	1500102700	1500102700LF
9/16 - 18 UNF	2B	7/8	1/2	0.5264	0.5323	1500102800	1500102800LF
5/8 - 11 UNC	2B	7/8	1/2	0.566	0.5732	1500102900	1500102900LF
5/8 - 18 UNF	2B	7/8	1/2	0.5889	0.5949	1500103000	1500103000LF
3/4 - 10 UNC	2B	7/8	1/2	0.685	0.6927	1500103100	1500103100LF
3/4 - 16 UNF	2B	7/8	1/2	0.7094	0.7159	1500103200	1500103200LF
7/8 - 9 UNC	2B	1	5/8	0.8028	0.811	1500103300	1500103300LF
7/8 - 14 UNF	2B	1	5/8	0.8286	0.8356	1500103400	1500103400LF
1 - 8 UNC	2B	1	5/8	0.9188	0.9276	1500103500	1500103500LF
1 - 12 UNF	2B	1	5/8	0.9459	0.9535	1500103600	1500103600LF
1 - 14 UNS	2B	1	5/8	0.9536	0.9609	1500103700	1500103700LF
1,1/8 - 7 UNC	2B	1	5/8	1.0322	1.0416	1500103800	1500103800LF
1,1/8 - 12 UNF	2B	1	5/8	1.0709	1.0787	1500103900	1500103900LF
1,1/4 - 7 UNC	2B	1 1/4	3/4	1.1572	1.1668	1500104000	1500104000LF
1,1/4 - 12 UNF	2B	1	3/4	1.1959	1.2039	1500104100	1500104100LF
1,3/8 - 6 UNC	2B	1 1/4	3/4	1.2667	1.2771	1500104200	1500104200LF
1,3/8 - 12 UNF	2B	1	3/4	1.3209	1.3291	1500104300	1500104300LF
1,1/2 - 6 UNC	2B	1 1/4	3/4	1.3917	1.4022	1500104400	1500104400LF
1,1/2 - 12 UNF	2B	1	3/4	1.4459	1.4542	1500104500	1500104500LF

Packed: 1 pc.
Available Bright finish only.

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.**

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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	Long Form*
M3 x 0.5	6H	7.9	5.6	2.675	2.775	1500200100	1500200100LF
M3.5 x 0.6	6H	7.9	5.6	3.11	3.222	1500200200	1500200200LF
M4 x 0.7	6H	10.3	7.1	3.545	3.663	1500200300	1500200300LF
M5 x 0.8	6H	10.3	7.1	4.48	4.605	1500200400	1500200400LF
M6 x 0.75	6H	12.7	7.9	5.513	5.645	1500200500	1500200500LF
M6 x 1	6H	12.7	7.9	5.35	5.5	1500200600	1500200600LF
M7 x 1	6H	12.7	7.9	6.35	6.5	1500200700	1500200700LF
M8 x 1	6H	12.7	7.9	7.35	7.5	1500200800	1500200800LF
M8 x 1.25	6H	12.7	7.9	7.188	7.348	1500200900	1500200900LF
M10 x 1	6H	19	9.5	9.35	9.5	1500201000	1500201000LF
M10 x 1.25	6H	19	9.5	9.188	9.348	1500201100	1500201100LF
M10 x 1.5	6H	19	9.5	9.026	9.206	1500201200	1500201200LF
M12 x 1.25	6H	19	9.5	11.188	11.368	1500201300	1500201300LF
M12 x 1.5	6H	19	9.5	11.026	11.216	1500201400	1500201400LF
M12 x 1.75	6H	19	9.5	10.863	11.063	1500201500	1500201500LF
M14 x 1.5	6H	22.2	12.7	13.026	13.216	1500201600	1500201600LF
M14 x 2	6H	22.2	12.7	12.701	12.913	1500201700	1500201700LF
M16 x 1.5	6H	22.2	12.7	15.026	15.216	1500201800	1500201800LF
M16 x 2	6H	22.2	12.7	14.701	14.913	1500201900	1500201900LF
M18 x 1.5	6H	22.2	12.7	17.026	17.216	1500202000	1500202000LF
M18 x 2.5	6H	22.2	12.7	16.376	16.6	1500202100	1500202100LF
M20 x 1.5	6H	22.2	12.7	19.026	19.216	1500202200	1500202200LF
M20 x 2.5	6H	22.2	12.7	18.376	18.6	1500202300	1500202300LF
M22 x 1.5	6H	25.4	15.9	21.026	21.216	1500202400	1500202400LF
M22 x 2.5	6H	25.4	15.9	20.376	20.6	1500202500	1500202500LF
M24 x 1.5	6H	25.4	15.9	23.026	23.226	1500202600	1500202600LF
M24 x 2	6H	25.4	15.9	22.701	22.925	1500202700	1500202700LF
M24 x 3	6H	25.4	15.9	22.051	22.316	1500202800	1500202800LF

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.**

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THREADING
Technical



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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.

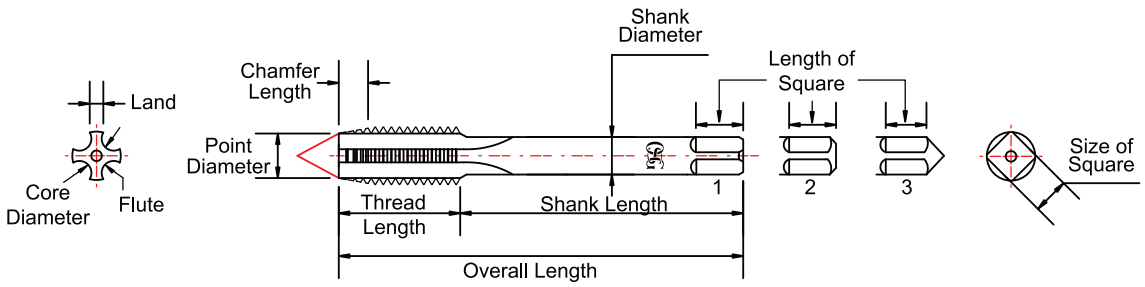
Threads per Inch: The number of threads in one inch of length.

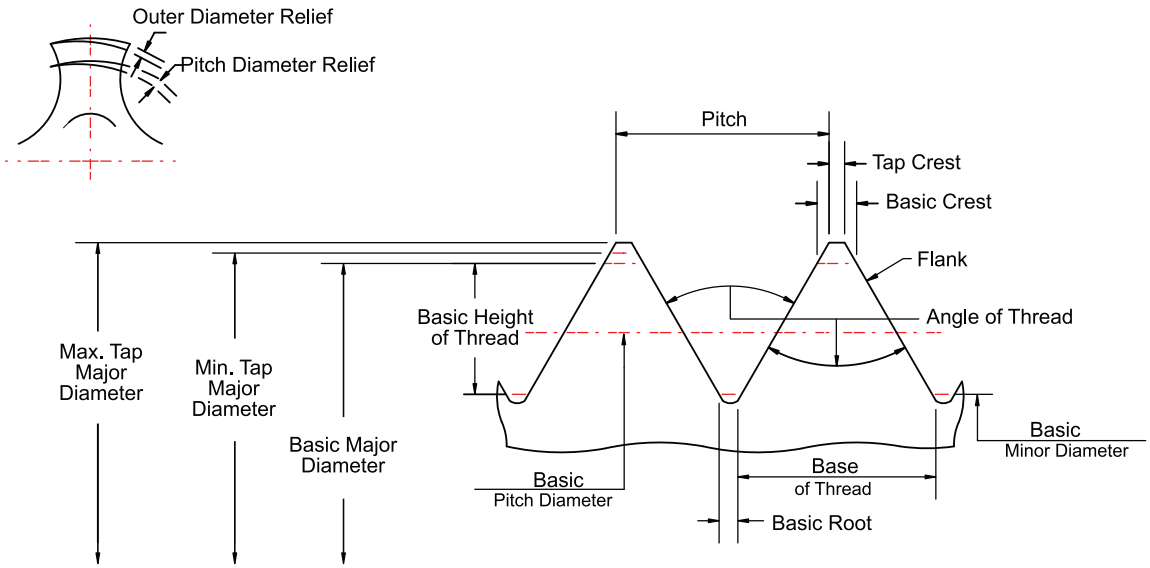
Thread:

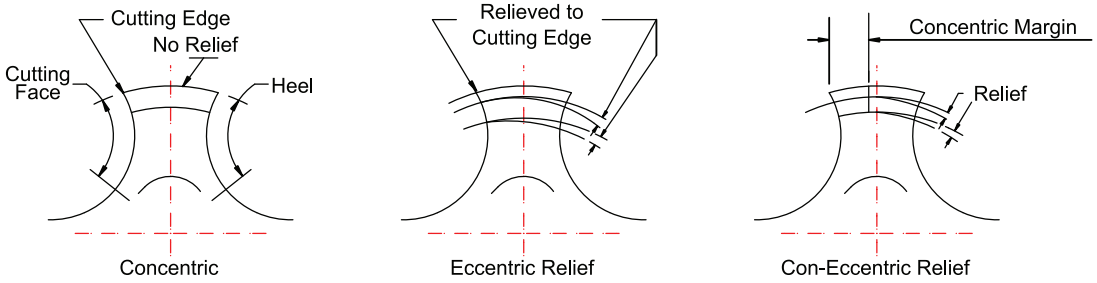
Single: A thread in which lead is equal to pitch.
Double: A thread in which lead is equal to twice the pitch.
Triple: A thread in which lead is equal to triple the pitch.

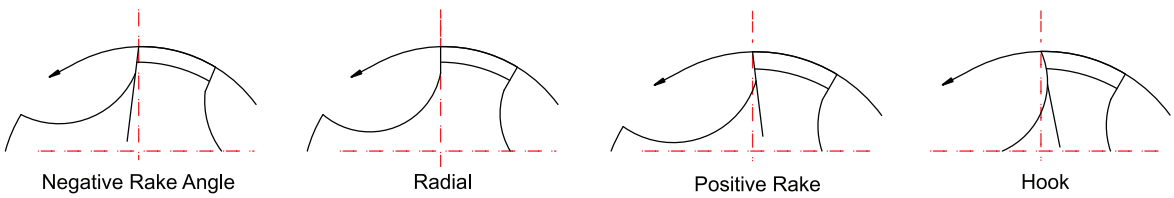
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Illustration of Tap Terms









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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

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														
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

Formulas

SFM (Surface Feet per Minute) = 0.262 x RPM x D

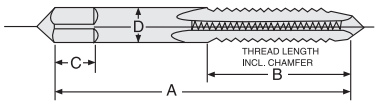
RPM (Revolutions Per Minute) = (3.82 x SFM) / D

Note: D = Diameter (Must be in inches)

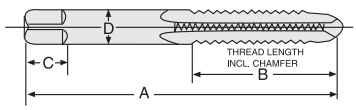
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ANSI General Tap Dimensions (USCTI Table 302)

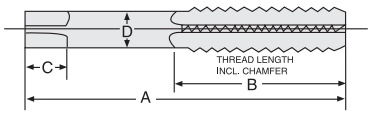
Blank Style 1



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.

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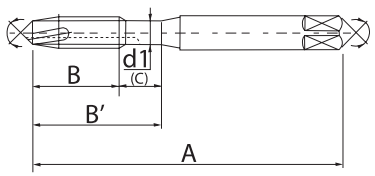
Spiral Pointed and Spiral Fluted, JIS (Table 350)

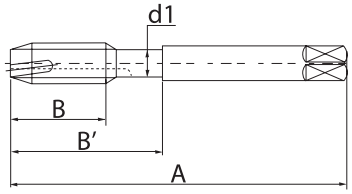
Diameter	Pitch	General Dimensions - Metric					Ground Thread Limits Class	Pitch Diameter Limit		
		Overall Length A	Length of Thread B	Length of Square C	Shank Diam. D	Size of Square E		Basic	Minimum	Maximum
M2	0.4	40	15	5	3	2.5	2	1.740	1.750	1.770
M2.3	0.4	42	15	5	3	2.5	2	2.040	2.050	2.070
M2.6	0.45	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
M8	0.75	62	20	8	6.2	5	2	7.513	7.525	7.550
	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
M10	1	70	30	8	7	5.5	2	9.350	9.362	9.387
	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
M12	1	70	30	9	8.5	6.5	2	11.350	11.365	11.395
	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
	2.5	100	48	14	14	11	2	16.376	16.396	16.431
M20	1.5	95	45	15	15	12	2	19.026	19.041	19.076
	2.5	100	48	15	15	12	2	18.376	19.396	18.431
M22	1.5	95	45	16	17	13	2	21.026	21.041	21.076
	2.5	115	55	16	17	13	2	20.376	20.396	20.431
M24	1.5	95	45	18	19	15	2	23.026	23.041	23.076
	3	120	58	18	19	15	2	22.051	22.071	22.111
M26	1.5	95	45	18	20	15	2	25.026	25.041	25.076
	3	130	62	18	20	15	2	24.051	24.071	24.076
M28	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

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Spiral Point Taps: Lists 105, 105A, 105B, 125, 142, 917*



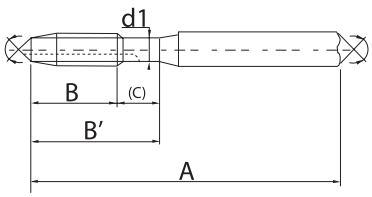


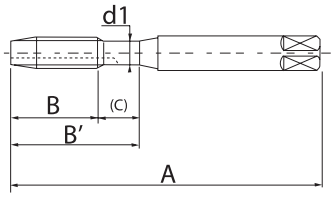
Major Diameter	Overall Length A	Thread Length B	Neck Length (C)	Thread+Neck Length B′	Neck Diameter d1
#4	1.88	0.31	0.25	0.56	0.0827
#5	1.94	0.31	0.31	0.62	0.0945
#6	2.00	0.38	0.31	0.69	0.0984
#8	2.13	0.38	0.38	0.76	0.1260
#10	2.38	0.50	0.38	0.88	0.1378
#12	2.38	0.50	0.44	0.94	0.1614
1/4	2.50	0.63	0.38	1.01	0.1850
5/16	2.72	0.69	0.44	1.13	0.2362
3/8	2.94	0.75	0.50	1.25	0.2835
7/16	3.16	0.88	0.43	1.31	0.3165
1/2	3.38	0.94	0.43	1.37	0.3606
5/8	3.81	1.09	0.47	1.56	0.4720
3/4	4.25	1.22	0.49	1.71	0.5823
M3	1.94	0.31	0.31	0.62	0.0906
M3.5	2.00	0.38	0.31	0.69	0.1063
M4	2.13	0.38	0.38	0.76	0.1181
M4.5	2.38	0.50	0.38	0.88	0.1339
M5	2.38	0.50	0.38	0.88	0.1496
M6	2.50	0.63	0.38	1.01	0.1850
M7	2.72	0.69	0.44	1.13	0.2244
M8	2.72	0.69	0.44	1.13	0.2480
M10	2.94	0.75	0.50	1.25	0.3150
M12	3.38	0.94	0.43	1.37	0.3598
M14	3.59	1.00	0.47	1.47	0.4213
M16	3.81	1.09	0.47	1.56	0.4720
M18	4.03	1.09	0.51	1.60	0.5343
M20	4.47	1.22	0.55	1.77	0.6441

Thread Length B is a minimum value
*List 917 (long shank standard) is same value except overall length.

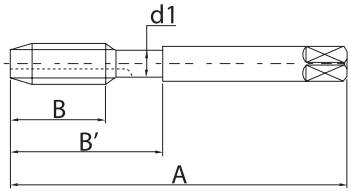
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Spiral Flute Taps: List 107, 143, S108, 918*





5/16~3/8, M7~M10



7/16~3/4, M12~M20

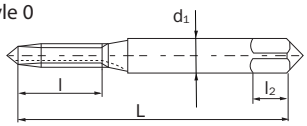
Major Diameter	Overall Length A	Thread Length B	Neck Length (C)	Thread+Neck Length B′	Neck Diameter d1
#4	1.88	0.31	0.25	0.56	0.083
#5	1.94	0.31	0.31	0.62	0.095
#6	2.00	0.38	0.31	0.69	0.098
#8	2.13	0.38	0.38	0.76	0.126
#10	2.38	0.50	0.38	0.88	0.138
#12	2.38	0.50	0.44	0.94	0.161
1/4	2.50	0.63	0.38	1.01	0.185
5/16	2.72	0.69	0.44	1.13	0.236
3/8	2.94	0.75	0.50	1.25	0.284
7/16	3.16	0.88	0.43	1.31	0.317
1/2	3.38	0.94	0.43	1.37	0.361
5/8	3.81	1.09	0.47	1.56	0.472
3/4	4.25	1.22	0.49	1.71	0.582
M3	1.94	0.31	0.31	0.62	0.091
M3.5	2.00	0.38	0.31	0.69	0.106
M4	2.13	0.38	0.38	0.76	0.118
M4.5	2.38	0.50	0.38	0.88	0.134
M5	2.38	0.50	0.38	0.88	0.150
M6	2.50	0.63	0.38	1.01	0.185
M7	2.72	0.69	0.44	1.13	0.224
M8	2.72	0.69	0.44	1.13	0.248
M10	2.94	0.75	0.50	1.25	0.315
M12	3.38	0.94	0.43	1.37	0.360
M14	3.59	1.00	0.47	1.47	0.421
M16	3.81	1.09	0.47	1.56	0.472
M18	4.03	1.09	0.51	1.60	0.534
M20	4.47	1.22	0.55	1.77	0.644

Thread Length B is a minimum value
*List 918 (long shank standard) is same value except overall length.

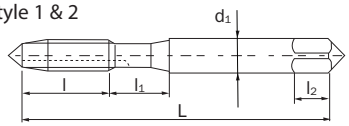
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Straight Flute Taps: Lists 101, 101C, 101N, 101H, 101L, 102, 102H, 103, 104, 141, 180

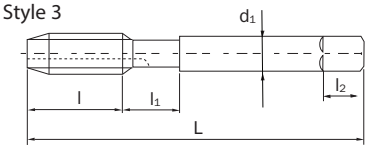
Style 0



Style 1 & 2



Style 3

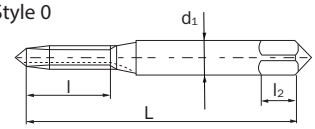


Major Diameter	Threads Per Inch	Style	Overall Length	Thread Length	Reduced Neck Length	Thread + Reduced	Neck Diameter	Square Length	Shank Diameter	Size of Square
			L	l	l_1	$l + l_1$		l_2	d_1	a
#0	80	0	1.63	0.31	-	-	-	0.19	0.141	0.11
#1	64	0	1.69	0.38	-	-	-	0.19	0.141	0.11
#1	72	0	1.69	0.38	-	-	-	0.19	0.141	0.11
#2	56	0	1.75	0.44	-	-	-	0.19	0.141	0.11
#2	64	0	1.75	0.44	-	-	-	0.19	0.141	0.11
#3	48	0	1.81	0.5	-	-	-	0.19	0.141	0.11
#3	56	0	1.81	0.5	-	-	-	0.19	0.141	0.11
#4	40	1	1.88	0.38	0.50	0.88	0.0827	0.19	0.141	0.11
#4	48	1	1.88	0.38	0.50	0.88	0.0827	0.19	0.141	0.11
#5	40	1	1.94	0.38	0.56	0.94	0.0945	0.19	0.141	0.11
#5	44	1	1.94	0.38	0.56	0.94	0.0945	0.19	0.141	0.11
#6	32	1	2	0.47	0.53	1	0.0984	0.19	0.141	0.11
#6	40	1	2	0.47	0.53	1	0.0984	0.19	0.141	0.11
#8	32	1	2.13	0.47	0.66	1.13	0.126	0.25	0.168	0.131
#8	36	1	2.13	0.47	0.66	1.13	0.126	0.25	0.168	0.131
#10	24	1	2.38	0.63	0.62	1.25	0.1378	0.25	0.194	0.152
#10	32	1	2.38	0.63	0.62	1.25	0.1378	0.25	0.194	0.152
#12	24	1	2.38	0.63	0.68	1.31	0.1614	0.28	0.22	0.165
#12	28	1	2.38	0.63	0.68	1.31	0.1614	0.28	0.22	0.165
1/4	20	2	2.5	0.75	0.63	1.38	0.185	0.31	0.255	0.191
1/4	28	2	2.5	0.75	0.63	1.38	0.185	0.31	0.255	0.191
5/16	18	2	2.72	0.83	0.73	1.56	0.2362	0.38	0.318	0.238
5/16	24	2	2.72	0.83	0.73	1.56	0.2362	0.38	0.318	0.238
3/8	16	2	2.94	0.94	0.75	1.69	0.2835	0.44	0.381	0.286
3/8	24	2	2.94	0.94	0.75	1.69	0.2835	0.44	0.381	0.286
7/16	14	3	3.16	1.07	0.62	1.69	0.3165	0.41	0.323	0.242
7/16	20	3	3.16	1.07	0.62	1.69	0.3165	0.41	0.323	0.242
1/2	13	3	3.38	1.15	0.66	1.81	0.3606	0.44	0.367	0.275
1/2	20	3	3.38	1.15	0.66	1.81	0.3606	0.44	0.367	0.275
9/16	12	3	3.59	1.25	0.69	1.94	0.4211	0.5	0.429	0.322
9/16	18	3	3.59	1.25	0.69	1.94	0.4211	0.5	0.429	0.322
5/8	11	3	3.81	1.36	0.64	2	0.472	0.56	0.48	0.36
5/8	18	3	3.81	1.36	0.64	2	0.472	0.56	0.48	0.36
11/16	11	3	4.03	1.36	0.77	2.13	0.5341	0.63	0.542	0.406
11/16	16	3	4.03	1.36	0.77	2.13	0.5341	0.63	0.542	0.406
3/4	10	3	4.25	1.50	0.72	2.22	0.5823	0.69	0.59	0.442
3/4	16	3	4.25	1.50	0.72	2.22	0.5823	0.69	0.59	0.442
13/16	12	3	4.47	1.50	0.88	2.38	0.6441	0.69	0.652	0.489
13/16	16	3	4.47	1.50	0.88	2.38	0.6441	0.69	0.652	0.489
7/8	9	3	4.69	1.67	0.83	2.5	0.6872	0.75	0.697	0.523
7/8	14	3	4.69	1.67	0.83	2.5	0.6872	0.75	0.697	0.523
15/16	12	3	4.91	1.50	1.00	2.5	0.7502	0.75	0.76	0.57
15/16	16	3	4.91	1.50	1.00	2.5	0.7502	0.75	0.76	0.57
1	8	3	5.13	1.88	0.84	2.72	0.7902	0.81	0.8	0.6
1	12	3	5.13	1.88	0.84	2.72	0.7902	0.81	0.8	0.6
1	14	3	5.13	1.88	0.84	2.72	0.7902	0.81	0.8	0.6
1 1/8	7	3	5.44	2.14	0.80	2.94	0.8662	0.88	0.896	0.672
1 1/8	8	3	5.44	1.88	1.06	2.94	0.8662	0.88	0.896	0.672
1 1/8	12	3	5.44	1.88	1.06	2.94	0.8662	0.88	0.896	0.672
1 1/4	7	3	5.75	2.14	0.86	3	1.0112	1	1.021	0.766
1 1/4	8	3	5.75	1.88	1.12	3	1.0112	1	1.021	0.766
1 1/4	12	3	5.75	1.88	1.12	3	1.0112	1	1.021	0.766

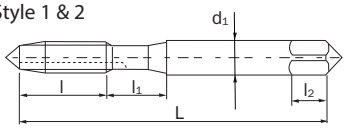
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Straight Flute Taps: Lists 101, 101C, 101N, 101H, 101L, 102, 102H, 103, 104, 141, 180

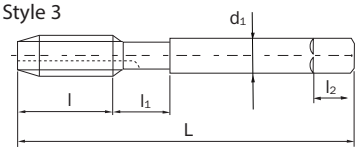
Style 0



Style 1 & 2



Style 3



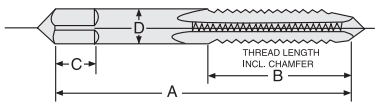
Major Diameter	Threads Per Inch	Style	Overall Length	Thread Length	Reduced Neck Length	Thread + Reduced	Neck Diameter	Square Length	Shank Diameter	Size of Square
			L	l	l_1	$l + l_1$		l_2	d_1	a
1 3/8	6	3	6.06	2.50	0.66	3.16	1.0702	1.06	1.08	0.831
1 3/8	8	3	6.06	1.88	1.28	3.16	1.0702	1.06	1.08	0.831
1 3/8	12	3	6.06	1.88	1.28	3.16	1.0702	1.06	1.08	0.831
1 1/2	6	3	6.38	2.50	0.88	3.38	1.2232	1.13	1.233	0.925
1 1/2	8	3	6.38	1.88	1.50	3.38	1.2232	1.13	1.233	0.925
1 1/2	12	3	6.38	1.88	1.50	3.38	1.2232	1.13	1.233	0.925
1 5/8	8	3	6.69	1.88	1.50	3.38	1.2952	1.13	1.305	0.979
1 3/4	8	3	7	1.88	1.71	3.59	1.4174	1.25	1.43	1.072
2	8	3	7.63	1.88	1.93	3.81	1.6314	1.38	1.644	1.233
2 1/4	8	3	8.25	1.88	2.12	4	1.8814	1.894	1.894	1.42

Major Diameter	Threads Per Inch	Style	Overall Length	Thread Length	Reduced Neck Length	Thread + Reduced	Neck Diameter	Square Length	Shank Diameter	Size of Square
			L	l	l_1	$l + l_1$		l_2	d_1	a
M2	0.4	0	1.75	0.44	-	-	-	0.19	0.141	0.11
M2.5	0.45	0	1.81	0.50	-	-	-	0.19	0.141	0.11
M3	0.5	1	1.94	0.30	0.64	0.94	0.0906	0.19	0.141	0.11
M3.5	0.6	1	2	0.35	0.65	1	0.1063	0.19	0.141	0.11
M4	0.7	1	2.13	0.41	0.72	1.13	0.1181	0.25	0.168	0.131
M4.5	0.75	1	2.38	0.44	0.81	1.25	0.1339	0.25	0.194	0.152
M5	0.8	1	2.38	0.47	0.78	1.25	0.1496	0.25	0.194	0.152
M6	1	2	2.5	0.59	0.79	1.38	0.185	0.31	0.255	0.191
M7	1	2	2.72	0.59	0.97	1.56	0.2244	0.38	0.318	0.238
M8	1	2	2.72	0.59	0.97	1.56	0.248	0.38	0.318	0.238
M8	1.25	2	2.72	0.74	0.82	1.56	0.248	0.38	0.318	0.238
M10	1	2	2.94	0.89	0.80	1.69	0.315	0.44	0.381	0.286
M10	1.25	2	2.94	0.89	0.80	1.69	0.315	0.44	0.381	0.286
M10	1.5	2	2.94	0.89	0.80	1.69	0.315	0.44	0.381	0.286
M12	1.25	3	3.38	1.03	0.78	1.81	0.3606	0.44	0.367	0.275
M12	1.5	3	3.38	1.03	0.78	1.81	0.3606	0.44	0.367	0.275
M12	1.75	3	3.38	1.03	0.78	1.81	0.3606	0.44	0.367	0.275
M14	1.25	3	3.59	1.18	0.76	1.94	0.4213	0.5	0.429	0.322
M14	1.5	3	3.59	1.18	0.76	1.94	0.4213	0.5	0.429	0.322
M14	2	3	3.59	1.18	0.76	1.94	0.4213	0.5	0.429	0.322
M16	1.5	3	3.81	1.18	0.82	2	0.472	0.56	0.48	0.36
M16	2	3	3.81	1.18	0.82	2	0.472	0.56	0.48	0.36
M18	1.5	3	4.03	1.48	0.65	2.13	0.5343	0.63	0.542	0.406
M18	2.5	3	4.03	1.48	0.65	2.13	0.5343	0.63	0.542	0.406
M20	1.5	3	4.47	1.48	0.90	2.38	0.6441	0.69	0.652	0.489
M20	2.5	3	4.47	1.48	0.90	2.38	0.6441	0.69	0.652	0.489

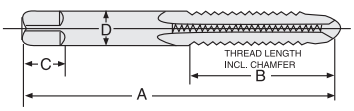
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Screw Thread Inserts General Tap Dimensions - Inch (USCTI Table 322)

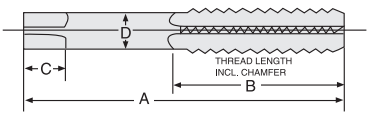
Blank Style 1



Blank Style 2



Blank Style 3



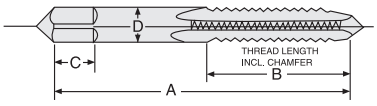
Nominal Size	Threads Per Inch		Blank Design No.	Tap Dimensions (Inch)					Table 302 Blank Equivalent
	UNC	UNF		A	B	C	D	Size of Square	
1	64	–	1	1.810	0.500	0.190	0.141	0.110	No. 3
2	56	–	1	1.880	0.560	0.190	0.141	0.110	No. 4
	–	64	1	1.880	0.560	0.190	0.141	0.110	No. 4
3	48	–	1	1.940	0.630	0.190	0.141	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
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.

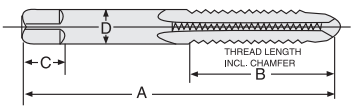
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Screw Thread Inserts General Tap Dimensions - Metric (USCTI Table 322A)

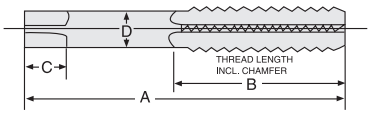
Blank Style 1



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.

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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	0.5323	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	—	14NS	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

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″

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″
H4 = Basic PD + 0.0010″ to Basic PD + 0.0020″

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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	
			Maximum		Minimum		Max.	Minimum			Maximum		Minimum	
	NC UNC	NF UNF	Class 2A	Class 3A Basic No.	Class 2A	Class 3A	Classes 2, 3 Basic Size No.	Class 2 No.	Class 3	All Classes Minimum Size No.	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

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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

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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	-	26	-	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	–	–

*Major diameter for H7 Limit Taps is 0.002" larger than values shown in min. and max. columns.

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 + 0.0001".
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".

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	–	0.8048	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	–	0.8306	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	0.9208	–	–	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	0.9479	–	–	0.8311	0.8316
1	8	—	—	1.0000	1.0081	1.0162	0.9188	0.9188	0.9193	0.9193	0.9198	–	–	0.9203	0.9556	–	–	0.9213	0.9218
1	—	12	—	1.0000	1.0054	1.0108	0.9459	–	–	–	–	–	–	0.9474	1.0342	–	–	–	–
1	—	—	14	1.0000	1.0047	1.0093	0.9536	–	–	.9541	.9546	–	–	0.9551	1.0729	–	–	0.9561	0.9566
1 1/8	7	—	—	1.1250	1.1343	1.1436	1.0322	–	–	–	–	–	–	1.0332	1.1592	–	–	–	–
1 1/8	—	12	—	1.1250	1.1304	1.1358	1.0709	–	–	–	–	–	–	1.0719	1.1979	–	–	–	–
1 1/4	7	—	—	1.2500	1.2593	1.2686	1.1572	–	–	–	–	–	–	1.1582	1.2687	–	–	–	–
1 1/4	—	12	—	1.2500	1.2554	1.2608	1.1959	–	–	–	–	–	–	1.1969	1.3229	–	–	–	–
1 3/8	6	—	—	1.3750	1.3859	1.3967	1.2667	–	–	–	–	–	–	1.2677	1.3937	–	–	–	–
1 3/8	—	12	—	1.3750	1.3804	1.3858	1.3209	–	–	–	–	–	–	1.3219	1.4479	–	–	–	–
1 1/2	6	—	—	1.5000	1.5109	1.5217	1.3917	–	–	–	–	–	–	1.3927	–	–	–	–	–
1 1/2	—	12	—	1.5000	1.5054	1.5108	1.4459	–	–	–	–	–	–	1.4469	–	–	–	–	–

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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 ±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.	±20′
6 to 9 incl.	±25′
10 to 80 incl.	±30′

FORMULA

Max. Major Dia. = Basic + A
Min. Major Dia. = Basic + B
Max. Pitch Dia. = Min. + D
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.

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Metric Size Taps - Ground Thread (Table 337)

Nominal Size mm	Pitch mm	Major Diameter Inches Basic	Min.	Max.	Standard Pitch Diameter Limits Inches Basic Pitch Diam.	D3 Limits Min.	D3 Limits Max.	D4 Limits Min.	D4 Limits Max.	D5 Limits Min.	D5 Limits Max.	D6 Limits Min.	D6 Limits Max.	D7 Limits Min.	D7 Limits Max.	D8 Limits Min.	D8 Limits Max.	D9 Limits Min.	D9 Limits 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	1.0942	1.0962
30	3.5	1.181100	1.1922	1.1961	1.091599	–	–	–	–	–	–	–	–	–	–	–	–	1.3176	1.3196
36	4.0	1.417320	1.4300	1.4339	1.315034	–	–	–	–	–	–	–	–	–	–	–	–	–	–

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

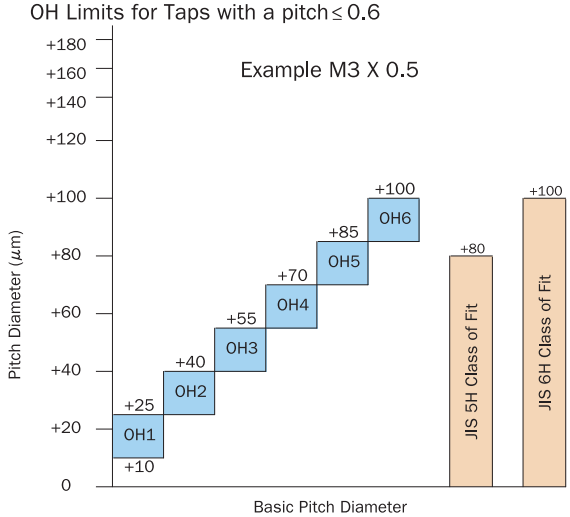
Min. Major Dia. = Basic + W
Max. Major Dia. = Min. + X
For Values of W, Y & Z, See Table 341

Max. Pitch Dia. = Basic + Y
Min. Pitch Dia. = Max. - Z

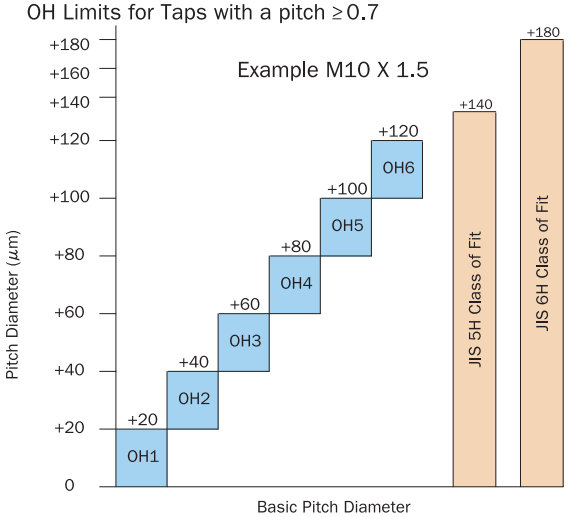
In all cases, the tap major and pitch diameter inch conversions have been rounded upwards to the next ten thousandth of an inch. Basic values agree with B1 Report—ISO Metric Screw Threads, Table 9B.

OH Tap Limits

OH Limits for Taps with a pitch ≤ 0.6



OH Limits for Taps with a pitch ≥ 0.7



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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. Major Dia. = Min. + X
Max. Pitch Dia. = Basic + Y
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		Symetrical Thread Height	Tap Limits for Metric Threads (inch)									
					Y				Z			
mm	Inch Equiv.	0.64952P (Inch)	W	X	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
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.

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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

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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.
mm	mm				Max.	Min.	Max.	Min.	Tol.	Max.	Min.		Min.	Max.	Min.	Max.	Tol.	Min.
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").

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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
	1-1/2 to 4 incl.	Plus or Minus	1/8	1/8
Length of Square-C	1/16 to 3/4 incl.	Plus or Minus	1/32	1/32
	1 to 4 incl.	Plus or Minus	1/16	1/16
Shank Diameter-D	1/16 to 1/8 incl.	Minus	0.0070	0.0015
	1/4 to 1/2 incl.	Minus	0.0070	0.0020
	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.

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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 440).

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.

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. Minor Dia.	0.0014	.0041 .0041	0.0040	.0055 .0040
18	Major Dia. Minor Dia.	0.0021	.0057 .0057	0.0050	.0065 .0050
14	Major Dia. Minor Dia.	0.0027	.0064 .0064	0.0050	.0065 .0050
11 1/2	Major Dia. Minor Dia.	0.0033	.0073 .0073	0.0060	.0083 .0060
8	Major Dia. Minor Dia.	0.0048	.0090 .0090	0.0080	.0103 .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.

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.

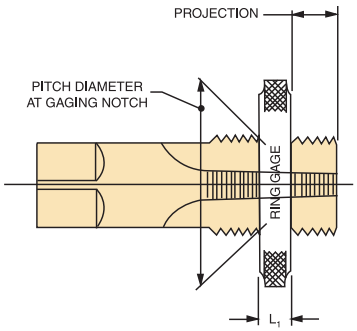
FORMULA FOR DRYSEAL AMERICAN NATIONAL STANDARD PIPE FORM
Minimum major diameter = Measured pitch diameter +D.
Maximum major diameter = Measured pitch diameter +E.
Minimum minor diameter = Maximum or smaller.
Maximum minor diameter = Measured pitch diameter -E.

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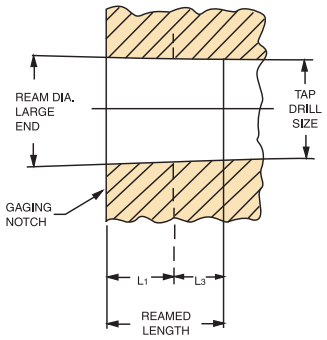
Measurement of Taper Pipe Taps, Reaming Data and Tap Drill Sizes (Table 357)

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
1-11-1/2	0.584	0.772	–	–	1.1691	0.400	0.6609	1-1/8	1-9/64
1-1/4-11-1/2	0.592	0.780	–	–	1.1538	0.420	0.6809	1-15/32	1-31/64
1-1/2-11-1/2	0.606	0.792	–	–	1.7528	0.420	0.6809	1-45/64	1-23/32
2-11-1/2	0.574	0.760	–	–	2.2267	0.436	0.6969	2-3/16	2-3/16

Projection Thru Ring Gage



Reamed Hole Data



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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 of 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

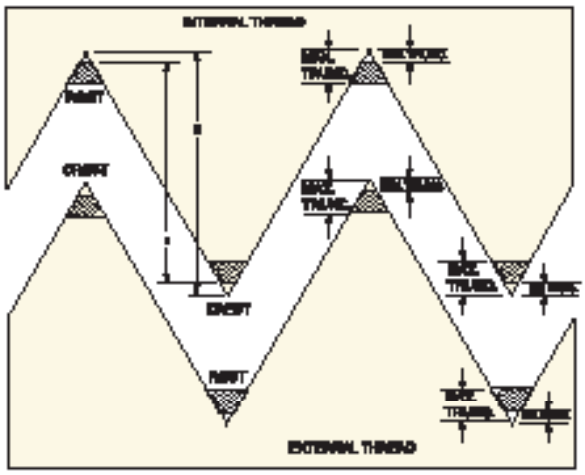
Formula Values

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.

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American National General Pipe Threads (Table 357)

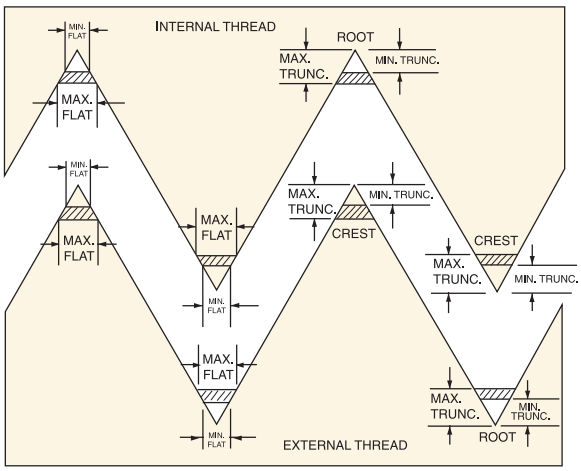


Crest and root limits for American National Standard External and Internal Taper Pipe Thread (NPT)

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.

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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	–	–	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	–	–	8	1.7400	1.7650	1.7451	1.7532	1.7613	1.7695	1.7776
2	4-1/2	–	–	1.7590	1.7950	1.7691	1.7835	1.7979	1.8124	1.8268
	–	–	8	1.8650	1.8900	1.8701	1.8782	1.8863	1.8945	1.9026
2-1/4	4-1/2	–	–	2.0090	2.0450	2.0191	2.0335	2.0479	2.0624	2.0768
	–	–	8	2.1150	2.1400	2.1201	2.1282	2.1363	2.1445	2.1526
2-1/2	4	–	–	2.2290	2.2670	2.2402	2.2564	2.2727	2.2889	2.3051
	–	–	8	2.3650	2.3900	2.3701	2.3782	2.3863	2.3945	2.4026

FORMULA: TAP DRILL SIZE

$$\text{Drill Size} = \text{Tap Major Dia} - \frac{0.01299 \times \%\ \text{of Full Thread}}{\#\ \text{of Threads Per Inch}}$$

Example: Determine Drill Size for 2"—12N Tap,70% Full Thread.
Basic Major Diameter of Tap = 2.0000"
0.01299 x 70 = 0.9093 ÷ 12 = 0.0758"
Drill Size = 1.9242"

FORMULA: PERCENTAGE OF FULL THREAD

$$\%\ \text{of Full Thread} = \text{Threads Per Inch} \times \frac{\text{Tap Major Dia} - \text{Drill Dia}}{0.01299}$$

Example: Determine the % of Full Thread for 2"—12N Tap, using 1.9242" Drill.
Threads Per Inch = 12
2.000-1.9242 =0.0758 ÷ 0.01299 = 5.835
Percentage of Full Threads = 70%

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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 x 70 = 0.4760 ÷ 12 = 0.0397"
Drill Size = 1.9603"

FORMULA: PERCENTAGE OF FULL THREAD

$$\%\ \text{of Full Thread} = \text{Threads Per Inch} \times \frac{\text{Tap Major Dia - Drill Dia}}{0.0068}$$

Example: Determine the % of Full Thread for 2"—12N Tap, using 1.9603" Drill.
Threads Per Inch = 12
2.0000 - 1.9603 = 0.0397 ÷ 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.

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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 Diameter (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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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 x 70 = 119 ÷ 76.980 = 1.59mm
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 = 1.59mm x 76.980 ÷ 1.75 = 70
Percentage of Full Thread = 70%

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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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	1.5	10.376	10.676	11.24	0.4425	11.29	0.4484	11.34	0.4465	11.39	0.4484	11.44	0.4504
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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
	–	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 x 70 = 119 ÷ 147.059 = 0.083mm
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 = 0.83mm x 147.059 ÷ 1.75 = 70
Percentage of Full Thread = 70%

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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.

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Tap Drill Sizes - STI Taps - Metric

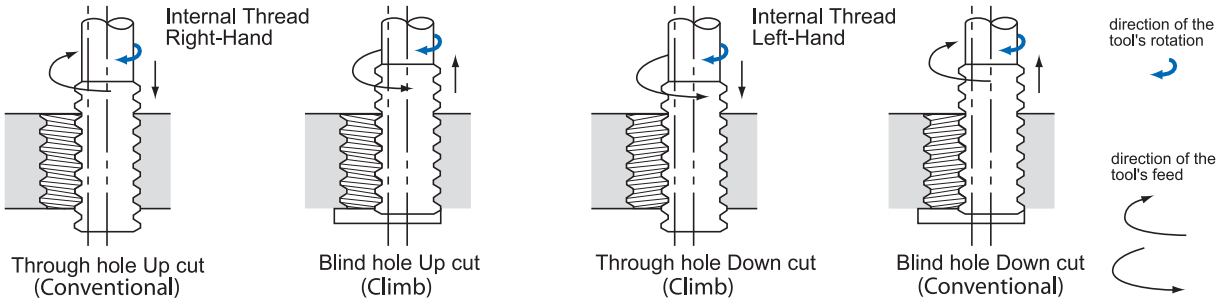
Tap Size	Pitch	Minor Diameter (in) (After Tapping)		Tap Drill Diameter (Metric)	
		Min	Max	Aluminum	Steel, Magnesium, Plastic
M2	0.4	2.087	2.199	2.1	2.1
M2.5	0.45	2.297	2.422	2.3	2.35
M3	0.5	3.108	3.248	3.15	3.2
M4	0.7	4.152	4.332	4.2	4.25
M5	0.8	5.174	5.374	5.2	5.3
M6	1.0	6.217	6.407	6.25	6.3
M8	1.25	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.

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Machining Technique

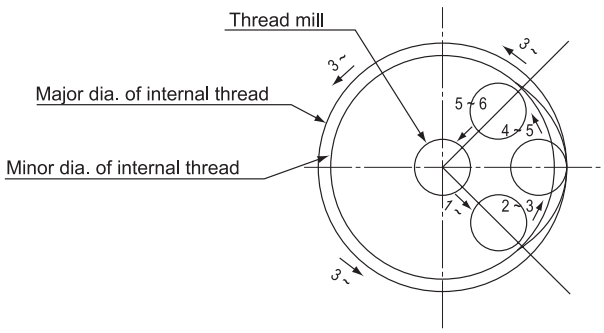
OSG's EXOCARB® Thread Mills have been developed for thread milling on a 3-Axis CNC controlled machine tool. Threads are produced by advancing one pitch feed per revolution in the axial direction, utilizing the planet-like rotation and revolution movements of the tool. Internal/external and right/left 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)

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List 41000/41100 - EXOCARB® Thread Mill
List 41050/41150 - EXOCARB® Thread Mill Oil
List 42000/42001 - EXOCARB® Thread Mill NPT/NPTF

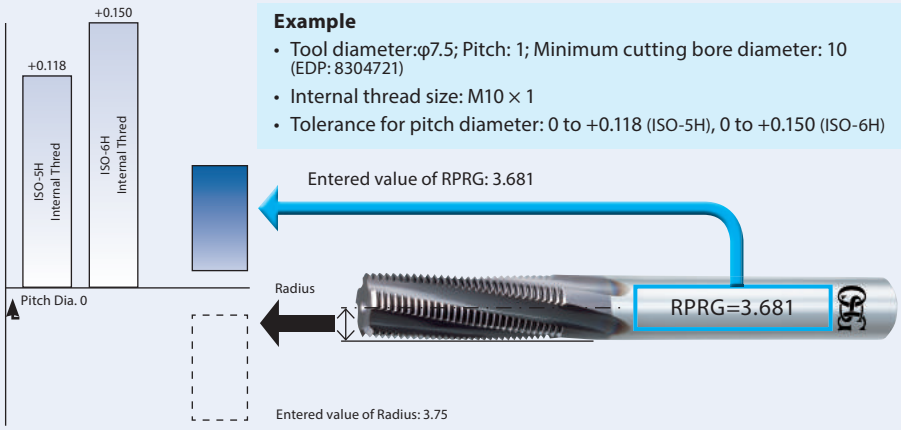
Work Material	SFM	Feed Rate (Inch/Tooth)	No. of Passes
Low Carbon Steel	300 - 420	0.0016 - 0.0050	1
Medium Carbon Steel	300 - 420	0.0016 - 0.0050	1
High Carbon Steel	250 - 420	0.0016 - 0.0050	1
Alloy Steel	180 - 350	0.0008 - 0.0040	1-2
Heat Treated Steel (28-34HRC)	160 - 300	0.0008 - 0.0040	1
Heat Treated 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.

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:φ7.5; Pitch: 1; Minimum cutting bore diameter: 10 (EDP: 8304721)
- Internal thread size: M10 × 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.

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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.

ThreadPro (Thread Milling NC Code Generator Software)



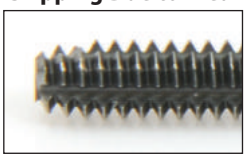
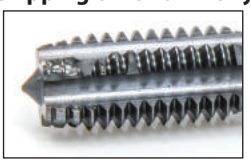
- Available in 12 different languages
- Supports 8 NC programming languages
- Incorporates RPRG* value to further simplify process

ThreadPro

Powered by AUTODESK

* RPRG = reference value of tool radius offset

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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
	Chips not coiling / breaking properly	Use alternate coating
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

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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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MILLING

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MILLING

EXOPRO®

OSG's ultra-premium tooling series, featuring our latest innovative technologies when the absolute best performance is needed.

EXOCARB® WXL®

The new standard in high performance end mills for high speed machining, featuring our WXL® nanocoating technology.

EXOCARB® WXS®

The new standard in high performance end mills for hard milling, featuring our WXS® nanocoating technology.

EXOCARB® MAX

Maximum performance end mills designed exclusively for hard milling. Features technologies including WXS® and CBN.

EXOCARB® Diamond

OSG's patented CVD diamond coated end mills for die/mold and aerospace applications in non-ferrous materials like graphite, aluminum and CFRP.

EXOCARB® AERO

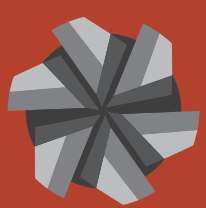
High performance carbide end mills for aircraft materials.

HY-PRO® CARB

Performance sub-micrograin carbide end mills with OSG TiAlN coating. The perfect blend of performance and cost-efficiency.

Carbide

All-purpose micrograin carbide end mills for general machining applications.



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	EXOCARB® WXL® Series		EXOCARB® WXS® Series		EXOCARB® AERO DLC		EXOCARB® AERO BLIZZARD®	
	P615 - 642		P643 - 660		P680 - 685		P686 - 694	
								
Inch/Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
Size Range	1/64 - 3/4"	0.1 - 26mm	1/32 - 3/4"	0.1 - 13mm	5/8 - 1"	20 - 25mm	1/8 - 1"	–
Number of Flutes	2, 4		2, 3, 4, 6		3		2, 3	
Square	✓	✓	✓	✓	✓	✓	✓	
Corner Radius/Chamfer	✓	✓	✓	✓	✓	✓	✓	
Ball Nose	✓	✓	✓	✓			✓	
Long Neck, Pencil Neck, Rib	✓	✓		✓			✓	
Coolant-Through					✓	✓		
Unequal Index, Variable Helix								
Substrate	Carbide		Carbide		Carbide		Carbide	
Coating	WXL®		WXS®		DLC		Bright/DLC	

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)	○	✖		

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EXOCARB® AERO UVX		EXOPRO® UVX-Ni		EXOCARB® AERO UVX Silent Rougher		EXOCARB® AERO HFC-Ti		EXOPRO® PHX		HY-PRO® CARB VGX Series	
P675-676		P602		P677		P679		P603-614		P696-704	
											
Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric	Inch	Metric
1/8 - 1"	–	1/4 - 1"	–	–	6 - 25mm	5/8 - 1"	16 - 25mm	–	0.06-20mm	1/8 - 1 1/4"	–
4		5		4		6, 8		3, 4		4, 5	
✓						✓	✓			✓	
✓		✓			✓				✓	✓	
									✓	✓	
									✓	✓	
✓		✓			✓					✓	
Carbide		Carbide		Carbide		Carbide		Carbide		Carbide	
TiAlN		EXO®		WXL®		Bright		WXS®/EXO®		TiAlN	

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○		○		✖	○
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		○			
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○				✖	○
				✖	○

For OSG's complete end mill offering please refer to the Illustrated Index starting on page 574.

✖ 1st Choice ✖ 2nd Choice ○ Recommended

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOPRO®										
2055		Inch	5	Variable	Carbide	EXO®	1/4 - 1"	UVX-Ni, Corner Radius	602	832
9510		Metric	3	Stub	Carbide	EXO®	1mm - 20mm	Phoenix® Deep Feed, Ball End	603	833-834
9590		Metric	3	Stub	Carbide	WXS®	0.06mm-6mm	Phoenix® Long Neck, Ball End	604	833-834
9581		Metric	3	Stub	Carbide	WXS®	1mm - 12mm	Phoenix® Pencil-Neck, Deep Feed, Ball End	605-607	833-834
9592		Metric	4	Stub	Carbide	WXS®	0.8mm - 3mm	Phoenix® Pencil Neck, Deep Feed, Corner Radius	608	835
9575		Metric	3	Stub	Carbide	WXS®	6mm - 20mm	Phoenix® Deep Feed, Corner Radius	609	836-837
9576		Metric	3	Stub	Carbide	WXS®	4mm - 16mm	Phoenix® Long Neck, Deep Feed, Corner Radius	610	836-837
9580		Metric	3	Stub	Carbide	WXS®	2mm - 12mm	Phoenix® Pencil Neck, Deep Feed, Corner Radius	611-613	836-837
9570		Metric	3	Stub	Carbide	EXO®	1mm - 20mm	Phoenix® High-Feed, Corner Radius	614	836-837
EXOCARB® WXL®										
3610		Inch	2	Regular	Carbide	WXL®	1/32 - 1/2"	Ball End	615	841
3710		Metric	2	Regular	Carbide	WXL®	0.1mm - 20mm	Ball End	616	842
3670		Inch	4	Regular	Carbide	WXL®	1/16 - 1/2"	Corner Radius	617	843
3604		Inch	4	Regular	Carbide	WXL®	1/16 - 3/4"		618	844
3690		Inch	2	Regular	Carbide	WXL®	1/64 - 1/4"	Ball End, Long Neck, ±5µm Radius Tolerance	619	845 - 848
3790		Metric	2	Regular	Carbide	WXL®	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	620 - 622	845 - 848
3620		Inch	2	Stub	Carbide	WXL®	1/16 - 3/4"		623	849
3621		Inch	2	Regular	Carbide	WXL®	1/16 - 3/4"		623	849
3704		Metric	4	Stub	Carbide	WXL®	1mm - 12mm		624	850 - 851
3742		Metric	4	Long	Carbide	WXL®	3mm - 26mm		625	852
3791		Metric	2	Stub	Carbide	WXL®	0.2mm - 5mm	Long Neck	626 - 627	853 - 856
3711		Metric	2	Regular	Carbide	WXL®	1mm - 18mm	Ball End, Long Shank	628	857
3720		Metric	2	Stub	Carbide	WXL®	0.1mm - 6mm		629	858 - 859

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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														
	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
EXOPRO®																	
2055						○	○	○				◎				○	
9510	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○
9590	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○
9581	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○
9592	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	◎	◎	◎
9575	◎	◎	◎	◎	◎	◎	◎	◎	◎					◎	◎	◎	◎
9576	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○
9580	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○
9570	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○
EXOCARB® WXL®																	
3610	◎	◎	◎	◎	◎	○	○	○	◎	○		○	○	◎	◎	◎	
3710	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3670	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3604	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3690	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3790	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3620	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3621	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3704	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3742	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎			◎	◎	◎	○
3791	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3711	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	◎	◎	○
3720	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOCARB® WXL®										
3721		Metric	2	Stub	Carbide	WXL®	0.1mm - 20mm		630	860 - 861
3712		Metric	2	Stub	Carbide	WXL®	0.2mm - 6mm	Pencil Neck, Ball End	631 - 636	862 - 869
3722		Metric	2	Regular	Carbide	WXL®	0.1mm - 20mm		637	870 - 871
3723		Metric	2	Long	Carbide	WXL®	0.2mm - 12mm		638	872 - 873
3770		Metric	2	Regular	Carbide	WXL®	0.6mm - 12mm	Corner Radius	639	874
3771		Metric	4	Regular	Carbide	WXL®	3mm - 12mm	Corner Radius	640	875
3794		Metric	4	Stub	Carbide	WXL®	1mm - 3mm	Long Neck	641 - 642	876 - 877
EXOCARB® WXS®										
4410		Inch	2	Regular	Carbide	WXS®	1/32 - 1/2"	Ball End	643	878
4510		Metric	2	Regular	Carbide	WXS®	1mm - 12mm	Ball End	644	879
4440		Inch	Multiple	Regular	Carbide	WXS®	1/16 - 3/4"		645	880
4540		Metric	Multiple	Regular	Carbide	WXS®	1mm - 12mm		646	881
4471		Inch	4	Regular	Carbide	WXS®	1/16 - 1/2"	Corner Radius	647	882
4571		Metric	4	Regular	Carbide	WXS®	3mm - 12mm	Corner Radius	648	883
4470		Inch	3, 4	Regular	Carbide	WXS®	1/8 - 1/2"	Corner Radius, High Feed	649	884
4570		Metric	Multiple	Regular	Carbide	WXS®	2mm - 13mm	Corner Radius, High Feed	649	885
4592		Metric	2	Stub	Carbide	WXS®	0.4mm - 3mm	Corner Radius, Long Neck, ±5µm Radius Tolerance	650 - 652	886
4590		Metric	2	Stub	Carbide	WXS®	0.1mm - 6mm	Ball End, Long Neck, ±5µm Radius Tolerance	653 - 655	887 - 889
4430		Inch	4	Regular	Carbide	WXS®	1/4 - 1/2"	Ball End, True 4 Flute	656	890
4530		Metric	4	Regular	Carbide	WXS®	6mm - 12mm	Ball End, True 4 Flute	656	892
4445		Inch	4	Regular	Carbide	WXS®	1/8 - 1/2"	High Helix, Corner Radius	657	891
4513		Metric	2	Regular	Carbide	WXS®	1mm - 12mm	Ball End, Sphere Type	658	893
4581		Metric	4	Variable	Carbide	WXS®	1mm - 2.5mm	Ball End, Tapered	659	894
4541		Metric	6	Regular	Carbide	WXS®	3mm - 12mm	Corner Radius	660	895

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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														
	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
EXOCARB® WXL®																	
3721	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3712	◎	◎	◎	◎	◎	◎	◎	◎	◎	○	○	○	○	◎	◎	◎	○
3722	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3723	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	◎	○	
3770	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3771	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○
3794	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	◎	○	
EXOCARB® WXS®																	
4410	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4510	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4440	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4540	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4471	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4571	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4470	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4570	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4592	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	○
4590	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	○
4430	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4530	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4445	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4513	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4581	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	○
4541	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOCARB® MAX										
9010		Inch	2	Stub	Carbide	WXS®	1/32 - 1/2"	Ball End	661	896
9110		Metric	2	Stub	Carbide	WXS®	1mm - 10mm	Ball End	661	896
9011		Inch	2	Stub	Carbide	WXS®	1/32 - 3/8"	Ball End, Long Shank	662	896
9111		Metric	2	Stub	Carbide	WXS®	1mm - 10mm	Ball End, Long Shank	662	896
9140		Metric	6	Regular	Carbide	WXS®	3mm - 12mm	Square End	663	900 - 901
9144		Metric	6	Regular	Carbide	WXS®	6mm - 12mm	Corner Radius	663	900 - 901
9191		Metric	2	Stub	CBN	Bright	0.4mm - 3mm	CBN, Ball End	664	898
9192		Metric	2	Stub	CBN	Bright	0.4mm - 3mm	CBN, Super Long Neck, Ball Nose	664	899
9181		Metric	2	Stub	CBN	Bright	0.5mm - 3mm	CBN, Corner Radius	665	897
9182		Metric	2	Stub	CBN	Bright	0.5mm - 3mm	Long Neck, CBN, Corner Radius	665	897

List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOCARB® Diamond										
7020		Inch	2	Stub	Carbide	Diamond	1/64 - 1/2"		666	902 - 903
7120		Metric	2	Regular	Carbide	Diamond	1mm - 12mm		667	902 - 903
7040		Inch	4	Stub	Carbide	Diamond	1/16 - 1/2"		667	902 - 903
7041		Inch	4	Long	Carbide	Diamond	1/8 - 1/2"		668	902 - 903
7042		Inch	4	Stub	Carbide	Diamond	1/16 - 1/2"	Long Shank	668	902 - 903
7072		Inch	4	Stub	Carbide	Diamond	1/8 - 1/2"	Long Shank, Corner Radius	669	902 - 903
7010		Inch	2	Regular	Carbide	Diamond	1/32 - 1/2"	Ball End	669	902 - 903
7110		Metric	2	Regular	Carbide	Diamond	1mm - 12mm	Ball End	670	902 - 903
7030		Inch	4	Regular	Carbide	Diamond	1/32 - 1/2"	Ball End	670	902 - 903

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EXOCARB® MAX

List No.	P					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 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
9010	◎	◎	◎	◎	◎	○	○	○	◎			○	○		◎	◎	◎
9110	◎	◎	◎	◎	◎	○	○	○	◎			○	○		◎	◎	◎
9011	◎	◎	◎	◎	◎	○	○	○	◎			○	○		◎	◎	○
9111	◎	◎	◎	◎	◎	○	○	○	◎			○	○		◎	◎	○
9140	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
9144	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
9191															○	◎	◎
9192															○	◎	◎
9181															◎	◎	◎
9182															◎	◎	◎

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EXOCARB® Diamond

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum Alloys	Copper Alloys	Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH				Inconel	6Al4V (30 HRC)				
7020										◎	◎					◎	
7120										◎	◎					◎	
7040										◎	◎					◎	
7041										◎	◎					◎	
7042										◎	◎					◎	
7072										◎	◎					◎	
7010										◎	◎					◎	
7110										◎	◎					◎	
7030										◎	◎					◎	

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
7031		Inch	4	Long	Carbide	Diamond	3/16 - 1/2"	Ball End	671	902 - 903
7032		Inch	4	Stub	Carbide	Diamond	1/16 - 1/2"	Ball End, Long Shank	671	902 - 903
7173		Metric	4	Stub	Carbide	Diamond	0.5mm - 12mm	Ball End, Long Shank	672	902 - 903
7132		Metric	4	Stub	Carbide	Diamond	3mm - 12mm	Long Shank, Corner Radius	673	902 - 903
7140		Metric	4	Regular	Carbide	Diamond	1mm - 12mm		673	902 - 903
7230		Inch	2, 4	Regular	Carbide	Diamond	1/64 - 1/4"	High Precision, Ball End	674	904
7231		Inch	2, 4	Regular	Carbide	Diamond	1/64 - 1/4"	High Precision, Ball End, Long Reach	674	904

List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOCARB® AERO										
2050		Inch	4	Variable	Carbide	EXO®	1/8 - 1"	UVX , Square End, for Exotics	675	905
2052		Inch	4	Variable	Carbide	EXO®	1/8 - 1"	UVX , Corner Radius, for Exotics	676	905
3915	 NEW!	Metric	4	Regular	Carbide	WXL®	6mm - 25mm	UVX SIlent Rougher, Low Helix	677	906
3920	 NEW!	Metric	4	Regular	Carbide	WXL®	6mm - 25mm	UVX SIlent Rougher, High Helix	677	906
2015		Inch	4	Regular	Carbide	TiAlN	1/4 - 1"	Rougher, for Exotics	678	907
2080	 NEW!	Inch	6,8	Regular	Carbide	Bright	5/8 - 1"	HFC-Ti, High Feed Radius Cutter for Titanium	679	908
2081	 NEW!	Metric	6,8	Regular	Carbide	Bright	16mm - 25mm	HFC-Ti, High Feed Radius Cutter for Titanium	679	908
2843	 NEW!	Inch	3	Multiple	Carbide	DLC	5/8 - 1"	DLC-AERO	680	909
2943	 NEW!	Metric	3	Multiple	Carbide	DLC	20mm - 25mm	DLC-AERO	680	909
2873	 NEW!	Inch	3	Multiple	Carbide	DLC	5/8 - 1"	DLC-AERO-CR, Corner Radius	681	909
2973	 NEW!	Metric	3	Multiple	Carbide	DLC	20mm - 25mm	DLC-AERO-CR, Corner Radius	682	909

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List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum Alloys	Copper Alloys	Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH				Inconel	6Al4V (30 HRC)				
7031										◎	◎					◎	
7032										◎	◎					◎	
7173										◎	◎					◎	
7132										◎	◎					◎	
7140										◎	◎					◎	
7230										◎	◎					◎	
7231										◎	◎					◎	

○ good ◎ best

List No.	P					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 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

EXOCARB® AERO

2050	◎	◎	◎	◎	◎	◎	◎	◎	○			◎	◎	◎	○		
2052	◎	◎	◎	◎	◎	◎	◎	◎	○			◎	◎	◎	○		
3915	◎	◎	◎	○	○	○	○	○	◎	○			○	○			
3920	○	○	○	○	○	◎	◎	◎	○	○		○	◎	◎	○		
2015	◎	◎	◎	◎	◎	◎	◎	◎	○			◎	◎	◎	○		
2080													◎				
2081													◎				
2843										◎							
2943										◎							
2873										◎							
2973										◎							

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOCARB® AERO										
2844		Inch	3	Regular	Carbide	DLC	5/8 - 1"	DLC-AERO-OIL, Coolant-Through	683	909
2944		Metric	3	Stub	Carbide	DLC	20mm - 25mm	DLC-AERO-OIL, Coolant-Through	683	909
2874		Inch	3	Stub	Carbide	DLC	3/4 - 1"	DLC-AERO-OIL-CR, Corner Radius	684	909
2974		Metric	3	Stub	Carbide	DLC	20mm - 25mm	DLC-AERO-OIL-CR, Corner Radius	685	909

List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOCARB® AERO										
2021		Inch	2	Stub	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	686	910
2022		Inch	2	Regular	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	687	910
2023		Inch	2	Regular	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck,Square & Corner Radius	688	910
2024		Inch	2	Long	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck, Square & Corner Radius	689	910
2041		Inch	3	Stub	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	690	911
2042		Inch	3	Regular	Carbide	Bright	1/8 - 1"	BLIZZARD® Square & Corner Radius	691	912
2043		Inch	3	Regular	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck,Square & Corner Radius	692	912
2048		Inch	3	Long	Carbide	Bright	1/4 - 1"	BLIZZARD®, Reduced Neck, Square & Corner Radius	693	912
2010		Inch	2	Regular	Carbide	Bright	1/8 - 1"	BLIZZARD®, Ball End	694	915
8120		Metric	2	Regular	Carbide	Bright	1mm - 16mm		695	913 - 914

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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														
	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

EXOCARB® AERO

2844										▢							
2944										▢							
2874										▢							
2974										▢							

▢ good ▢ best

List No.	P					M			K	N		S		Other			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum Alloys	Copper Alloys	Nickel Alloy	Titanium	Mg	Brass, Bronze	Graphite	Cobalt-Chrome
	Low	Med.	High														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH				Inconel	6Al4V (30 HRC)				

EXOCARB® AERO

2021										▢	▢						
2022										▢	▢						
2023										▢	▢						
2024										▢	▢						
2041										▢	▢						
2042										▢	▢						
2043										▢	▢						
2048										▢	▢						
2010										▢	▢						
8120										▢	▢						

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
HY-PRO® CARB VGX (Variable Geometry)										
VG441		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1"	Square End	696	916
VG434		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1"	Corner Radius	697	916
VG436		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1"	Corner Chamfer	698	916
VG446		Inch	4	Multiple	Carbide	TiAlN	1/4 - 1"	Red. Neck, Corner Radius/ Corner Chamfer	699	917
VG464		Inch	4	Multiple	Carbide	TiAlN	1/4 - 1"	Extended Length, Square End/ Corner Chamfer	700	917
VG441BN		Inch	4	Multiple	Carbide	TiAlN	1/8 - 1 1/4"	Ball Nose	701	918
VG541		Inch	5	Multiple	Carbide	TiAlN	1/8 - 1"	Square End	702	919
VG534		Inch	5	Multiple	Carbide	TiAlN	3/16 - 1"	Corner Radius	703 - 704	919
HY-PRO® CARB Square End										
HP421		Inch/ Metric	2		Carbide	TiAlN	3/64 - 1" 3mm-25mm		705 - 706	920 - 921
HP441		Inch/ Metric	4		Carbide	TiAlN	3/64 - 1" 3mm-25mm		705 - 706	921 - 922
HP460		Inch/ Metric	3		Carbide	TiAlN	1/8 - 1" 3mm-25mm	High Helix	707	923 - 924
HP450		Inch/ Metric	Multiple		Carbide	TiAlN	1/8 - 1" 3mm-25mm		708	925
HP453		Metric	4		Carbide	TiAlN	4mm - 20mm	Super Tough Mills	709	926 - 927
HP456		Metric	4		Carbide	TiAlN	6mm - 12mm	Super Tough Mills, Corner Radius	709	926 - 927
HP451		Inch/ Metric	4		Carbide	TiAlN	1/8 - 1" 4mm-20mm	Super Tough Mills	710	926 - 927
HP400		Inch/ Metric	4		Carbide	TiAlN	1/4 - 1" 3mm - 25mm	Rougher	711	928 - 929
HP410		Inch/ Metric	2		Carbide	TiAlN	1/32 - 3/16" 0.5mm-2.5mm	Short Length, Long Neck	712	930
HP410L		Metric	2		Carbide	TiAlN	0.5mm - 2mm	Short Length, Long Neck	713	930
HP411		Inch/ Metric	4		Carbide	TiAlN	1/8 - 1/4" 3mm - 6mm	Short Length, Long Neck	714	931
HP455		Inch/ Metric	5		Carbide	TiAlN	1/8 - 1" 3mm - 25mm	Corner Protection	715	932

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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														
	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
HY-PRO® CARB VGX (Variable Geometry)																	
VG441	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
VG434	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
VG436	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
VG446	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
VG464	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
VG441BN	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
VG541	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
VG534	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	
HY-PRO® CARB Square End																	
HP421	○	○	○	○	○	○	○	○	○			○	○	○	○	○	
HP441	○	○	○	○	○	○	○	○	○			○	○	○	○	○	
HP460	○	○	○	○		○	○	○	○				○	○	○	○	
HP450	○	○	○	○	○	○	○	○	○			○	○	○	○	○	
HP453	○	○	○	○	○	○	○	○	○					○	○	○	
HP456	○	○	○	○	○	○	○	○	○					○	○	○	
HP451	○	○	○	○	○	○	○	○	○					○	○	○	
HP400	○	○	○	○	○	○	○	○	○			○	○	○	○	○	
HP410	○	○	○	○	○				○					○	○	○	
HP410L	○	○	○	○	○				○					○	○	○	
HP411	○	○	○	○	○				○					○	○		
HP455	○	○	○	○	○	○	○	○	○			◎	◎	○	○	○	

○ good ◎ best

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
HY-PRO® CARB Ball End										
HP421BN		Inch/ Metric	2		Carbide	TiAlN	3/64 - 1" 1mm-20mm	Ball End	716 - 717	933 - 934
HP441BN		Inch/ Metric	4		Carbide	TiAlN	3/64 - 1" 1mm-20mm	Ball End	716 - 717	933 - 934
HP416		Inch/ Metric	2		Carbide	TiAlN	1/32 - 1/2" 1mm-25mm	Ball End	718	935 - 936
HP418		Inch/ Metric	2		Carbide	TiAlN	3/22 - 3/8 1mm-12mm	Ball End, Pencil Neck	719	937 - 938
HP419		Inch/ Metric	2		Carbide	TiAlN	1/32 - 3/16 0.5mm-6mm	Ball End, Long Neck	720	939 - 940
HP419L		Metric	2		Carbide	TiAlN	0.6mm - 3mm	Ball End, Long Neck	721	939 - 940
HP413		Inch/ Metric	2		Carbide	TiAlN	1/32 - 3/16 1mm-6mm	Ball End	722	939 - 940
HY-PRO® CARB Corner Radius										
HP432		Inch/ Metric	2		Carbide	TiAlN	1/8 - 1" 3mm-12mm	Corner Radius	723 - 724	941 - 944
HP434		Inch/ Metric	4		Carbide	TiAlN	1/8 - 1" 3mm-12mm	Corner Radius	723 - 724	942 - 944
HP433		Metric	2		Carbide	TiAlN	3mm - 12mm	Corner Radius	725	941 - 944
HP435		Metric	4		Carbide	TiAlN	3mm - 12mm	Corner Radius	726	941 - 944
Square & Corner Radius										
400		Inch/ Metric	4		Carbide	Bright*	1/4 - 1" 6mm-25mm	Roughy Mills	727	952 - 953
415		Inch			Carbide	Bright*	1/8 - 1"	Toughy Mills, Standard Cut	728	-
415C		Inch			Carbide	Bright*	1/8 - 1"	Toughy Mills, Coarse Cut	728	-
402		Inch/ Metric	2		Carbide	TiAlN, TiCN, Bright*	1/32 - 1" 5mm-25mm	General Purpose	729 - 731	945 - 946
403		Inch/ Metric	3		Carbide	TiAlN, TiCN, Bright*	1/32 - 1" 5mm-25mm	General Purpose	729 - 731	945 - 946
404		Inch/ Metric	4		Carbide	TiAlN, TiCN, Bright*	1/32 - 1" 5mm-25mm	General Purpose	729 - 731	947 - 948
408		Inch	Multiple		Carbide	Bright*	1/8 - 1"	Slow Spiral	732	947 - 948
409		Inch	4		Carbide	Bright*	1/16 - 1"	Slow Spiral	732	947 - 948
452		Inch	2		Carbide	TiALN, Bright*	1/16 - 1"	Plus Tolerance	733	945 - 946
454		Inch	4		Carbide	TiALN, Bright*	1/16 - 1"	Plus Tolerance	733	947 - 948

* Other coatings are available on request.

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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														
	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
HY-PRO® CARB Ball End																	
HP421BN	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	
HP441BN	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	
HP416	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢		
HP418	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢		
HP419	▢	▢	▢	▢	▢				▢					▢	▢		
HP419L	▢	▢	▢	▢	▢				▢					▢	▢		
HP413	▢	▢	▢	▢	▢				▢					▢	▢		
HY-PRO® CARB Corner Radius																	
HP432	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	
HP434	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	
HP433	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢		
HP435	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	
Square & Corner Radius																	
400	▢	▢		▢		▢	▢	▢	▢	▢	▢			▢	▢	▢	
415			▢	▢										▢	▢	▢	
415C			▢	▢										▢	▢	▢	
402	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
408	▢	▢	▢	▢	▢				▢					▢	▢	▢	
409	▢	▢	▢	▢	▢				▢					▢	▢	▢	
452	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
454	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

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Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
Square & Corner Radius										
412		Inch/ Metric	2		Carbide	TiCN, TiALN, Bright*	1/32 - 3/4" 1mm-12mm	Stub Length	734 - 735	945 - 946
414		Inch/ Metric	4		Carbide	TiCN, TiALN, Bright*	1/32 - 3/4" 1mm-12mm	Stub Length	734 - 735	947 - 948
462		Inch/ Metric	2		Carbide	TiCN, TiALN, Bright*	1/8 - 1" 3mm-25mm	Long Length	736 - 737	945 - 946
464		Inch/ Metric	4		Carbide	TiCN, TiALN, Bright*	1/8 - 1" 3mm-25mm	Long Length	736 - 737	947 - 948
482		Inch/ Metric	2		Carbide	TiCN, TiALN, Bright*	1/8 - 1" 3mm-25mm	Extra-Long Length	738 - 739	945 - 946
484		Inch/ Metric	4		Carbide	TiCN, TiALN, Bright*	1/8 - 1" 3mm-25mm	Extra-Long Length	738 - 739	947 - 948
495		Inch	2		Carbide	TiALN, Bright*	1/8 - 1"	Corner Radius	740	945 - 946
496		Inch	4		Carbide	TiALN, Bright*	1/8 - 1"	Corner Radius	740	947 - 948
Square End										
455C		Inch	5		Carbide	TiCN, TiALN, Bright*	1/8 - 1"	Corner Protection	741	947 - 948
460C		Inch/ Metric	3		Carbide	Bright*	1/8 - 1" 6mm - 25mm	High Helix	742	945 - 946
445		Inch/ Metric	3		Carbide	Bright*	1/16 - 1" 1mm-20mm		743	945 - 946
461		Inch/ Metric	6		Carbide	TiALN, Bright*	1/8 - 1" 3mm-25mm		744	947 - 948
447		Inch	4		Carbide	TiALN, Bright*	1/16 - 1"	RHC/LHS	745	947 - 948
492		Inch	2		Carbide	TiALN, Bright*	0.015 - 0.060	Miniature	746	954
494		Inch	4		Carbide	TiALN, Bright*	0.015 - 0.060	Miniature	746	954
Ball End										
402BN		Inch/ Metric	2		Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	747 - 749	950
403BN		Inch/ Metric	3		Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	747 - 749	950
404BN		Inch/ Metric	4		Carbide	TiAlN, Bright*	1/32 - 1" 0.5mm-25mm	Ball End	747 - 749	951
452BN		Inch	2		Carbide	Bright*	1/16 - 1"	Ball End, Plus Tolerance	750	950
412BN		Inch/ Metric	2		Carbide	TiCN, TiALN, Bright*	1/32 - 3/4" 1mm - 12mm	Ball End, Stub Length	751 - 752	950
414BN		Inch/ Metric	4		Carbide	TiCN, TiALN, Bright*	1/32 - 3/4" 1mm - 12mm	Ball End, Stub Length	751 - 752	951

* Other coatings are available on request.

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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														
	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
Square & Corner Radius																	
412	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
414	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
462	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
464	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	▢
482	▢	▢	▢						▢	▢	▢			▢			
484	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
495	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	▢
496	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	▢
Square End																	
455C	▢	▢	▢	▢	▢				▢			▢	▢	▢	▢	▢	
460C	▢	▢	▢			▢	▢	▢	▢	▢	▢	▢		▢	▢		
445	▢	▢	▢	▢		▢	▢		▢	▢	▢			▢	▢		
461	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	
447	▢	▢	▢	▢		▢	▢		▢	▢	▢			▢	▢	▢	
492	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
494	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
Ball End																	
402BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
452BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
412BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
414BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
Ball End										
462BN		Inch/ Metric	2		Carbide	TiCN, TiALN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Long Length	753	950
464BN		Inch/ Metric	4		Carbide	TiCN, TiALN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Long Length	753	951
482BN		Inch/ Metric	2		Carbide	TiALN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Extra Long Length	754 - 755	950
484BN		Inch/ Metric	4		Carbide	TiALN, Bright*	1/8 - 1" 3mm-25mm	Ball End, Extra Long Length	754 - 755	951
497		Inch/ Metric	2		Carbide	Bright*	1/8 - 1" 3mm-20mm	Ball End, Long Shank	756	949
Double End										
442		Inch	2		Carbide	TiALN, Bright*	1/8 - 1/2"		757	945 - 946
444		Inch	4		Carbide	TiALN, Bright*	1/8 - 1/2"		757	947 - 948
422		Inch	2		Carbide	TiALN, Bright*	1/32 - 1/2"	Stub Length	758	945 - 946
423		Inch	3		Carbide	TiALN, Bright*	1/32 - 1/2"	Stub Length	758	945 - 946
424		Inch	4		Carbide	TiALN, Bright*	1/32 - 1/2"	Stub Length	758	947 - 948
442BN		Inch	2		Carbide	TiALN, Bright*	1/8 - 1/2"	Ball End	759	950
444BN		Inch	4		Carbide	TiALN, Bright*	1/8 - 1/2"	Ball End	759	951
422BN		Inch	2		Carbide	TiALN, Bright*	1/32 - 1/2"	Ball End, Stub Length	760	950
423BN		Inch	3		Carbide	TiALN, Bright*	1/32 - 1/2"	Ball End, Stub Length	760	950
424BN		Inch	4		Carbide	TiALN, Bright*	1/32 - 1/2"	Ball End, Stub Length	760	951

* Other coatings are available on request.

List	Item	Inch/ Metric	Length of Cut	Material	Coating	Size Range	Features	Product Page
Carbide Routers								
500		Inch		Carbide	Bright	3/32 - 1/2"	2 Flute, Straight	761
502		Inch		Carbide	Bright	3/32 - 1/2"	3 Flute, Straight	761
640		Inch		Carbide	Bright	1/16 - 1/2"	Fiberglass Routers, Diamond Cut	762

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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														
	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
Ball End																	
462BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
464BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
482BN	▢	▢	▢						▢	▢	▢			▢			
484BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
497	▢	▢	▢	▢	▢	▢	▢		▢					▢	▢		
Double End																	
442	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
444	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
422	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
423	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
424	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
442BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
444BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
422BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
423BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
424BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
EXOMINI VC-10										
673		Inch	2	Regular	VC-10	TiN	1/32 - 3/16"		763	–
676		Inch	4	Stub	VC-10	TiN	1/16 - 3/16"	Center Hole (smaller than 1/8)	764	–
677		Inch	4	Regular	VC-10	TiN	1/16 - 3/16"	Center Hole (smaller than 1/8)	764	–
EXOMILL VC-10										
620		Inch	2	Regular	VC-10	Bright*	1/8 - 1 1/2"		765	–
621		Inch	2	Regular	VC-10	Bright*	1/8 - 1 1/2"	Ball End	765	971
641		Inch	Multiple	Regular	VC-10	Bright*	1/8 - 2"		766	969 - 970
644		Inch	Multiple	Regular	VC-10	Bright*	3/8 - 1 1/2"	Ball End	767	971
646		Inch	Multiple	Long	VC-10	Bright*	1/4 - 2"		768	969 - 970
660		Inch	3, 4	Regular	VC-10	Bright*	1/4 - 1"	High Helix	768	964
HY-PRO® V										
573		Inch	2	Regular	HSSE	TiCN, Bright*	1/8 - 1"		769	965
574		Inch	Multiple	Regular	HSSE	TiCN, Bright*	1/8 - 1"		770	965 - 966

* Other coatings are available on request.

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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														
	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
EXOMINI VC-10																	
673	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	◎	○		
676	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	◎	○		
677	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	◎	○		
EXOMILL VC-10																	
620	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		
621	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		
641	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		
644	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		
646	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	◎	○		
660	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	○			
HY-PRO® V																	
573	◎	◎	◎	◎	◎	○	○		◎	◎	◎		○	○	○		
574	◎	◎	◎	◎	◎	○	○		◎	◎	◎		○	○	○		

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
Roughing End Mills										
690		Inch	Multiple	Regular	HSSE	TiN	1/4 - 2"	EXOTIN®, Center Hole	771	963
450		Inch	Multiple	Stub, Reg., Long	HSS-Co	TiCN, Bright*	3/16 - 2"	Fine Pitch, Center Hole	772	955
455		Inch	Multiple	Stub, Reg., Long	HSS-Co	TiCN, TiAlN	1/4 - 2"	Fine Pitch	773	956
420		Inch	Multiple	Stub	HSS-Co	Bright*	1/4 - 1 1/2"	Fine Pitch, Center Cutting	774	955
460		Inch	Multiple	Regular, Long	HSS-Co	Bright*	1/2 - 1 1/2"	Fine Pitch, Center Cutting	774	961 - 962
410		Inch	3	Stub	HSS-Co	Bright*	1/2 - 1"		775	959
430E		Inch	3	Reg., Med., Long	HSS-Co	Bright*	3/8 - 1 1/2"		775	958
490		Inch	Multiple	Stub, Reg., Med., Long	HSS-Co	Bright*	1/4 - 2"	General Purpose, Center Hole	776	959
440		Inch	Multiple	Reg., Long	HSS-Co	Bright*	1/2 - 2"	Ball End, General Purpose	777	957
470		Inch	Multiple	Stub, Reg., Long	HSS-Co	Bright*	1/4 - 2"	Rough & Finish	778	960
Single End Mills										
520		Inch	2	Regular	HSS-Co	TiN, Bright*	1/8 - 2"		779	967 - 968
580		Metric	2	Regular	HSS-Co	Bright*	3mm - 50mm		780	972
525		Inch	2	Long	HSS-Co	Bright*	3/8 - 2"		781	967 - 968
527		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1 1/4"	Reduced Neck	781	967 - 968
530		Inch	2	Regular	HSS-Co	Bright*	1/4 - 2"	High Helix	782	967 - 968
535		Inch	2	Long	HSS-Co	Bright*	1/4 - 2"	High Helix	782	967 - 968
521		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1 1/2"	Ball End	783	971
526		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1"	Ball End, Reduced Neck	783	971

* Other coatings are available on request.

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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														
	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
Roughing End Mills																	
690	▢	▢	▢	▢	▢	◎	◎	▢	▢	▢	▢		▢	◎	▢		
450	▢	▢	▢	▢	▢	◎	▢	▢	▢		▢		▢	▢	▢		
455	▢	▢	▢	▢	▢	◎	◎	▢	▢		▢		▢	◎	▢		
420	▢	▢	▢	▢	▢	◎	▢	▢	▢		▢		▢	▢	▢		
460	▢	▢	▢	▢	▢	◎	▢	▢	▢		▢		▢	▢	▢		
410	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢			
430E										◎	◎						
490	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢			
440	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢			
470	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢			
Single End Mills																	
520	◎	◎	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		
580	◎	◎	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		
525	◎	◎	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		
527	◎	◎	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		
530	▢					▢	▢			◎	◎						
535	▢					▢	▢			◎	◎						
521	◎	◎	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		
526	◎	◎	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
Single End Multiple Flute										
531		Inch	3	Regular	HSS-Co	Bright*	1/8 - 2"		784	974
581		Metric	Multiple	Regular	HSS-Co	Bright*	3mm - 45mm	Center Hole	785	973
536		Inch	3	Long	HSS-Co	Bright*	1/4 - 2"		786	974
541		Inch	Multiple	Regular	HSS-Co	TiCN, TiN, TiAlN, Bright*	1/8 - 2"		787	969 - 970
548		Inch	4	Medium	HSS-Co	TiCN, Bright*	5/8 - 1 1/2"		788	969 - 970
546		Inch	Multiple	Long	HSS-Co	TiCN, Bright*	1/4 - 2"		788	–
558		Inch	Multiple	Extra Long	HSS-Co	TiCN, Bright*	1/4 - 2"		789	–
544		Inch	4	Regular	HSS-Co	Bright*	3/8 - 1 1/2"	Ball End	790	971
540		Inch	Multiple	Regular	HSS-Co	TiN, Bright*	1/8 - 2"	Center Hole	791	969 - 970
547		Inch	Multiple	Medium	HSS-Co	Bright*	1 - 2"	Center Hole	792	969 - 970
545		Inch	Multiple	Long	HSS-Co	Bright*	1/4 - 2"	Center Hole	792	969 - 970
557		Inch	Multiple	Extra Long	HSS-Co	Bright*	1/4 - 2"	Center Hole	793	969 - 970
Single End Tapered										
591		Inch	3	Reg., Long, Extra Long	HSS-Co	Bright*	1/16 - 5/8"	1° Taper per Side	794	975
593		Inch	3	Reg., Long, Extra Long	HSS-Co	Bright*	1/16 - 5/8"	2° Taper per Side	794	976
594		Inch	3	Reg., Long, Extra Long	HSS-Co	Bright*	3/32 - 1/2"	3° Taper per Side	795	976
595		Inch	5	Reg., Long, Extra Long	HSS-Co	Bright*	3/32 - 1/2"	3° Taper per Side	796	977
596		Inch	3	Regular, Long	HSS-Co	Bright*	5/64 - 1/2"	7° Taper per Side	797	977
597		Inch	3	Regular, Long	HSS-Co	Bright*	3/32 - 1/4"	10° Taper per Side	797	978

* Other coatings are available on request.

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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														
	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
Single End Multiple Flute																	
531	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
581	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
536	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
541	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
548	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
546	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
558	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
544	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
540	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
547	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
545	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
557	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
Single End Tapered																	
591	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		
593	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		
594	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		
595	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		
596	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		
597	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		

○ good ◎ best

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List	Item	Inch/ Metric	No. of Flutes	Length of Cut	Material	Coating	Size Range	Features	Product Page	Tech Page
Double End Mills										
522		Inch	2	Regular	HSS-Co	TiN, Bright*	1/8 - 1"		798	967 - 968
582		Metric	2	Regular	HSS-Co	Bright*	1mm - 25mm		799	972
532		Inch	3	Regular	HSS-Co	Bright*	1/8 - 1"		800	974
542		Inch	4	Regular	HSS-Co	TiN, Bright*	1/8 - 1"	Center Hole	801	969 - 970
543		Inch	4	Regular	HSS-Co	Bright*	1/8 - 1"		802	969 - 970
523		Inch	2	Regular	HSS-Co	Bright*	1/8 - 1"	Ball End	802	971
562		Inch	2	Stub	HSS-Co	Bright*	1/32 - 3/16"	Miniature	803	–
563		Inch	2	Regular	HSS-Co	Bright*	1/32 - 3/16"	Miniature	803	–
564		Inch	2	Long	HSS-Co	Bright*	1/16 - 3/16"	Miniature	804	–
566		Inch	4	Stub	HSS-Co	Bright*	1/16 - 3/16"	Miniature	804	–
567		Inch	4	Regular	HSS-Co	Bright*	1/16 - 3/16"	Miniature	805	–
568		Inch	4	Long	HSS-Co	Bright*	1/16 - 3/16"	Miniature	805	–
570		Inch	2	Stub	HSS-Co	Bright*	1/16 - 3/16"	Ball End, Miniature	806	–
571		Inch	2	Regular	HSS-Co	Bright*	1/16 - 3/16"	Ball End, Miniature	807	–

* Other coatings are available on request.

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Double End Mills

List No.	P					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 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
522	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
582	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
532	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
542	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
543	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
523	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
562	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
563	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
564	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
566	◎	◎	◎	○	○	○	○	○	○	○	○		○	○	○		
567	◎	◎	◎	○	○	○	○	○	○	○	○		○	○	○		
568	◎	◎	◎	○	○	○	○	○	○	○	○		○	○	○		
570	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
571	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

○ good ◎ best

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List No.	Item	Inch/ Metric	Material	Coating	Feature	Product Page
Carbide Burs 1/4" Shank						
801		Inch, Metric	Carbide	Bright	Cylindrical, Medium Tough Cut	809
802		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Tough Cut	809
803		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Right Hand Spiral	809
901		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Tough Cut	810
902		Inch, Metric	Carbide	Bright	Cylindrical, Medium Right Hand Spiral	810
903		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Right Hand Spiral	810
804		Inch, Metric	Carbide	Bright	Pointed Tree, Medium Tough Cut	811
805		Inch, Metric	Carbide	Bright	Pointed Cone, Medium Right Hand Spiral	811
806		Inch, Metric	Carbide	Bright	Egg Shape, Medium Tough Cut	811
904		Inch, Metric	Carbide	Bright	Pointed Cone, Medium Tough Cut	812
905		Inch, Metric	Carbide	Bright	Pointed Tree, Medium Right Hand Spiral	812
906		Inch, Metric	Carbide	Bright	Egg Shape, Medium Right Hand Spiral	812
807		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Tough Cut	813
808		Inch, Metric	Carbide	Bright	90° Cone, Medium Tough Cut	813
849		Inch, Metric	Carbide	Bright	Ball Shape, Medium Right Hand Spiral	813
907		Inch, Metric	Carbide	Bright	Ball Shape, Medium Tough Cut	814
908		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Right Hand Spiral	814
949		Inch, Metric	Carbide	Bright	90° Cone, Medium Right Hand Spiral	814
850		Inch, Metric	Carbide	Bright	60° Cone, Medium Tough Cut	815
851		Inch, Metric	Carbide	Bright	Inverted Taper, Medium Tough Cut	815
852		Inch	Carbide	Bright	Flame Shape, Medium Right Hand Spiral	815
950		Inch, Metric	Carbide	Bright	Flame Shape, Medium Tough Cut	816
951		Inch, Metric	Carbide	Bright	60° Cone, Medium Right Hand Spiral	816
952		Inch	Carbide	Bright	Inverted Taper, Medium Right Hand Spiral	816

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List No.	Item	Inch/ Metric	Material	Coating	Feature	Product Page
Carbide Burs 6" Long Shank						
861		Inch, Metric	Carbide	Bright	Cylindrical, Medium Tough Cut	817
862		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Tough Cut	817
863		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Right Hand Spiral	817
961		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Medium Tough Cut	818
962		Inch, Metric	Carbide	Bright	Cylindrical, Medium Right Hand Spiral	818
963		Inch, Metric	Carbide	Bright	Round Nose Tree, Medium Right Hand Spiral	818
867		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Tough Cut	819
868		Inch, Metric	Carbide	Bright	14° Included Angle, Medium Right Hand Spiral	819
967		Inch, Metric	Carbide	Bright	Ball Shape, Medium Tough Cut	820
968		Inch, Metric	Carbide	Bright	Ball Shape, Medium Right Hand Spiral	820
Carbide Burs for Aluminum						
881		Inch, Metric	Carbide	Bright	Cylindrical, Aluminum Cut	821
882		Inch, Metric	Carbide	Bright	Cylindrical Ball End, Aluminum Cut	821
883		Inch, Metric	Carbide	Bright	Round Nose Tree, Aluminum Cut	821
885		Inch, Metric	Carbide	Bright	Flame Shape, Aluminum Cut	822
886		Inch, Metric	Carbide	Bright	Egg Shape, Aluminum Cut	822
887		Inch, Metric	Carbide	Bright	14° Included Angle, Aluminum Cut	822
888		Inch, Metric	Carbide	Bright	Ball Shape, Aluminum Cut	822
Carbide Burs 1-1/2" OAL						
800		Inch, Metric	Carbide	Bright	Tough Cut	823-824
900		Inch, Metric	Carbide	Bright	Medium Right Hand Spiral	825-826
815		Inch, Metric	Carbide	Bright	Tough Cut	827
915		Inch, Metric	Carbide	Bright	Medium Right Hand Spiral	828
820		Inch, Metric	Carbide	Bright	Tough Cut	829
920		Inch, Metric	Carbide	Bright	Medium Right Hand Spiral	830

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List 2055

5 Flute, Multiple Lengths, Corner Radius

SPEED FEED P832 | 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

Weldon Flat 3/8" and above.
Packed: 1 pc. Available EXO® coating only.

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														
	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
2055						▢	▢	▢				▣				▢	

▢ good ▣ best

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List 9510

3 Flute, Deep Feed, Ball End

SPEED FEED P833-834 | CARBIDE | EXO® | 45° | SHRINK h6

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



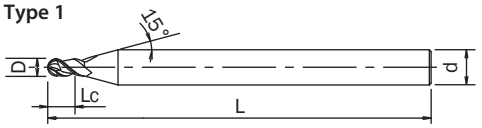
EDP Number	Mill Diameter D	OAL L	Length of Cut Lc	Shank Diameter d	Type
3090202	1	60	1.5	6	1
3090204	2	60	3.0	6	1
3090206	3	70	4.5	6	1
3090208	4	70	6.0	6	1
3090210	5	70	7.5	6	1
3090212	6	80	9.0	6	2
3090312	6	110	9.0	6	2
3090216	8	90	12.0	8	2

EDP Number	Mill Diameter D	OAL L	Length of Cut Lc	Shank Diameter d	Type
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.

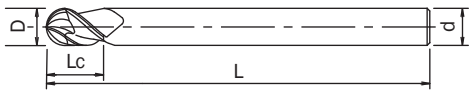
EP

Type 1





Type 2



Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
9510	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○

○ good ◎ best

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List 9590

3 Flute, Long Neck, Ball End

SPEED FEED P833-834 | CARBIDE | WXS® | 45° | SHRINK h6

Milling Diameter Tolerance	
0.6≤D≤6	+0.007mm / -0.007mm

Radius Tolerance	
0.3≤R≤3	+0.007mm / -0.007mm

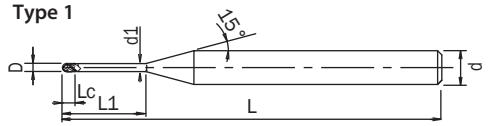


EDP Number	Mill Diameter	OAL	Length of Cut	Neck Length	Neck Diameter	Effective Neck Length (Based on Inclined Angle)						Shank Diameter	Type
	D	L	Lc	L1	d1	α						d	
						0.5°	1°	1.5°	2°	2.5°	3°		
3194901	0.6	50	0.45	1	0.55	1.02	1.05	1.08	1.11	1.14	1.17	4	1
3194902	0.6	50	0.45	2	0.55	2.06	2.12	2.18	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.

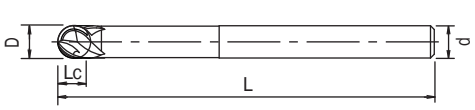
EP

Type 1





Type 2



Work Material

List No.	P					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 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
9590	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○

○ good ◎ best

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List 9581

3 Flute, Pencil-Neck, Deep Feed, Ball End

SPEED FEED P833-834 | CARBIDE | WXS® | 45° | SHRINK h6

Milling Diameter Tolerance	
1≤D≤12	+ 0 / -0.015mm

Radius Tolerance	
0.5≤R≤6	+0.01mm / -0.01mm



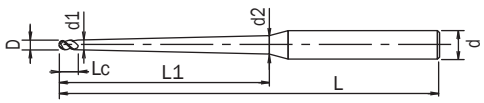
EDP Number	Mill Diameter	Overall Length	Length of Cut	Min. Neck Diameter	Max. Neck Diameter	Neck Length	Effective Draft Angle	Neck Draft Angle	Shank Diameter	Type
	D	L	Lc	d1	d2	L1	α	β	d	
3095125	1.0	60	1.5	0.95	1.20	16.0	0.38°	0.5°	6	1
3095141	1.0	60	1.5	0.95	1.10	6.0	0.56°	1.0°	6	1
3095142	1.0	60	1.5	0.95	1.17	8.0	0.68°	1.0°	6	1
3095143	1.0	60	1.5	0.95	1.24	10.0	0.75°	1.0°	6	1
3095144	1.0	60	1.5	0.95	1.31	12.0	0.79°	1.0°	6	1
3095145	1.0	60	1.5	0.95	1.45	16.0	0.85°	1.0°	6	1
3095146	1.0	60	1.5	0.95	1.59	20.0	0.88°	1.0°	6	1
3095147	1.0	70	1.5	0.95	1.77	25.0	0.91°	1.0°	6	1
3095155	1.0	60	1.5	0.95	1.65	15.0	1.30°	1.5°	6	1
3095157	1.0	70	1.5	0.95	2.18	25.0	1.39°	1.5°	6	1
3095191	1.0	70	1.5	0.95	5.43	30.0	4.30°	4.5°	6	1
3095211	1.5	60	2.3	1.45	1.58	6.0	0.45°	1.0°	6	1
3095212	1.5	60	2.3	1.45	1.68	9.0	0.65°	1.0°	6	1
3095213	1.5	60	2.3	1.45	1.79	12.0	0.74°	1.0°	6	1
3095214	1.5	60	2.3	1.45	1.89	15.0	0.80°	1.0°	6	1
3095215	1.5	60	2.3	1.45	2.10	21.0	0.86°	1.0°	6	1
3095216	1.5	70	2.3	1.45	2.41	30.0	0.90°	1.0°	6	1
3095223	2.0	60	3.0	1.95	2.24	20.0	0.38°	0.5°	6	1
3095241	2.0	60	3.0	1.95	2.19	10.0	0.62°	1.0°	6	1
3095242	2.0	60	3.0	1.95	2.36	15.0	0.76°	1.0°	6	1
3095243	2.0	60	3.0	1.95	2.54	20.0	0.82°	1.0°	6	1
3095244	2.0	70	3.0	1.95	2.71	25.0	0.86°	1.0°	6	1

Packed: 1 pc. Available WXS® coating only.

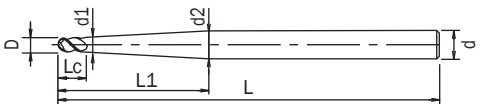
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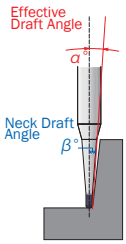
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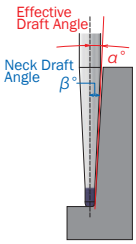
Type 1



Type 2







* 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														
	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
9581	▢	▢	▢	▢	▢	○	○	○	▢					▢	▢	▢	○

○ good ▢ best

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List 9581 (Continued)

3 Flute, Pencil-Neck, Deep Feed, Ball End



SPEED FEED P833-834 | CARBIDE | WXS® | 45° | SHRINK h6

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	
3095245	2.0	80	3.0	1.95	2.89	30.0	0.89°	1.0°	6	1
3095246	2.0	80	3.0	1.95	3.24	40.0	0.92°	1.0°	6	1
3095247	2.0	100	3.0	1.95	3.59	50.0	0.93°	1.0°	6	1
3095251	2.0	80	3.0	1.95	3.88	40.0	1.39°	1.5°	6	1
3095262	2.0	100	3.0	1.95	5.81	60.3	1.94°	2.0°	6	2
3095273	2.0	80	3.0	1.95	5.75	41.2	2.85°	3.0°	6	2
3095281	2.0	80	3.0	1.95	5.67	30.0	3.95°	3.8°	6	2
3095321	3.0	80	4.5	2.90	3.17	20.0	0.27°	0.5°	6	1
3095341	3.0	80	4.5	2.90	3.44	20.0	0.69°	1.0°	6	1
3095342	3.0	80	4.5	2.90	3.61	25.0	0.76°	1.0°	6	1
3095343	3.0	80	4.5	2.90	3.79	30.0	0.80°	1.0°	6	1
3095344	3.0	80	4.5	2.90	4.13	40.0	0.85°	1.0°	6	1
3095345	3.0	100	4.5	2.90	4.48	50.0	0.88°	1.0°	6	1
3095346	3.0	100	4.5	2.90	4.83	60.0	0.90°	1.0°	6	1
3095356	3.0	100	4.5	2.90	5.74	60.8	1.45°	1.5°	6	2
3095365	3.0	100	4.5	2.90	5.70	46.5	1.92°	2.0°	6	2
3095374	3.0	80	4.5	2.90	5.60	32.1	2.81°	3.0°	6	2
3095421	4.0	80	6.0	3.90	4.23	25.0	0.29°	0.5°	6	1
3095441	4.0	80	6.0	3.90	4.73	30.0	0.76°	1.0°	6	1
3095442	4.0	80	6.0	3.90	5.08	40.0	0.82°	1.0°	6	1
3095443	4.0	100	6.0	3.90	5.43	50.0	0.86°	1.0°	6	1
3095444	4.0	100	6.0	3.90	5.76	61.3	0.97°	1.0°	6	2
3095445	4.0	120	6.0	3.90	6.48	80.0	0.92°	1.0°	8	1
3095453	4.0	80	6.0	3.90	5.70	42.2	1.43°	1.5°	6	2
3095454	4.0	120	6.0	3.90	7.69	80.4	1.47°	1.5°	8	2
3095462	4.0	120	6.0	3.90	7.63	61.3	1.94°	2.0°	8	2
3095472	4.0	100	6.0	3.90	7.50	42.2	2.85°	3.0°	8	2
3095541	5.0	100	7.5	4.90	5.86	35.0	0.76°	1.0°	8	1
3095542	5.0	100	7.5	4.90	6.38	50.0	0.84°	1.0°	8	1
3095543	5.0	130	7.5	4.90	7.08	70.0	0.89°	1.0°	8	1
3095544	5.0	130	7.5	4.90	7.72	90.4	0.98°	1.0°	8	2
3095553	5.0	130	7.5	4.90	7.64	61.8	1.45°	1.5°	8	2
3095562	5.0	130	7.5	4.90	7.56	47.5	1.91°	2.0°	8	2
3095641	6.0	100	9.0	5.90	6.98	40.0	0.77°	1.0°	8	1
3095642	6.0	100	9.0	5.90	7.33	50.0	0.82°	1.0°	8	1
3095643	6.0	130	9.0	5.90	7.69	62.3	0.97°	1.0°	8	2
3095644	6.0	130	9.0	5.90	8.72	90.0	0.90°	1.0°	10	1
3095651	6.0	100	9.0	5.90	7.60	43.2	1.43°	1.5°	8	2
3095653	6.0	130	9.0	5.90	9.59	81.4	1.47°	1.5°	10	2
3095661	6.0	100	9.0	5.90	7.50	33.6	1.87°	2.0°	8	2
3095662	6.0	130	9.0	5.90	9.49	62.3	1.94°	2.0°	10	2
3095841	8.0	120	12.0	7.90	9.22	50.0	0.77°	1.0°	10	1
3095842	8.0	120	12.0	7.90	9.62	63.3	0.97°	1.0°	10	2
3095843	8.0	150	12.0	7.90	10.62	90.0	0.88°	1.0°	12	1
3095844	8.0	180	12.0	7.90	11.62	120.6	0.99°	1.0°	12	2
3095851	8.0	120	12.0	7.90	9.50	44.2	1.43°	1.5°	10	2
3095853	8.0	150	12.0	7.90	11.49	82.4	1.47°	1.5°	12	2
3095862	8.0	120	12.0	7.90	11.35	63.3	1.94°	2.0°	12	2

Packed: 1 pc. Available WXS® coating only.

EP

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List 9581 (Continued)

3 Flute, Pencil-Neck, Deep Feed, Ball End

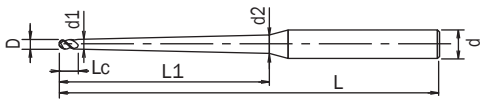
SPEED FEED P833-834 | CARBIDE | WXS® | 45° | SHRINK h6

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	
3096041	10.0	120	15.0	9.90	11.56	64.3	0.97°	1.0°	12	2
3096042	10.0	160	15.0	9.90	12.16	80.0	0.83°	1.0°	16	1
3096043	10.0	160	15.0	9.90	12.86	100.0	0.87°	1.0°	16	1
3096044	10.0	180	15.0	9.90	13.56	120.0	0.89°	1.0°	16	1
3096045	10.0	200	15.0	9.90	14.26	140.0	0.91°	1.0°	16	1
3096046	10.0	220	15.0	9.90	14.96	160.0	0.92°	1.0°	16	1
3096051	10.0	120	15.0	9.90	11.40	45.2	1.43°	1.5°	12	2
3096053	10.0	180	15.0	9.90	15.38	121.6	1.48°	1.5°	16	2
3096061	10.0	120	15.0	9.90	11.24	35.6	1.87°	2.0°	12	2
3096064	10.0	160	15.0	9.90	15.21	92.9	1.96°	2.0°	16	2
3096241	12.0	120	18.0	11.90	13.36	60.0	0.73°	1.0°	16	1
3096242	12.0	180	18.0	11.90	14.76	100.0	0.85°	1.0°	16	1
3096243	12.0	180	18.0	11.90	15.48	122.6	0.99°	1.0°	16	2
3096244	12.0	220	18.0	11.90	16.85	160.0	0.91°	1.0°	20	1
3096254	12.0	220	18.0	11.90	19.27	160.8	1.48°	1.5°	20	2

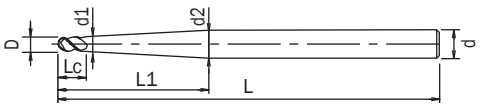
Packed: 1 pc. Available WXS® coating only.

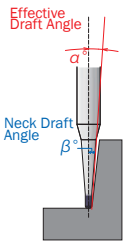
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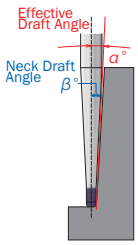
Type 1



Type 2







* 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														
	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
9581	▢	▢	▢	▢	▢	○	○	○	▢					▢	▢	▢	○

○ good ▢ best

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List 9592

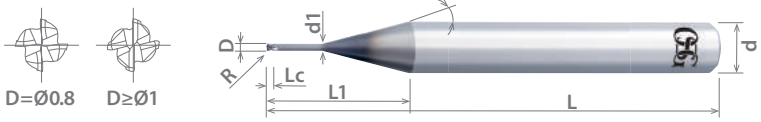
4 Flute, Pencil-Neck, Deep Feed, Corner Radius, Rib Processor

SPEED FEED P835 | CARBIDE | WXS® | 30° | SHRINK h6

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	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Dia.	Effective Neck Length (le)			Shank Diameter
	D	R	L	Lc	L1	d1	α			d
							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.

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														
	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
9592	▢	▢	▢	▢	▢	▢	▢	▢	▢					▢	▢	▢	▢

▢ good ▢ best

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List 9575

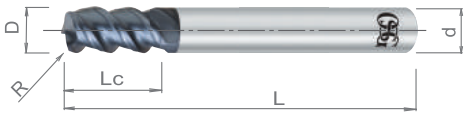
3 Flute, Deep Feed, Corner Radius

SPEED FEED P836-837 | CARBIDE | WXS® | 55° | SHRINK h6

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.

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														
	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
9575	▢	▢	▢	▢	▢	▢	▢	▢	▢					▢	▢	▢	▢

▢ good ▢ best

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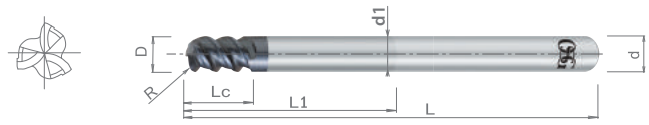
List 9576

3 Flute, Long Neck, Deep Feed, Corner Radius

SPEED FEED P836-837 | CARBIDE | WXS® | 55° | SHRINK h6

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 Diameter	Neck Length	Shank Diameter
	D	R	L	Lc	d1	L1	d
3092041	4	1.0	70	6	3.8	20	4
3092042	4	1.0	70	6	3.8	28	4
3092061	6	1.5	80	9	5.8	30	6
3092062	6	1.5	90	9	5.8	42	6
3092063	6	1.5	100	9	5.8	54	6
3092081	8	2.0	85	12	7.7	40	8
3092082	8	2.0	100	12	7.7	56	8
3092083	8	2.0	120	12	7.7	72	8
3092101	10	2.0	100	15	9.7	50	10
3092102	10	2.0	120	15	9.7	70	10
3092103	10	2.0	140	15	9.7	90	10
3092121	12	2.0	110	18	11.7	60	12
3092122	12	2.0	135	18	11.7	84	12
3092123	12	2.0	160	18	11.7	108	12
3092161	16	3.0	140	24	15.5	80	16
3092162	16	3.0	175	24	15.5	120	16

Packed: 1 pc. Available WXS® coating only.

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														
	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
9576	◎	◎	◎	◎	◎	○	○	○	◎					◎	◎	◎	○

○ good ◎ best

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List 9580

3 Flute, Pencil Neck, Deep Feed, Corner Radius

SPEED FEED P836-837 | CARBIDE | WXS® | 55° | SHRINK h6

Milling Diameter Tolerance	
2≤D≤12	+0 / -0.015mm

Radius Tolerance	
1≤R≤6	+0.03mm / -0.03mm



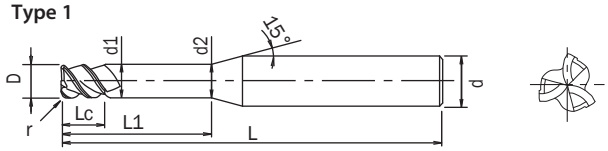
EDP Number	Mill Diameter	Overall Length	Length of Cut	Corner Radius	Effective Draft Angle	Neck Draft Angle	Neck Length	Min. Neck Diameter	Maximum Neck Diameter	Shank Diameter	Type
	D	L	Lc	r	α	β	L1	d1	d2	d	
3097223	2	60	3	0.5	0.36°	0.5°	20.0	1.95	2.25	6	1
3097224	2	70	3	0.5	0.39°	0.5°	25.0	1.95	2.33	6	1
3097225	2	80	3	0.5	0.41°	0.5°	30.0	1.95	2.42	6	1
3097226	2	80	3	0.5	0.42°	0.5°	35.0	1.95	2.51	6	1
3097227	2	80	3	0.5	0.43°	0.5°	40.0	1.95	2.60	6	1
3097241	2	60	3	0.5	0.59°	1°	10.0	1.95	2.19	6	1
3097242	2	60	3	0.5	0.73°	1°	15.0	1.95	2.37	6	1
3097243	2	60	3	0.5	0.80°	1°	20.0	1.95	2.54	6	1
3097244	2	70	3	0.5	0.84°	1°	25.0	1.95	2.72	6	1
3097245	2	80	3	0.5	0.87°	1°	30.0	1.95	2.89	6	1
3097246	2	80	3	0.5	0.89°	1°	35.0	1.95	3.07	6	1
3097247	2	80	3	0.5	0.90°	1°	40.0	1.95	3.24	6	1
3097248	2	100	3	0.5	0.91°	1°	45.0	1.95	3.42	6	1
3097249	2	100	3	0.5	0.92°	1°	50.0	1.95	3.59	6	1
3097251	2	80	3	0.5	1.37°	1.5°	40.0	1.95	3.89	6	1
3097262	2	100	3	0.5	2.00°	2°	60.3	1.95	6.00	6	2
3097273	2	100	3	0.5	3.00°	3°	41.2	1.95	6.00	6	2
3097321	3	80	4.5	0.8	0.25°	0.5°	20.0	2.90	3.17	6	1
3097341	3	80	4.5	0.8	0.66°	1°	20.0	2.90	3.44	6	1
3097342	3	80	4.5	0.8	0.73°	1°	25.0	2.90	3.62	6	1
3097343	3	80	4.5	0.8	0.78°	1°	30.0	2.90	3.79	6	1

Packed: 1 pc. Available WXS® coating only.

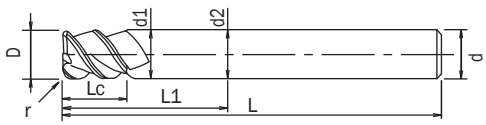
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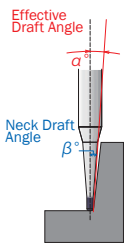
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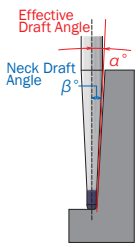
Type 1



Type 2







* 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														
	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
9580	▢	▢	▢	▢	▢	▢	▢	▢	▢					▢	▢	▢	▢

▢ good ▢ best

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List 9580 (Continued)

3 Flute, Pencil Neck, Deep Feed, Corner Radius

SPEED FEED P836-837 | CARBIDE | WXS® | 55° | SHRINK h6

Milling Diameter Tolerance	
2≤D≤12	+0 / -0.015mm

Radius Tolerance	
1≤R≤6	+0.03mm / -0.03mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Corner Radius	Effective Draft Angle	Neck Draft Angle	Neck Length	Min. Neck Diameter	Maximum Neck Diameter	Shank Diameter	Type
	D	L	Lc	r	α	β	L1	d1	d2	d	
3097344	3	80	4.5	0.8	0.83°	1°	40.0	2.90	4.14	6	1
3097345	3	100	4.5	0.8	0.87°	1°	50.0	2.90	4.49	6	1
3097346	3	100	4.5	0.8	0.89°	1°	60.0	2.90	4.84	6	1
3097356	3	100	4.5	0.8	1.50°	1.5°	60.8	2.90	6.00	6	2
3097365	3	100	4.5	0.8	2.00°	2°	46.5	2.90	6.00	6	2
3097374	3	100	4.5	0.8	3.00°	3°	32.1	2.90	6.00	6	2
3097421	4	80	6	1	0.28°	0.5°	25.0	3.90	4.23	6	1
3097422	4	80	6	1	0.31°	0.5°	30.0	3.90	4.32	6	1
3097423	4	80	6	1	0.34°	0.5°	35.0	3.90	4.41	6	1
3097424	4	80	6	1	0.36°	0.5°	40.0	3.90	4.49	6	1
3097425	4	80	6	1	0.38°	0.5°	45.0	3.90	4.58	6	1
3097426	4	100	6	1	0.39°	0.5°	50.0	3.90	4.67	6	1
3097441	4	80	6	1	0.73°	1°	30.0	3.90	4.74	6	1
3097442	4	80	6	1	0.80°	1°	40.0	3.90	5.09	6	1
3097443	4	100	6	1	0.84°	1°	50.0	3.90	5.44	6	1
3097444	4	100	6	1	1.00°	1°	61.3	3.90	6.00	6	2
3097453	4	80	6	1	1.50°	1.5°	42.2	3.90	6.00	6	2
3097454	4	120	6	1	1.50°	1.5°	80.4	3.90	8.00	8	2
3097461	4	80	6	1	2.00°	2°	32.6	3.90	6.00	6	2
3097462	4	120	6	1	2.00°	2°	61.3	3.90	8.00	8	2
3097472	4	100	6	1	3.00°	3°	42.2	3.90	8.00	8	2
3097627	6	130	9	1.5	0.39°	0.5°	60.0	5.90	6.79	8	1
3097641	6	100	9	1.5	0.73°	1°	40.0	5.90	6.98	8	1
3097642	6	100	9	1.5	0.79°	1°	50.0	5.90	7.33	8	1
3097643	6	130	9	1.5	1.00°	1°	62.3	5.90	8.00	8	2
3097651	6	100	9	1.5	1.50°	1.5°	43.2	5.90	8.00	8	2
3097653	6	130	9	1.5	1.50°	1.5°	81.4	5.90	10.00	10	2
3097661	6	100	9	1.5	2.00°	2°	33.6	5.90	8.00	8	2
3097662	6	130	9	1.5	2.00°	2°	62.3	5.90	10.00	10	2
3097826	8	150	12	2	0.40°	0.5°	80.0	7.90	9.09	10	1
3097841	8	120	12	2	0.73°	1°	50.0	7.90	9.23	10	1
3097842	8	150	12	2	1.00°	1°	63.3	7.90	10.00	10	2
3097844	8	180	12	2	1.00°	1°	120.6	7.90	12.00	12	2
3097851	8	120	12	2	1.50°	1.5°	44.2	7.90	10.00	10	2
3097853	8	150	12	2	1.50°	1.5°	82.4	7.90	12.00	12	2
3097861	8	120	12	2	2.00°	2°	34.6	7.90	10.00	10	2
3097862	8	120	12	2	2.00°	2°	63.3	7.90	12.00	12	2
3098026	10	150	15	2	0.40°	0.5°	100.0	9.90	11.38	12	1
3098041	10	120	15	2	1.00°	1°	64.3	9.90	12.00	12	2
3098042	10	160	15	2	0.80°	1°	80.0	9.90	12.17	16	1
3098043	10	160	15	2	0.84°	1°	100.0	9.90	12.87	16	1
3098044	10	180	15	2	0.87°	1°	120.0	9.90	13.57	16	1
3098045	10	200	15	2	0.88°	1°	140.0	9.90	14.26	16	1
3098046	10	220	15	2	0.90°	1°	160.0	9.90	14.96	16	1
3098051	10	120	15	2	1.50°	1.5°	45.2	9.90	12.00	12	2
3098053	10	180	15	2	1.50°	1.5°	121.6	9.90	16.00	16	2
3098061	10	120	15	2	2.00°	2°	35.6	9.90	12.00	12	2

Packed: 1 pc. Available WXS® coating only.

EP

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List 9580 (Continued)

SPEED FEED P836-837 | CARBIDE | WXS® | 55° | SHRINK h6

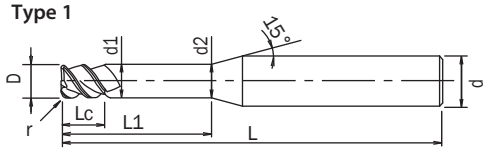
3 Flute, Pencil Neck, Deep Feed, Corner Radius

EDP Number	Mill Diameter	Overall Length	Length of Cut	Corner Radius	Effective Draft Angle	Neck Draft Angle	Neck Length	Min. Neck Diameter	Maximum Neck Diameter	Shank Diameter	Type
	D	L	Lc	r	α	β	L1	d1	d2	d	
3098064	10	220	15	2	2.00°	2°	92.9	9.90	16.00	16	2
3098224	12	180	18	2	0.41°	0.5°	120.0	11.90	13.68	16	1
3098241	12	120	18	2	0.67°	1°	60.0	11.90	13.37	16	1
3098242	12	180	18	2	0.81°	1°	100.0	11.90	14.76	16	1
3098243	12	180	18	2	1.00°	1°	122.6	11.90	16.00	16	2
3098244	12	220	18	2	0.88°	1°	160.0	11.90	16.86	20	1
3098254	12	220	18	2	1.50°	1.5°	160.8	11.90	20.00	20	2

Packed: 1 pc. Available WXS® coating only.

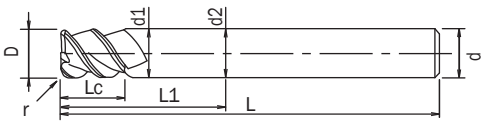
EP

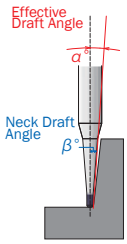
Type 1

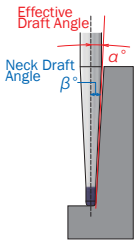




Type 2







* 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														
	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
9580	▢	▢	▢	▢	▢	○	○	○	▢					▢	▢	▢	○

○ good ▢ best

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List 9570

3 Flute, High Feed, Corner Radius

SPEED FEED P836-837 | CARBIDE | EXO® | 55° | SHRINK h6

Milling Diameter Tolerance	
1≤D≤5	+0 / -0.015mm
6≤D≤20	+0.01mm / -0.005mm

Radius Tolerance	
0.5≤R≤10	+0.01mm / -0.01mm

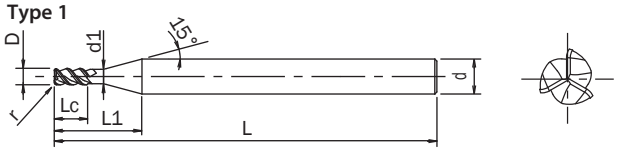


EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Effective Neck Length (Le) (Based on Inclined Angle)				Shank Diameter	Type
	D	r	L	Lc	L1	d1	α				d	
							0.5°	1°	2°	3°		
3090002	1	0.3	60	2	4.0	0.95	4.29	4.56	5.05	5.5	6	1
3090003	1.5	0.3	60	3	4.5	1.45	4.82	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	12.6	13.09	14.07	15.21	6	1
3090010	5	1.0	70	10	15.0	4.85	15.72	16.3	—	—	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

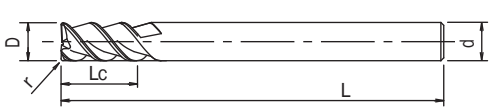
Packed: 1 pc. Available EXO® coating only.

EP

Type 1



Type 2



Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
9570	▢	▢	▢	▢	▢	▢	▢	▢	▢					▢	▢	▢	▢

▢ good ▢ best

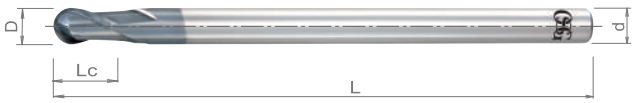
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List 3610

2 Flute, Regular Length, Ball End

SPEED FEED P841 | CARBIDE | WXL® | REG | 30° | SHRINK h6

Radius Tolerance	
D≤1/4	+0.0002" / -0.0002"
D>1/4	+0.0004" / -0.0004"



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

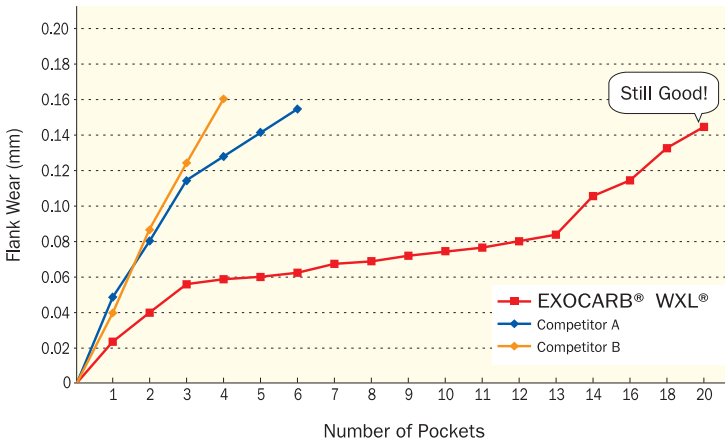
EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
36100611	1/4	3	1/4	1/4
36100711	5/16	4	5/16	5/16
36100811	3/8	4	3/8	3/8
36100911	1/2	4	1/2	1/2

Packed: 1 pc. Available WXL® coating only.

HTE

Tool Life in 1050

Tool:	EXOCARB® WXL® 10mm
Material:	1050
Milling Speed:	6,366 RPM
Feed:	65 IPM
Milling Method:	Pocket Milling
Milling Depth:	aa=0.1D ; ar=0.2D
Projection Length:	4D
Coolant:	Air Blow
Machine:	Vertical Machining Center



OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP416 (p. 718)
Want to turbo-charge performance? Try EXOCARB® WXS® - List 4410 (p. 643)

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
3610	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢	▢	▢	

▢ good ▢ best

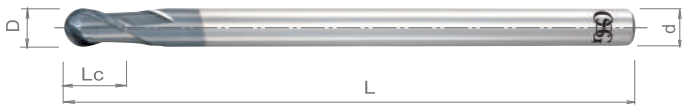
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List 3710

2 Flute, Regular Length, Ball End

SPEED FEED P842 | CARBIDE | WXL® | REG | 30° | SHRINK h6

Radius Tolerance	
D≤6	+0.005mm / -0.005mm
D>6	+0.01mm / -0.01mm



EDP Number	Mill Diameter D	Overall Length L	Length of Cut Lc	Shank Diameter 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 D	Overall Length L	Length of Cut Lc	Shank Diameter 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.

HTE

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List 421BN (p. 716-717)
Want to turbo-charge performance? Try EXOCARB® WXS® - List 4510 (p. 644)

Work Material

List No.	P					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 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
3710	▢	▢	▢	▢	▢	○	○	○	▢	○	○	○	○	▢	▢	▢	○

○ good ▢ best

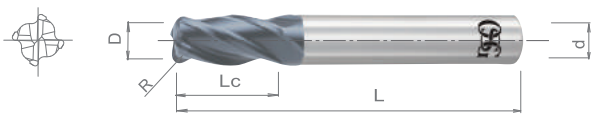
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List 3670

4 Flute, Regular Length, Corner Radius

SPEED FEED P843 | CARBIDE | WXL® | REG | 30° | SHRINK h6

Milling Diameter Tolerance	
1/16≤D≤1/2	+0 / -0.0008"



EDP Number	Mill Diameter D	Corner Radius R	Overall Length L	Length of Cut Lc	Shank Diameter 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 D	Corner Radius R	Overall Length L	Length of Cut Lc	Shank Diameter 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

HTE

Packed: 1 pc. Available WXL® coating only.

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP434 (p. 723-724)
Want to turbo-charge performance? Try EXOCARB® WXS® - List 4471 (p. 647)

Work Material																			
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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		
3670	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○		

○ good ◎ best

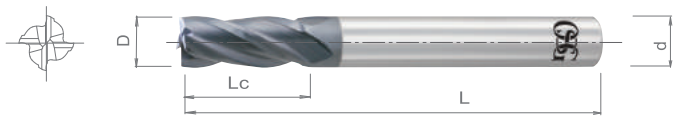
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List 3604

4 Flute, Regular Length

SPEED FEED P844 | CARBIDE | WXL® | REG | 30° | SHRINK h6

Milling Diameter Tolerance	
1/16≤D≤3/4	+0 / -0.0008"



EDP Number	Mill Diameter D	Overall Length L	Length of Cut Lc	Shank Diameter 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 D	Overall Length L	Length of Cut Lc	Shank Diameter 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.

HTE

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (p. 705-706)
Want to turbo-charge side milling performance? Try EXOCARB® WXS® - List 4440 (p. 645)

Work Material

List No.	P					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 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
3604	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

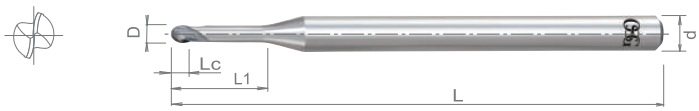
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List 3690

2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

SPEED FEED P845-848 | CARBIDE | WXL® | REG | 30° | SHRINK h6

±5µm Radius Tolerance



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
36900111	1/64	2-1/2	1/64	3/64	1/8
36900211	1/64	2-1/2	1/64	3/32	1/8
36900311	1/32	2-1/2	1/32	5/32	1/4
36900411	1/32	2-1/2	1/32	5/16	1/4
36900511	1/32	2-1/2	1/32	13/32	1/4
36900611	1/16	2-1/2	1/16	5/16	1/4
36900711	1/16	2-1/2	1/16	5/8	1/4
36900811	1/16	3	1/16	13/16	1/4
36900911	3/32	2-1/2	3/32	15/32	1/4

EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Shank Diameter
	D	L	Lc	L1	d
36901011	3/32	2-7/8	3/32	15/16	1/4
36901111	3/32	3-1/8	3/32	1-13/32	1/4
36901211	1/8	3	1/8	5/8	1/4
36901311	1/8	3	1/8	1-1/4	1/4
36901411	1/8	3-3/4	1/8	1-7/8	1/4
36901511	3/16	3-1/2	3/16	15/16	1/4
36901611	3/16	4	3/16	1-7/8	1/4
36901711	1/4	4	1/4	1-1/4	1/4
36901811	1/4	4-1/2	1/4	2	1/4

Packed: 1 pc. Available WXL® coating only.

HTE

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
3690	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

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List 3790

SPEED FEED P845-848 | CARBIDE | WXL® | REG | 30° | SHRINK h6

2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

±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.

HTE

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List 3790 (Continued)

2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

SPEED FEED P845-848 | CARBIDE | WXL® | REG | 30° | SHRINK h6

±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
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

HTE

Work Material

List No.	P					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 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
3790	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢

▢ good ▢ best

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List 3790 (Continued)

SPEED FEED P845-848 | CARBIDE | WXL® | REG | 30° | SHRINK h6

2 Flute, Regular Length, Long Neck, Ball End, Rib Processing

±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

HTE

Packed: 1 pc. Available WXL® coating only.

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP419 (p. 720) or HY-PRO® CARB - HP419L (p. 721)

Want to turbo-charge performance? Try EXOCARB® WXS® - List 4590 (pp. 653-655)

Work Material

List No.	P					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 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
3790	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

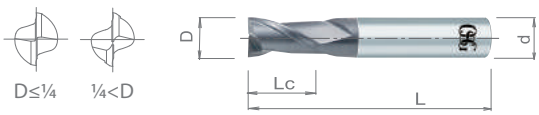
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List 3620

2 Flute, Stub Length

SPEED FEED P849 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

Milling Diameter Tolerance	
D≤7/16	+0 / -0.0008"
D≥1/2	+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
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.

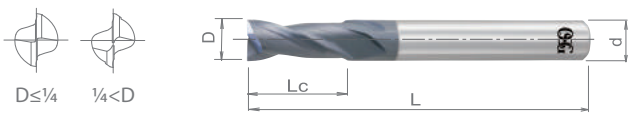
HTE

List 3621

2 Flute, Regular Length

SPEED FEED P849 | CARBIDE | WXL® | REG | 35° | SHRINK h6

Milling Diameter Tolerance	
D≤7/16	+0 / -0.0008"
D≥1/2	+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
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.

HTE

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (p. 705-706)

Work Material

List No.	P					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 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
3620	▣	▣	▣	▣	▣	▢	▢	▢	▣	▢	▢	▢	▢	▣	▣	▣	▢
3621	▣	▣	▣	▣	▣	▢	▢	▢	▣	▢	▢	▢	▢	▣	▣	▣	▢

▢ good ▣ best

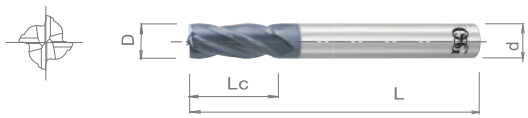
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List 3704

4 Flute, Stub Length

SPEED FEED P850-851 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

Milling Diameter Tolerance	
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

Packed: 1 pc. Available WXL® coating only.

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

HTE

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP441 (pp. 705-706)

Work Material

List No.	P					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 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
3704	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

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List 3742

4 Flute, Long Length

SPEED FEED P852 | CARBIDE | WXL® | LONG | 30° | SHRINK h6

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

Packed: 1 pc. Available WXL® coating only.

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

HTE

Work Material

List No.	P					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 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
3742	◎	◎	◎	◎	◎	○	○	○	◎	◎	◎			◎	◎	◎	○

○ good ◎ best

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List 3791

2 Flute, Stub Length, Long Neck, Rib Processing

SPEED FEED P853-856 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

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.

HTE

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List 3791 (Continued)

2 Flute, Stub Length, Long Neck, Rib Processing

SPEED FEED P853-856 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

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

HTE

Packed: 1 pc. Available WXL® coating only.

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP410 (p. 712)

Work Material

List No.	P					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 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
3791	◻	◻	◻	◻	◻	○	○	○	◻	○	○	○	○	◻	◻	◻	○

○ good ◻ best

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List 3711

2 Flute, Regular Length, Long Shank, Ball End

SPEED FEED P857 | CARBIDE | WXL® | REG | 30° | SHRINK h6

Milling Diameter Tolerance	
1≤D≤18	+0 / -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

Packed: 1 pc. Available WXL® coating only.

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

HTE

Work Material

List No.	P					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 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
3711	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	○			▢	▢	▢	○

○ good ▢ best

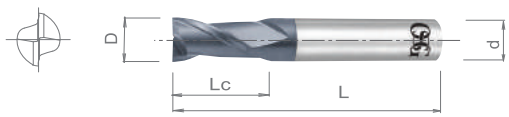
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List 3720

2 Flute, Stub Length

SPEED FEED P858-859 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

Milling Diameter Tolerance	
0.2≤D≤5	+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.

HTE

Work Material

List No.	P					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 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
3720	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

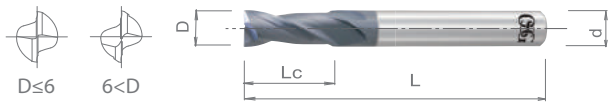
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List 3721

2 Flute, Stub Length

SPEED FEED P860-861 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

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
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

HTE

Packed: 1 pc. Available WXL® coating only.

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB - List HP421 (pp. 705-706)

Work Material

List No.	P					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 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
3721	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

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List 3712

2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P862-869 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

Radius Tolerance	
D≤6	+/-0.005mm



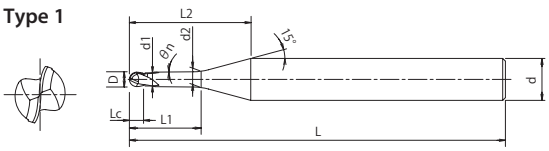
EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Max Neck Diameter	Neck Length	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	d2	L2	L1	θn	d	
3170011	0.20	45	0.16	0.19	0.20	8.3	1.0	0.5°	4	1
3170012	0.20	45	0.16	0.19	0.21	8.8	1.5	0.5°	4	1
3170013	0.20	45	0.16	0.19	0.21	9.2	2.0	0.5°	4	1
3170014	0.20	45	0.16	0.19	0.22	9.7	2.5	0.5°	4	1
3170015	0.20	45	0.16	0.19	0.23	10.2	3.0	0.5°	4	1
3170021	0.20	45	0.16	0.19	0.24	9.2	2.0	1.0°	4	1
3170022	0.20	45	0.16	0.19	0.26	9.6	2.5	1.0°	4	1
3170023	0.20	45	0.16	0.19	0.28	10.1	3.0	1.0°	4	1
3170031	0.30	45	0.24	0.29	0.31	9.1	2.0	0.5°	4	1
3170032	0.30	45	0.24	0.29	0.33	10.0	3.0	0.5°	4	1
3170041	0.30	45	0.24	0.29	0.37	9.9	3.0	1.0°	4	1
3170042	0.30	45	0.24	0.29	0.41	10.9	4.0	1.0°	4	1
3170051	0.40	45	0.30	0.38	0.41	9.0	2.0	0.5°	4	1
3170052	0.40	45	0.30	0.38	0.42	9.9	3.0	0.5°	4	1
3170053	0.40	45	0.30	0.38	0.44	10.9	4.0	0.5°	4	1
3170054	0.40	45	0.30	0.38	0.45	11.9	5.0	0.5°	4	1
3170055	0.40	45	0.30	0.38	0.47	12.8	6.0	0.5°	4	1
3170061	0.40	45	0.30	0.38	0.49	10.8	4.0	1.0°	4	1
3170062	0.40	45	0.30	0.38	0.52	11.7	5.0	1.0°	4	1
3170063	0.40	45	0.30	0.38	0.56	12.7	6.0	1.0°	4	1
3170071	0.50	45	0.40	0.48	0.53	10.7	4.0	0.5°	4	1
3170072	0.50	45	0.40	0.48	0.57	12.7	6.0	0.5°	4	1

Packed: 1 pc. Available WXL® coating only.

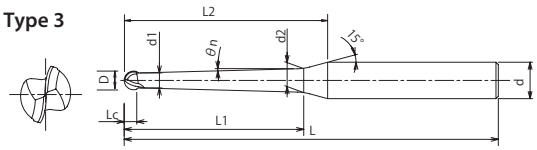
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HTE

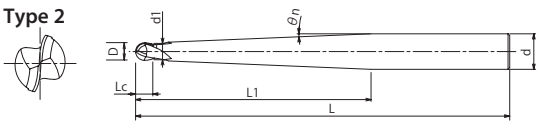
Type 1



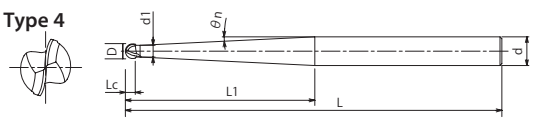
Type 3



Type 2



Type 4



Work Material

List No.	P					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 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
3712	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢

▢ good ▢ best

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List 3712 (Continued)

2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P862-869 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

Radius Tolerance	
D≤6	+/-0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Max Neck Diameter	Neck Length	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	d2	L2	L1	θn	d	
3170073	0.50	45	0.40	0.48	0.60	14.6	8.0	0.5°	4	1
3170074	0.50	45	0.40	0.48	0.64	16.5	10.0	0.5°	4	1
3170081	0.50	45	0.40	0.48	0.59	10.6	4.0	1.0°	4	1
3170082	0.50	45	0.40	0.48	0.66	12.5	6.0	1.0°	4	1
3170083	0.50	45	0.40	0.48	0.72	14.3	8.0	1.0°	4	1
3170084	0.50	45	0.40	0.48	0.79	16.2	10.0	1.0°	4	1
3170085	0.50	50	0.40	0.48	0.86	18.1	12.0	1.0°	4	1
3170091	0.60	45	0.50	0.58	0.60	9.0	2.0	0.5°	4	1
3170092	0.60	45	0.50	0.58	0.64	10.9	4.0	0.5°	4	1
3170093	0.60	45	0.50	0.58	0.67	12.8	6.0	0.5°	4	1
3170094	0.60	45	0.50	0.58	0.70	14.8	8.0	0.5°	4	1
3170095	0.60	45	0.50	0.58	0.74	16.7	10.0	0.5°	4	1
3170096	0.60	45	0.50	0.58	0.77	18.7	12.0	0.5°	4	1
3170097	0.60	50	0.50	0.58	0.84	22.5	16.0	0.5°	4	1
3170101	0.60	45	0.50	0.58	0.68	10.8	4.0	1.0°	4	1
3170102	0.60	45	0.50	0.58	0.75	12.6	6.0	1.0°	4	1
3170103	0.60	45	0.50	0.58	0.82	14.5	8.0	1.0°	4	1
3170104	0.60	45	0.50	0.58	0.89	16.4	10.0	1.0°	4	1
3170105	0.60	45	0.50	0.58	0.96	18.2	12.0	1.0°	4	1
3170106	0.60	50	0.50	0.58	1.10	22.0	16.0	1.0°	4	1
3170111	0.80	45	0.60	0.78	0.84	10.5	4.0	0.5°	4	1
3170112	0.80	45	0.60	0.78	0.86	12.5	6.0	0.5°	4	1
3170113	0.80	45	0.60	0.78	0.90	14.4	8.0	0.5°	4	1
3170114	0.80	45	0.60	0.78	0.97	18.3	12.0	0.5°	4	1
3170121	0.80	45	0.60	0.78	1.02	14.1	8.0	1.0°	4	1
3170122	0.80	45	0.60	0.78	1.16	17.9	12.0	1.0°	4	1
3170123	0.80	50	0.60	0.78	1.30	21.6	16.0	1.0°	4	1
3170131	1.00	45	0.63	0.95	1.03	12.2	6.0	0.5°	4	3
3170132	1.00	45	0.63	0.95	1.07	14.1	8.0	0.5°	4	3
3170133	1.00	45	0.63	0.95	1.10	16.0	10.0	0.5°	4	3
3170134	1.00	45	0.63	0.95	1.14	18.0	12.0	0.5°	4	3
3170135	1.00	50	0.63	0.95	1.21	21.8	16.0	0.5°	4	3
3170136	1.00	55	0.63	0.95	1.24	23.8	18.0	0.5°	4	3
3170137	1.00	55	0.63	0.95	1.28	25.7	20.0	0.5°	4	3
3170138	1.00	60	0.63	0.95	1.36	30.5	25.0	0.5°	4	3
3170139	1.00	65	0.63	0.95	1.45	35.4	30.0	0.5°	4	3
3170140	1.00	70	0.63	0.95	1.54	40.2	35.0	0.5°	4	3
3170141	1.00	45	0.63	0.95	1.25	15.7	10.0	1.0°	4	3
3170142	1.00	50	0.63	0.95	1.46	21.3	16.0	1.0°	4	3
3170143	1.00	55	0.63	0.95	1.60	25.0	20.0	1.0°	4	3
3170144	1.00	60	0.63	0.95	1.78	29.7	25.0	1.0°	4	3
3170145	1.00	65	0.63	0.95	1.95	34.4	30.0	1.0°	4	3
3170146	1.00	70	0.63	0.95	2.13	39.1	35.0	1.0°	4	3
3170147	1.00	80	0.63	0.95	2.30	43.7	40.0	1.0°	4	3
3170148	1.00	90	0.63	0.95	2.65	53.1	50.0	1.0°	4	3
3170149	1.00	100	0.63	0.95	3.00	62.4	60.0	1.0°	4	3
3170150	1.00	110	0.63	0.95	3.35	71.8	70.0	1.0°	4	3
3170151	1.00	45	0.63	0.95	1.30	13.5	8.0	1.5°	4	3
3170152	1.00	45	0.63	0.95	1.40	15.4	10.0	1.5°	4	3
3170153	1.00	45	0.63	0.95	1.51	17.2	12.0	1.5°	4	3

Packed: 1 pc. Available WXL® coating only.

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List 3712 (Continued)

SPEED FEED P862-869 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

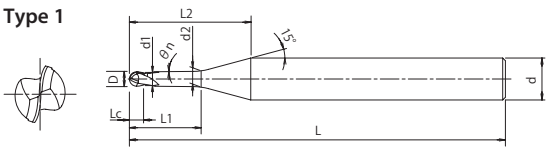
2 Flute, Stub Length, Pencil Neck, Ball End

EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Max Neck Diameter	Neck Length	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	d2	L2	L1	θn	d	
3170154	1.00	50	0.63	0.95	1.72	20.8	16.0	1.5°	4	3
3170155	1.00	55	0.63	0.95	1.93	24.4	20.0	1.5°	4	3
3170156	1.00	60	0.63	0.95	2.19	28.9	25.0	1.5°	4	3
3170157	1.00	65	0.63	0.95	2.45	33.4	30.0	1.5°	4	3
3170158	1.00	70	0.63	0.95	2.71	37.9	35.0	1.5°	4	3
3170161	1.00	80	0.63	0.95	4.00	-	45.0	2.0°	4	4
3170171	1.20	45	0.76	1.15	1.33	17.6	12.0	0.5°	4	3
3170172	1.20	60	0.76	1.15	1.56	30.2	25.0	0.5°	4	3
3170181	1.20	45	0.76	1.15	1.52	17.2	12.0	1.0°	4	3
3170182	1.20	60	0.76	1.15	1.97	29.4	25.0	1.0°	4	3
3170191	1.20	45	0.76	1.15	1.70	16.8	12.0	1.5°	4	3
3170192	1.20	60	0.76	1.15	2.38	28.5	25.0	1.5°	4	3
3170211	1.50	45	0.95	1.42	1.53	13.2	8.0	0.5°	4	3
3170212	1.50	45	0.95	1.42	1.57	15.2	10.0	0.5°	4	3
3170213	1.50	45	0.95	1.42	1.60	17.1	12.0	0.5°	4	3
3170214	1.50	55	0.95	1.42	1.67	21.0	16.0	0.5°	4	3
3170215	1.50	55	0.95	1.42	1.74	24.8	20.0	0.5°	4	3
3170216	1.50	60	0.95	1.42	1.83	29.7	25.0	0.5°	4	3
3170217	1.50	65	0.95	1.42	1.91	34.5	30.0	0.5°	4	3
3170218	1.50	70	0.95	1.42	2.00	39.4	35.0	0.5°	4	3
3170221	1.50	45	0.95	1.42	1.71	14.8	10.0	1.0°	4	3
3170222	1.50	45	0.95	1.42	1.78	16.7	12.0	1.0°	4	3
3170223	1.50	55	0.95	1.42	1.92	20.4	16.0	1.0°	4	3
3170224	1.50	55	0.95	1.42	2.06	24.2	20.0	1.0°	4	3
3170225	1.50	60	0.95	1.42	2.23	28.9	25.0	1.0°	4	3

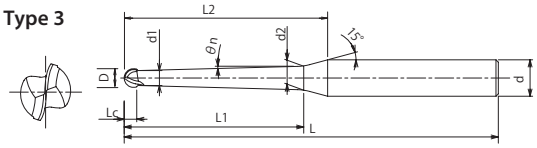
Packed: 1 pc. Available WXL® coating only.

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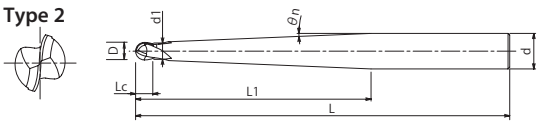
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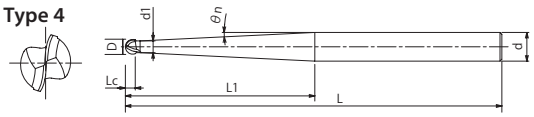
Type 3



Type 2



Type 4



Work Material

List No.	P					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 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
3712	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢

▢ good ▢ best

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List 3712 (Continued)

2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P862-869 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

Radius Tolerance	
D≤6	+/-0.005mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Max Neck Diameter	Neck Length	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	d2	L2	L1	θn	d	
3170226	1.50	65	0.95	1.42	2.41	33.5	30.0	1.0°	4	3
3170227	1.50	70	0.95	1.42	2.58	38.2	35.0	1.0°	4	3
3170230	1.50	45	0.95	1.42	1.86	14.5	10.0	1.5°	4	3
3170231	1.50	45	0.95	1.42	1.96	16.3	12.0	1.5°	4	3
3170232	1.50	55	0.95	1.42	2.17	19.9	16.0	1.5°	4	3
3170233	1.50	55	0.95	1.42	2.38	23.5	20.0	1.5°	4	3
3170234	1.50	60	0.95	1.42	2.64	28.0	25.0	1.5°	4	3
3170235	1.50	65	0.95	1.42	2.90	32.6	30.0	1.5°	4	3
3170236	1.50	70	0.95	1.42	3.16	37.1	35.0	1.5°	4	3
3170241	1.50	70	0.95	1.42	4.00	-	38.6	2.0°	4	4
3170271	2.00	45	1.26	1.93	2.04	12.3	8.0	0.5°	4	3
3170272	2.00	45	1.26	1.93	2.07	14.2	10.0	0.5°	4	3
3170273	2.00	45	1.26	1.93	2.11	16.2	12.0	0.5°	4	3
3170274	2.00	50	1.26	1.93	2.17	20.0	16.0	0.5°	4	3
3170275	2.00	55	1.26	1.93	2.24	23.9	20.0	0.5°	4	3
3170276	2.00	65	1.26	1.93	2.33	28.7	26.0	0.5°	4	3
3170277	2.00	70	1.26	1.93	2.42	33.6	30.0	0.5°	4	3
3170278	2.00	75	1.26	1.93	2.51	38.4	35.0	0.5°	4	3
3170279	2.00	80	1.26	1.93	2.59	43.2	40.0	0.5°	4	3
3170281	2.00	50	1.26	1.93	2.42	19.5	16.0	1.0°	4	3
3170282	2.00	55	1.26	1.93	2.56	23.3	20.0	1.0°	4	3
3170283	2.00	65	1.26	1.93	2.73	27.9	25.0	1.0°	4	3
3170284	2.00	70	1.26	1.93	2.91	32.6	30.0	1.0°	4	3
3170285	2.00	75	1.26	1.93	3.08	37.3	35.0	1.0°	4	3
3170286	2.00	80	1.26	1.93	3.26	41.9	40.0	1.0°	4	3
3170287	2.00	90	1.26	1.93	3.61	55.0	50.0	1.0°	6	3
3170288	2.00	100	1.26	1.93	3.96	64.4	60.0	1.0°	6	3
3170289	2.00	110	1.26	1.93	4.30	73.7	70.0	1.0°	6	3
3170291	2.00	50	1.26	1.93	2.66	19.0	16.0	1.5°	4	3
3170292	2.00	55	1.26	1.93	2.87	22.6	20.0	1.5°	4	3
3170293	2.00	65	1.26	1.93	3.14	27.1	25.0	1.5°	4	3
3170294	2.00	70	1.26	1.93	3.40	31.6	30.0	1.5°	4	3
3170295	2.00	75	1.26	1.93	3.66	36.1	35.0	1.5°	4	3
3170296	2.00	80	1.26	1.93	4.00	-	41.4	1.5°	4	4
3170301	2.00	70	1.26	1.93	4.00	-	31.5	2.0°	4	4
3170321	3.00	50	2.40	2.95	3.04	14.1	8.0	0.5°	6	1
3170322	3.00	50	2.40	2.95	3.08	16.1	10.0	0.5°	6	1
3170323	3.00	55	2.40	2.95	3.11	18.0	12.0	0.5°	6	1
3170324	3.00	55	2.40	2.95	3.18	21.9	16.0	0.5°	6	1
3170325	3.00	60	2.40	2.95	3.25	25.8	20.0	0.5°	6	1
3170326	3.00	65	2.40	2.95	3.33	30.6	25.0	0.5°	6	1
3170327	3.00	70	2.40	2.95	3.42	35.4	30.0	0.5°	6	1
3170328	3.00	80	2.40	2.95	3.51	40.3	35.0	0.5°	6	1
3170329	3.00	85	2.40	2.95	3.60	45.1	40.0	0.5°	6	1
3170330	3.00	90	2.40	2.95	3.77	54.8	50.0	0.5°	6	1
3170331	3.00	60	2.40	2.95	3.54	25.1	20.0	1.0°	6	1
3170332	3.00	65	2.40	2.95	3.72	29.8	25.0	1.0°	6	1
3170333	3.00	70	2.40	2.95	3.89	34.5	30.0	1.0°	6	1

Packed: 1 pc. Available WXL® coating only.

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List 3712 (Continued)

SPEED FEED P862-869 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

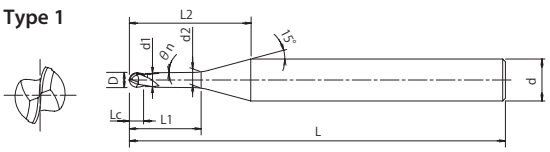
2 Flute, Stub Length, Pencil Neck, Ball End

EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Max Neck Diameter	Neck Length	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	d2	L2	L1	θn	d	
3170334	3.00	80	2.40	2.95	4.07	39.2	35.0	1.0°	6	1
3170335	3.00	85	2.40	2.95	4.24	43.8	40.0	1.0°	6	1
3170336	3.00	90	2.40	2.95	4.59	53.2	50.0	1.0°	6	1
3170337	3.00	100	2.40	2.95	4.94	62.5	60.0	1.0°	6	1
3170338	3.00	110	2.40	2.95	5.29	71.9	70.0	1.0°	6	1
3170341	3.00	60	2.40	2.95	3.84	24.5	20.0	1.5°	6	1
3170342	3.00	65	2.40	2.95	4.10	29.0	25.0	1.5°	6	1
3170343	3.00	70	2.40	2.95	4.36	33.6	30.0	1.5°	6	1
3170344	3.00	80	2.40	2.95	4.63	38.1	35.0	1.5°	6	1
3170345	3.00	85	2.40	2.95	4.89	42.6	40.0	1.5°	6	1
3170346	3.00	90	2.40	2.95	5.41	51.6	50.0	1.5°	6	1
3170347	3.00	100	2.40	2.95	6.00	-	62.5	1.5°	6	2
3170351	3.00	100	2.40	2.95	6.00	-	47.5	2.0°	6	2
3170371	4.00	65	3.20	3.93	4.50	23.4	20.0	1.0°	6	1
3170372	4.00	80	3.20	3.93	4.85	32.7	30.0	1.0°	6	1
3170373	4.00	90	3.20	3.93	5.19	42.1	40.0	1.0°	6	1
3170374	4.00	100	3.20	3.93	5.54	55.1	50.0	1.0°	8	1
3170375	4.00	110	3.20	3.93	5.89	64.5	60.0	1.0°	8	1
3170381	4.00	80	3.20	3.93	6.00	-	44.2	1.5°	6	2
3170391	4.00	80	3.20	3.93	6.00	-	34.0	2.0°	6	2
3170401	5.00	100	5.00	4.95	5.80	34.7	30.0	1.0°	8	1
3170402	5.00	100	5.00	4.95	6.15	44.0	40.0	1.0°	8	1
3170403	5.00	130	5.00	4.95	6.85	62.7	60.0	1.0°	8	1
3170411	5.00	100	5.00	4.95	6.00	-	26.9	1.5°	6	2
3170412	5.00	130	5.00	4.95	8.00	-	65.1	1.5°	8	2

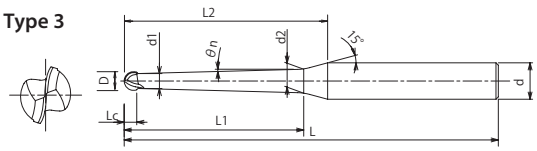
Packed: 1 pc. Available WXL® coating only.

continued on next page HTE

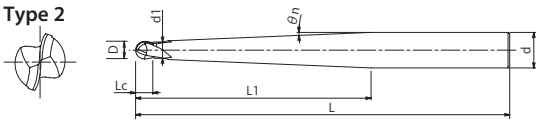
Type 1



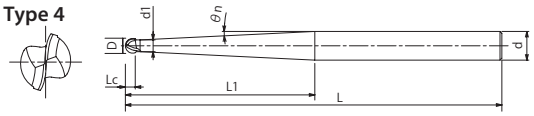
Type 3



Type 2



Type 4



Work Material

List No.	P					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 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
3712	▢	▢	▢	▢	▢	▢	▢	▢	▢	○	○	○	○	▢	▢	▢	○

○ good ▢ best

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List 3712 (Continued)

2 Flute, Stub Length, Pencil Neck, Ball End

SPEED FEED P862-869 | CARBIDE | WXL® | STUB | 30° | SHRINK h6

Radius Tolerance	
D≤6	+/-0.005mm

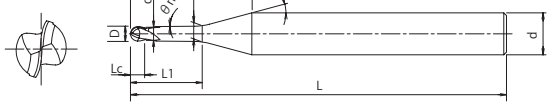


EDP Number	Mill Diameter	Overall Length	Length of Cut	Minimum Neck Diameter	Max Neck Diameter	Neck Length	Effective Neck Length	Neck Taper	Shank Diameter	Type
	D	L	Lc	d1	d2	L2	L1	θn	d	
3170421	5.00	130	5.00	4.95	8.00	-	50.1	2.0°	8	2
3170431	6.00	100	6.00	5.95	6.77	32.9	30.0	1.0°	8	1
3170432	6.00	100	6.00	5.95	7.12	42.2	40.0	1.0°	8	1
3170433	6.00	100	6.00	5.95	7.47	51.6	50.0	1.0°	8	1
3170434	6.00	110	6.00	5.95	7.81	64.6	60.0	1.0°	10	1
3170435	6.00	120	6.00	5.95	8.16	74.0	70.0	1.0°	10	1
3170436	6.00	130	6.00	5.95	8.51	87.1	80.0	1.0°	12	1
3170441	6.00	100	6.00	5.95	8.00	-	49.0	1.5°	8	2
3170451	6.00	100	6.00	5.95	8.00	-	36.0	2.0°	8	2

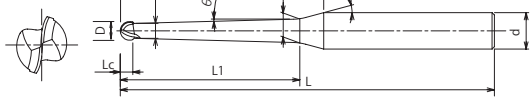
Packed: 1 pc. Available WXL® coating only.

HTE

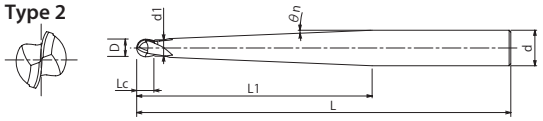
Type 1



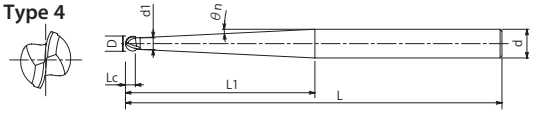
Type 3



Type 2



Type 4



Work Material

List No.	P					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 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
3712	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢

▢ good ▢ best

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List 3722

2 Flute, Regular Length

SPEED FEED P870-871 | CARBIDE | WXL® | REG | 35° | SHRINK h6

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
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

HTE

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														
	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
3722	◎	◎	◎	◎	◎	○	○	○	◎	○	○	○	○	◎	◎	◎	○

○ good ◎ best

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List 3723

2 Flute, Long Length

SPEED FEED P872-873 | CARBIDE | WXL® | LONG | 40° | SHRINK h6

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.

HTE

Work Material

List No.	P					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 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
3723	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	◎	○	

○ good ◎ best

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List 3770

2 Flute, Regular Length, Corner Radius

SPEED FEED P874 | CARBIDE | WXL® | REG | 30° | SHRINK h6

Milling Diameter Tolerance	
0.6≤D≤12	+0 / -0.02mm



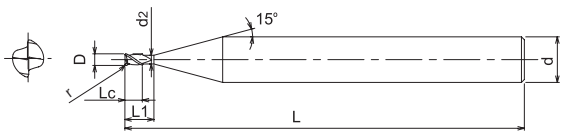
EDP Number	Mill Dia.	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.	Type
	D	r	L	Lc	L1	d2	d	
37700000	0.6	0.1	50	0.9	2.0	0.55	6	1
37700001	0.8	0.1	50	1.2	2.6	0.75	6	1
37700002	1.0	0.1	50	1.5	2.7	0.95	6	1
37700003	1.2	0.1	50	1.8	3.2	1.15	6	1
37700004	1.4	0.1	50	2.1	3.7	1.35	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

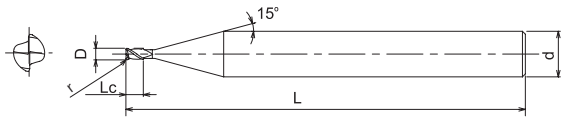
HTE

Packed: 1 pc. Available WXL® coating only.

Type 1



Type 2



OSG's Performance & Savings

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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														
	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
3770	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢

▢ good ▢ best

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List 3771

4 Flute, Regular Length, Corner Radius

SPEED FEED P875 | CARBIDE | WXL® | REG | 30° | SHRINK h6

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

HTE

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														
	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
3771	▢	▢	▢	▢	▢	○	○	○	▢	○	○	○	○	▢	▢	▢	○

○ good ▢ best

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List 3794

4 Flute, Long Neck, Rib Processing

SPEED FEED P876-877 | CARBIDE | WXL® | STUB | 35° | SHRINK h6

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

HTE

Work Material

List No.	P					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 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
3794	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	◎	◎	

○ good ◎ best

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List 3794 (Continued)

SPEED FEED P876-877 | CARBIDE | WXL® | STUB | 35° | SHRINK h6

4 Flute, Long Neck, Rib Processing

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.

HTE

Work Material

List No.	P					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 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
3794	◎	◎	◎	◎	◎	○	○	○	◎	○	○			◎	◎	○	

○ good ◎ best

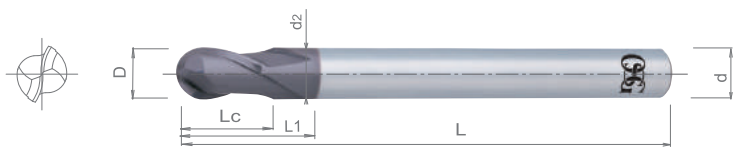
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List 4410

SPEED FEED P878 | CARBIDE | WXS® | REG | 30° | SHRINK h6

2 Flute, Regular Length, Ball End

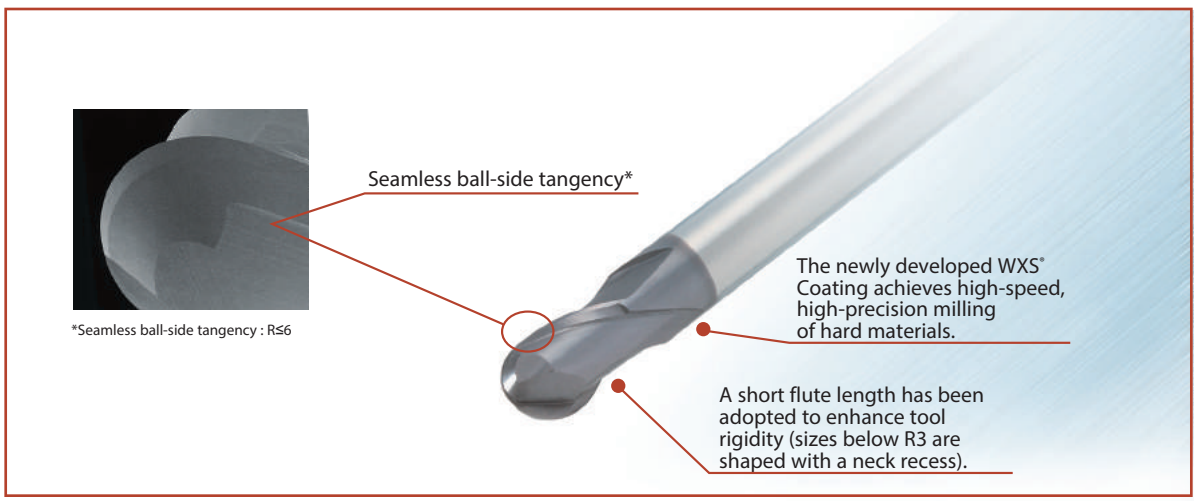
Radius Tolerance	
D≤1/4	+/- 0.0002"
D>1/4	+/-0.0004"



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.

HTE



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3610 (p. 615)
Don't require ultra-high performance? Try HY-PRO® CARB - List HP416 (p. 718)

Work Material

List No.	P					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 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
4410	▢	▢	▢	▢	▢	▢	▢	▢	▢						▢	▢	▢

▢ good ▢ best

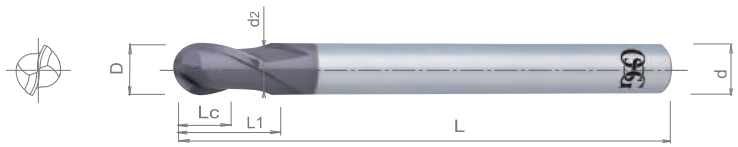
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List 4510

2 Flute, Regular Length, Ball End

SPEED FEED P879 | CARBIDE | WXS® | REG | 30° | SHRINK h6

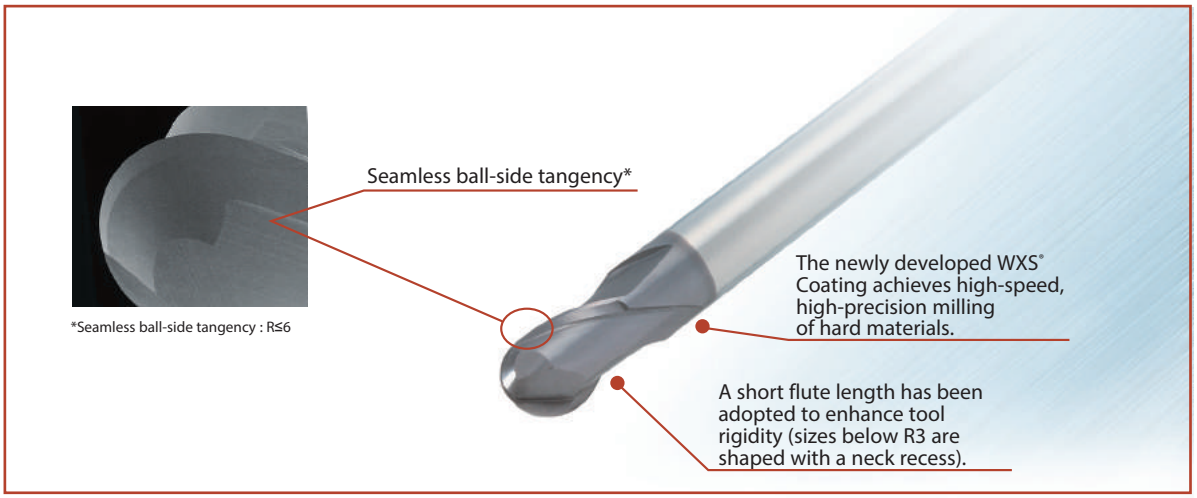
Radius Tolerance	
D≤2	+/-.005mm
2<D≤12	+/- 0.007mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L1	d2	d
3041410	1	50	1	2	0.95	4
3041415	2	50	2	3	1.45	4
3041420	2	50	2	4	1.95	6
3041430	3	60	3	6	2.85	6
3041440	4	70	4	8	3.85	6
3041441	4	60	4	8	3.85	4
3041450	5	80	5	10	4.85	6
3041460	6	90	9	-	-	6
3041480	8	100	12	-	-	8
3041500	10	100	15	-	-	10
3041520	12	110	18	-	-	12

Packed: 1 pc.
Available WXS® coating only.

HTE



OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3710 (p. 616)
Don't require ultra-high performance? Try HY-PRO®CARB - List HP416 (p. 718)

Work Material

List No.	P					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 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
4510	▣	▣	▣	▣	▣	▢	▢	▢	▣						▣	▣	▣

▢ good ▣ best

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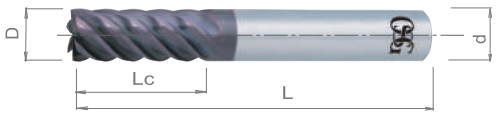
List 4440

Multiple Flute, Regular Length

SPEED FEED P880 | CARBIDE | WXS® | REG | 45° | SHRINK h6

Milling Diameter Tolerance	
1/16≤D≤3/4	+0 / -0.0008"





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.

HTE

OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL - List 3604 (p. 618)

Work Material

List No.	P					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 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
4440	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎

○ good ◎ best

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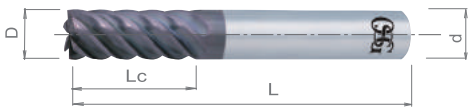
List 4540

Multiple Flute, Regular Length

SPEED FEED P881 | CARBIDE | WXS® | REG | 45° | SHRINK h6

Milling Diameter Tolerance	
1≤D≤12	+0 / -0.02mm





EDP Number	Mill Diameter D	Overall Length L	Length of Cut Lc	Shank Dia. d	Number of Flutes
3041010	1	60	2.5	6	4
3041015	1.5	60	4.0	6	4
3041020	2	60	6.0	6	4
3041025	2.5	60	8.0	6	4
3041030	3	60	8.0	6	4
3041035	3.5	60	10.0	6	4
3041040	4	60	11.0	6	4

EDP Number	Mill Diameter D	Overall Length L	Length of Cut Lc	Shank Dia. d	Number of Flutes
3041045	4.5	60	11.0	6	4
3041050	5	60	13.0	6	4
3041055	5.5	60	13.0	6	4
3041060	6	60	13.0	6	6
3041080	8	70	19.0	8	6
3041100	10	80	22.0	10	6
3041120	12	90	26.0	12	6

Packed: 1 pc. Available WXS® coating only.

HTE

OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3710 (p. 616)
Don't require ultra-high performance? Try HY-PRO®CARB - List HP450 (p. 708)

Work Material

List No.	P					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 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
4540	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎

○ good ◎ best

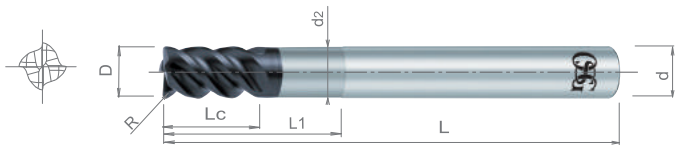
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List 4471

SPEED FEED P882 | CARBIDE | WXS® | REG | 45° | SHRINK h6

4 Flute, Regular Length, Reduced Neck, Corner Radius

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	0.01	2.25	1/16	0.25	0.058	1/8
447100311	3/32	0.01	2.25	3/32	0.38	0.089	1/8
447100511	1/8	0.01	2.25	1/8	0.50	0.12	1/8
447100611	1/8	0.015	2.25	1/8	0.50	0.12	1/8
447100711	1/8	0.02	2.25	1/8	0.50	0.12	1/8
447101011	3/16	0.02	2.25	3/16	0.50	0.181	3/16
447101111	3/16	0.03	2.25	3/16	0.50	0.181	3/16
447101411	1/4	0.01	2.5	1/4	0.75	0.242	1/4
447101511	1/4	0.02	2.5	1/4	0.75	0.242	1/4
447101611	1/4	0.03	2.5	1/4	0.75	0.242	1/4
447102011	3/8	0.02	3.0	3/8	1.00	0.367	3/8
447102111	3/8	0.03	3.0	3/8	1.00	0.367	3/8
447102211	3/8	0.06	3.0	3/8	1.00	0.367	3/8
447102611	1/2	0.03	3.25	1/2	1.50	0.488	1/2
447102711	1/2	0.06	3.25	1/2	1.50	0.488	1/2

Packed: 1 pc. Available WXS® coating only.

HTE

OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3670 (p. 617)
Don't require ultra-high performance? Try HY-PRO®-CARB - List HP434 (p. 723-724)

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
4471	▢	▢	▢	▢	▢	○	○	○	▢						▢	▢	▢

○ good ▢ best

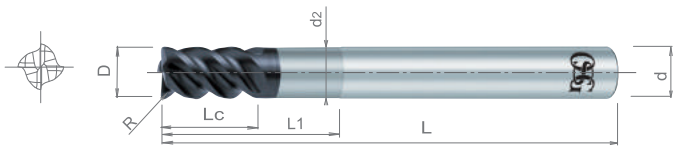
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List 4571

SPEED FEED P883 | CARBIDE | WXS® | REG | 45° | SHRINK h6

4 Flute, Regular Length, Reduced Neck, Corner Radius

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	3.8	6
457104111	4	0.2	80	6	20	3.8	6
457104211	4	0.5	70	6	12	3.8	6
457104311	4	0.5	80	6	20	3.8	6
457105011	5	0.2	80	8	15	4.8	6
457105111	5	0.2	90	8	25	4.8	6
457105211	5	0.5	80	8	15	4.8	6
457105311	5	0.5	90	8	25	4.8	6
457106011	6	0.5	90	9	18	5.8	6
457106111	6	1.0	90	9	18	5.8	6
457106211	6	1.0	100	9	30	5.8	6
457106311	6	0.5	100	9	30	5.8	6
457108011	8	0.5	100	12	24	7.7	8
457108111	8	0.5	110	12	40	7.7	8
457108211	8	1.0	100	12	24	7.7	8
457108311	8	1.0	110	12	40	7.7	8
457110011	10	0.5	100	15	30	9.7	10
457110111	10	0.5	120	15	50	9.7	10
457110211	10	1.0	100	15	30	9.7	10
457110311	10	1.0	120	15	50	9.7	10
457110411	10	2.0	100	15	30	9.7	10
457110511	10	2.0	120	15	50	9.7	10
457112011	12	1.0	110	18	36	11.7	12
457112111	12	1.0	130	18	60	11.7	12
457112211	12	2.0	110	18	36	11.7	12
457112311	12	2.0	130	18	60	11.7	12

Packed: 1 pc. Available WXS® coating only.

HTE

Work Material

List No.	P					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 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
4571	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎

○ good ◎ best

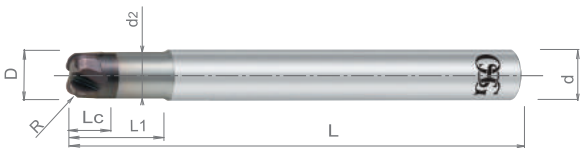
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List 4470

SPEED FEED P884 | CARBIDE | WXS® | REG | 0° | SHRINK h6

Regular Length, High Feed, Corner Radius

Milling Diameter Tolerance	
1/8≤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.

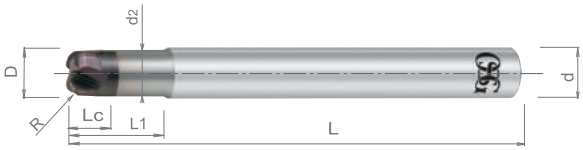
HTE

List 4570

SPEED FEED P885 | CARBIDE | WXS® | REG | 0° | SHRINK h6

Regular Length, High Feed, Corner Radius

Milling Diameter Tolerance	
2≤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	0.5	60	0.8	5.0	1.8	6	3
457003011	3	0.75	60	1.3	9.0	2.7	6	4
457004011	4	1.0	70	1.6	10.0	3.6	6	4
457005011	5	1.2	80	2.0	12.5	4.5	6	4
457006011	6	1.5	90	2.5	12.0	5.4	6	4
457007011	7	1.5	90	3.0	-	-	6	4
457008011	8	2.0	100	3.5	16.0	7.2	8	4
457009011	9	2.0	100	4.0	-	-	8	4
457010011	10	2.0	100	4.5	20.0	9.0	10	4
457011011	11	2.0	100	5.0	-	-	10	4
457012011	12	3.0	110	5.0	24.0	11.0	12	4
457013011	13	3.0	110	6.0	-	-	12	4

Packed: 1 pc. Available WXS® coating only.

HTE

Work Material

List No.	P					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 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
4470	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎
4570	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎

○ good ◎ best

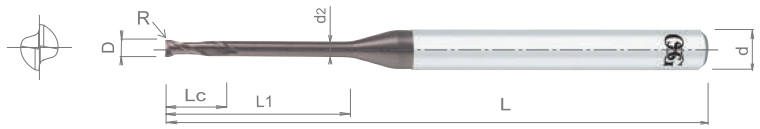
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List 4592

SPEED FEED P886 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

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
3100403	0.4	0.05	50	0.3	2	0.37	4
3100404	0.4	0.05	50	0.3	3	0.37	4
3100405	0.4	0.05	50	0.3	4	0.37	4
3100406	0.4	0.1	50	0.3	2	0.37	4
3100407	0.4	0.1	50	0.3	3	0.37	4
3100408	0.4	0.1	50	0.3	4	0.37	4
3100501	0.5	0.05	50	0.4	1	0.46	4
3100502	0.5	0.05	50	0.4	2	0.46	4
3100503	0.5	0.05	50	0.4	3	0.46	4
3100504	0.5	0.05	50	0.4	4	0.46	4
3100505	0.5	0.05	50	0.4	5	0.46	4
3100506	0.5	0.05	50	0.4	6	0.46	4
3100508	0.5	0.1	50	0.4	2	0.46	4
3100509	0.5	0.1	50	0.4	3	0.46	4
3100510	0.5	0.1	50	0.4	4	0.46	4
3100511	0.5	0.1	50	0.4	5	0.46	4
3100512	0.5	0.1	50	0.4	6	0.46	4
3100601	0.6	0.1	50	0.48	2	0.56	4
3100602	0.6	0.1	50	0.48	4	0.56	4
3100603	0.6	0.1	50	0.48	6	0.56	4
3100803	0.8	0.2	50	0.65	4	0.76	4
3100804	0.8	0.2	50	0.65	6	0.76	4
3100805	0.8	0.2	50	0.65	8	0.76	4
3101001	1.0	0.05	50	0.8	4	0.95	4
3101002	1.0	0.05	50	0.8	6	0.95	4
3101003	1.0	0.05	50	0.8	8	0.95	4
3101004	1.0	0.05	50	0.8	10	0.95	4
3101005	1.0	0.05	50	0.8	12	0.95	4
3101006	1.0	0.1	50	0.8	4	0.95	4
3101007	1.0	0.1	50	0.8	6	0.95	4
3101008	1.0	0.1	50	0.8	8	0.95	4
3101009	1.0	0.1	50	0.8	10	0.95	4
3101010	1.0	0.1	50	0.8	12	0.95	4
3101011	1.0	0.2	50	0.8	4	0.95	4
3101012	1.0	0.2	50	0.8	6	0.95	4
3101013	1.0	0.2	50	0.8	8	0.95	4
3101014	1.0	0.2	50	0.8	10	0.95	4
3101015	1.0	0.2	50	0.8	12	0.95	4
3101016	1.0	0.2	50	0.8	16	0.95	4
3101017	1.0	0.2	50	0.8	20	0.95	4
3101018	1.0	0.3	50	0.8	4	0.95	4
3101019	1.0	0.3	50	0.8	6	0.95	4
3101020	1.0	0.3	50	0.8	8	0.95	4
3101021	1.0	0.3	50	0.8	10	0.95	4
3101022	1.0	0.3	50	0.8	12	0.95	4
3101201	1.2	0.2	50	1.0	6	1.15	4
3101202	1.2	0.2	50	1.0	8	1.15	4
3101203	1.2	0.2	50	1.0	10	1.15	4
3101501	1.5	0.2	50	1.2	6	1.45	4
3101502	1.5	0.2	50	1.2	8	1.45	4
3101503	1.5	0.2	50	1.2	10	1.45	4

Packed: 1 pc.
Available WXS® coating only.

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List 4592 (Continued)

SPEED FEED P886 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

2 Flute, Stub Length, Long Neck, Corner Radius, Rib Processing

EDP Number	Mill Diameter	Corner Radius	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	R	L	Lc	L1	d2	d
3101504	1.5	0.2	50	1.2	12	1.45	4
3101505	1.5	0.2	50	1.2	16	1.45	4
3101506	1.5	0.3	50	1.2	6	1.45	4
3101507	1.5	0.3	50	1.2	8	1.45	4
3101508	1.5	0.3	50	1.2	10	1.45	4
3101509	1.5	0.3	50	1.2	12	1.45	4
3101510	1.5	0.3	50	1.2	16	1.45	4
3102001	2.0	0.1	50	1.6	8	1.95	4
3102002	2.0	0.1	50	1.6	10	1.95	4
3102003	2.0	0.1	50	1.6	12	1.95	4
3102004	2.0	0.1	60	1.6	16	1.95	4
3102005	2.0	0.1	60	1.6	20	1.95	4
3102006	2.0	0.1	70	1.6	25	1.95	4
3102007	2.0	0.2	50	1.6	8	1.95	4
3102008	2.0	0.2	50	1.6	10	1.95	4
3102009	2.0	0.2	50	1.6	12	1.95	4
3102010	2.0	0.2	60	1.6	16	1.95	4
3102011	2.0	0.2	60	1.6	20	1.95	4
3102012	2.0	0.2	70	1.6	25	1.95	4
3102013	2.0	0.3	50	1.6	8	1.95	4
3102014	2.0	0.3	50	1.6	10	1.95	4
3102015	2.0	0.3	50	1.6	12	1.95	4
3102016	2.0	0.3	60	1.6	16	1.95	4
3102017	2.0	0.3	60	1.6	20	1.95	4
3102018	2.0	0.3	70	1.6	25	1.95	4
3102019	2.0	0.5	50	1.6	8	1.95	4
3102020	2.0	0.5	50	1.6	10	1.95	4
3102021	2.0	0.5	50	1.6	12	1.95	4
3102022	2.0	0.5	60	1.6	16	1.95	4
3102023	2.0	0.5	60	1.6	20	1.95	4
3102024	2.0	0.5	70	1.6	25	1.95	4
3102501	2.5	0.2	50	2.2	10	2.4	4
3102502	2.5	0.2	60	2.2	20	2.4	4
3102503	2.5	0.2	70	2.2	30	2.4	4
3102504	2.5	0.5	50	2.2	10	2.4	4
3102505	2.5	0.5	60	2.2	20	2.4	4
3102506	2.5	0.5	70	2.2	30	2.4	4
3103001	3.0	0.2	60	2.5	8	2.85	6
3103002	3.0	0.2	60	2.5	12	2.85	6
3103003	3.0	0.2	60	2.5	16	2.85	6
3103004	3.0	0.2	70	2.5	20	2.85	6
3103005	3.0	0.2	70	2.5	25	2.85	6
3103006	3.0	0.2	70	2.5	30	2.85	6
3103007	3.0	0.2	80	2.5	35	2.85	6
3103008	3.0	0.3	60	2.5	12	2.85	6
3103009	3.0	0.3	60	2.5	16	2.85	6
3103010	3.0	0.3	70	2.5	20	2.85	6

Packed: 1 pc.
Available WXS® coating only.

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HTE

Work Material

List No.	P					M			K	N		S		H			
	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened 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													
4592	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	○

○ good ◎ best

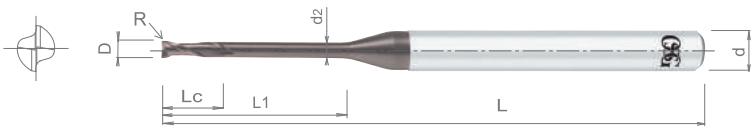
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List 4592 (Continued)

SPEED FEED P886 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

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
3103011	3.0	0.3	70	2.5	25	2.85	6
3103012	3.0	0.3	70	2.5	30	2.85	6
3103013	3.0	0.3	80	2.5	35	2.85	6
3103014	3.0	0.5	60	2.5	12	2.85	6
3103015	3.0	0.5	60	2.5	16	2.85	6
3103016	3.0	0.5	70	2.5	20	2.85	6
3103017	3.0	0.5	70	2.5	25	2.85	6
3103018	3.0	0.5	70	2.5	30	2.85	6
3103019	3.0	0.5	80	2.5	35	2.85	6

Packed: 1 pc.
Available WXS® coating only.

HTE

Work Material

List No.	P					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 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
4592	▢	▢	▢	▢	▢	○	○	○	▢						▢	▢	○

○ good ▢ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 4590

2 Flute, Stub Length, Long Neck, Ball End, Rib Processing

SPEED FEED P887-889 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

±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	0.3	0.09	4
3050101	0.1	45	0.08	0.5	0.09	4
3050201	0.2	45	0.16	0.5	0.18	4
3049921	0.2	45	0.16	0.75	0.18	4
3050202	0.2	45	0.16	1.0	0.18	4
3049922	0.2	45	0.16	1.25	0.18	4
3050203	0.2	45	0.16	1.5	0.18	4
3049923	0.2	45	0.16	1.75	0.18	4
3050204	0.2	45	0.16	2.0	0.18	4
3050205	0.2	45	0.16	2.5	0.18	4
3050206	0.2	45	0.16	3.0	0.18	4
3050301	0.3	45	0.16	0.6	0.28	4
3050302	0.3	45	0.24	1.0	0.28	4
3049932	0.3	45	0.24	1.25	0.28	4
3050303	0.3	45	0.24	1.5	0.28	4
3049933	0.3	45	0.24	1.75	0.28	4
3050304	0.3	45	0.24	2.0	0.28	4
3049934	0.3	45	0.24	2.25	0.28	4
3050305	0.3	45	0.24	2.5	0.28	4
3050306	0.3	45	0.24	3.0	0.28	4
3050307	0.3	45	0.24	3.5	0.28	4
3050308	0.3	45	0.24	4.0	0.28	4
3050309	0.3	45	0.24	4.5	0.28	4
3050310	0.3	45	0.24	5.0	0.28	4
3050401	0.4	45	0.3	0.8	0.37	4
3050402	0.4	45	0.3	1.0	0.37	4
3050403	0.4	45	0.3	1.5	0.37	4
3050404	0.4	45	0.3	2.0	0.37	4
3050405	0.4	45	0.3	2.5	0.37	4
3050406	0.4	45	0.3	3.0	0.37	4
3050407	0.4	45	0.3	3.5	0.37	4
3050408	0.4	45	0.3	4.0	0.37	4
3050409	0.4	45	0.3	4.5	0.37	4

Packed: 1 pc. Available WXS® coating only.

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3050410	0.4	45	0.3	5.0	0.37	4
3050411	0.4	45	0.3	5.5	0.37	4
3050412	0.4	45	0.3	6.0	0.37	4
3050500	0.5	45	0.4	1.0	0.45	4
3050501	0.5	45	0.4	1.5	0.45	4
3050502	0.5	45	0.4	2.0	0.45	4
3049952	0.5	45	0.4	2.5	0.45	4
3050503	0.5	45	0.4	3.0	0.45	4
3049953	0.5	45	0.4	3.5	0.45	4
3050504	0.5	45	0.4	4.0	0.45	4
3049954	0.5	45	0.4	4.5	0.45	4
3050505	0.5	45	0.4	5.0	0.45	4
3049955	0.5	45	0.4	5.5	0.45	4
3050506	0.5	45	0.4	6.0	0.45	4
3050507	0.5	45	0.4	7.0	0.45	4
3050508	0.5	45	0.4	8.0	0.45	4
3050509	0.5	45	0.4	9.0	0.45	4
3050510	0.5	45	0.4	10.0	0.45	4
3050601	0.6	45	0.5	1.2	0.55	4
3050602	0.6	45	0.5	2.0	0.55	4
3049962	0.6	45	0.5	2.5	0.55	4
3050603	0.6	45	0.5	3.0	0.55	4
3049963	0.6	45	0.5	3.5	0.55	4
3050604	0.6	45	0.5	4.0	0.55	4
3049964	0.6	45	0.5	4.5	0.55	4
3050605	0.6	45	0.5	5.0	0.55	4
3049965	0.6	45	0.5	5.5	0.55	4
3050606	0.6	45	0.5	6.0	0.55	4
3049966	0.6	45	0.5	6.5	0.55	4
3050607	0.6	45	0.5	7.0	0.55	4
3049967	0.6	45	0.5	7.5	0.55	4
3050608	0.6	45	0.5	8.0	0.55	4
3049968	0.6	45	0.5	8.5	0.55	4

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HTE

OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3790 (pp. 620-622)
Don't require ultra-high performance? Try HY-PRO®CARB - List HP419 & HP419L (pp. 720-721)

Work Material

List No.	P					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 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
4590	▣	▣	▣	▣	▣	▢	▢	▢	▣						▣	▣	▢

▢ good ▣ best

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List 4590 (Continued)

SPEED FEED P887-889 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

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
3050609	0.6	45	0.5	9.0	0.55	4
3049969	0.6	45	0.5	9.5	0.55	4
3050610	0.6	45	0.5	10.0	0.55	4
3050611	0.6	50	0.5	11.0	0.55	4
3050612	0.6	50	0.5	12.0	0.55	4
3050802	0.8	45	0.6	2.0	0.75	4
3050803	0.8	45	0.6	3.0	0.75	4
3050804	0.8	45	0.6	4.0	0.75	4
3050805	0.8	45	0.6	5.0	0.75	4
3050806	0.8	45	0.6	6.0	0.75	4
3050807	0.8	45	0.6	7.0	0.75	4
3050808	0.8	45	0.6	8.0	0.75	4
3050810	0.8	45	0.6	10.0	0.75	4
3050812	0.8	50	0.6	12.0	0.75	4
3051002	1.0	45	0.8	2.0	0.95	4
3051003	1.0	45	0.8	3.0	0.95	4
3051004	1.0	45	0.8	4.0	0.95	4
3051005	1.0	45	0.8	5.0	0.95	4
3051006	1.0	45	0.8	6.0	0.95	4
3051007	1.0	45	0.8	7.0	0.95	4
3051008	1.0	45	0.8	8.0	0.95	4
3051009	1.0	45	0.8	9.0	0.95	4
3051010	1.0	45	0.8	10.0	0.95	4
3051012	1.0	45	0.8	12.0	0.95	4
3051014	1.0	50	0.8	14.0	0.95	4
3051016	1.0	50	0.8	16.0	0.95	4
3051018	1.0	55	0.8	18.0	0.95	4
3051020	1.0	55	0.8	20.0	0.95	4
3051022	1.0	60	0.8	22.0	0.95	4
3051202	1.2	45	1.0	2.4	1.15	4
3051204	1.2	45	1.0	4.0	1.15	4
3051206	1.2	45	1.0	6.0	1.15	4
3051208	1.2	45	1.0	8.0	1.15	4
3051210	1.2	45	1.0	10.0	1.15	4
3051212	1.2	45	1.0	12.0	1.15	4
3051214	1.2	50	1.0	14.0	1.15	4
3051216	1.2	50	1.0	16.0	1.15	4
3051218	1.2	55	1.0	18.0	1.15	4
3051220	1.2	55	1.0	20.0	1.15	4
3051503	1.5	45	1.2	3.0	1.45	4
3051504	1.5	45	1.2	4.0	1.45	4
3051506	1.5	45	1.2	6.0	1.45	4
3051508	1.5	45	1.2	8.0	1.45	4
3051510	1.5	45	1.2	10.0	1.45	4
3051512	1.5	45	1.2	12.0	1.45	4
3051514	1.5	50	1.2	14.0	1.45	4
3051516	1.5	50	1.2	16.0	1.45	4
3051518	1.5	55	1.2	18.0	1.45	4
3051520	1.5	55	1.2	20.0	1.45	4
3051522	1.5	60	1.2	22.0	1.45	4
3051530	1.5	70	1.2	30.0	1.45	4

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3051608	1.6	45	1.3	8.0	1.55	4
3051612	1.6	45	1.3	12.0	1.55	4
3051616	1.6	50	1.3	16.0	1.55	4
3051620	1.6	55	1.3	20.0	1.55	4
3052004	2.0	45	1.6	4.0	1.95	4
3052006	2.0	45	1.6	6.0	1.95	4
3052008	2.0	45	1.6	8.0	1.95	4
3052010	2.0	45	1.6	10.0	1.95	4
3052012	2.0	45	1.6	12.0	1.95	4
3052014	2.0	50	1.6	14.0	1.95	4
3052016	2.0	50	1.6	16.0	1.95	4
3052018	2.0	55	1.6	18.0	1.95	4
3052020	2.0	55	1.6	20.0	1.95	4
3052022	2.0	60	1.6	22.0	1.95	4
3052025	2.0	65	1.6	25.0	1.95	4
3052030	2.0	70	1.6	30.0	1.95	4
3052035	2.0	70	1.6	35.0	1.95	4
3052040	2.0	80	1.6	40.0	1.95	4
3052510	2.5	45	2.0	10.0	2.35	4
3052515	2.5	50	2.0	15.0	2.35	4
3052520	2.5	55	2.0	20.0	2.35	4
3052525	2.5	65	2.0	25.0	2.35	4
3052530	2.5	70	2.0	30.0	2.35	4
3052535	2.5	70	2.0	35.0	2.35	4
3053006	3.0	50	2.4	6.0	2.85	6
3053008	3.0	50	2.4	8.0	2.85	6
3053010	3.0	50	2.4	10.0	2.85	6
3053012	3.0	55	2.4	12.0	2.85	6
3053014	3.0	55	2.4	14.0	2.85	6
3053015	3.0	55	2.4	15.0	2.85	6
3053016	3.0	55	2.4	16.0	2.85	6
3053020	3.0	60	2.4	20.0	2.85	6
3053025	3.0	65	2.4	25.0	2.85	6
3053030	3.0	70	2.4	30.0	2.85	6
3053035	3.0	80	2.4	35.0	2.85	6
3053040	3.0	90	2.4	40.0	2.85	6
3053515	3.5	55	2.8	15.0	3.35	6
3053520	3.5	60	2.8	20.0	3.35	6
3053525	3.5	65	2.8	25.0	3.35	6
3053530	3.5	70	2.8	30.0	3.35	6
3053535	3.5	80	2.8	35.0	3.35	6
3053540	3.5	90	2.8	40.0	3.35	6
3053545	3.5	90	2.8	45.0	3.35	6
3054008	4.0	60	3.2	8.0	3.85	6
3054010	4.0	60	3.2	10.0	3.85	6
3054012	4.0	60	3.2	12.0	3.85	6
3054015	4.0	60	3.2	15.0	3.85	6
3054016	4.0	60	3.2	16.0	3.85	6
3054020	4.0	65	3.2	20.0	3.85	6
3054025	4.0	70	3.2	25.0	3.85	6
3054030	4.0	80	3.2	30.0	3.85	6

Packed: 1 pc. Available WXS® coating only.

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List 4590 (Continued)

SPEED FEED P887-889 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

2 Flute, Stub Length, Long Neck, Ball End, Rib Processing

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3054035	4.0	80	3.2	35.0	3.85	6
3054040	4.0	90	3.2	40.0	3.85	6
3054045	4.0	90	3.2	45.0	3.85	6
3054050	4.0	100	3.2	50.0	3.85	6
3055010	5.0	60	4.0	10.0	4.85	6
3055015	5.0	60	4.0	15.0	4.85	6
3055020	5.0	70	4.0	20.0	4.85	6
3055025	5.0	70	4.0	25.0	4.85	6
3055030	5.0	80	4.0	30.0	4.85	6
3055035	5.0	80	4.0	35.0	4.85	6
3055040	5.0	90	4.0	40.0	4.85	6

Packed: 1 pc. Available WXS® coating only.

EDP Number	Mill Dia.	Overall Length	Length of Cut	Neck Length	Neck Dia.	Shank Dia.
	D	L	Lc	L1	d2	d
3055045	5.0	100	4.0	45.0	4.85	6
3055050	5.0	100	4.0	50.0	4.85	6
3056012	6.0	60	4.8	12.0	5.85	6
3056020	6.0	70	4.8	20.0	5.85	6
3056025	6.0	70	4.8	25.0	5.85	6
3056030	6.0	80	4.8	30.0	5.85	6
3056035	6.0	80	4.8	35.0	5.85	6
3056040	6.0	90	4.8	40.0	5.85	6
3056045	6.0	100	4.8	45.0	5.85	6
3056050	6.0	120	4.8	50.0	5.85	6

HTE

OSG's Performance & Savings

Not machining steel over 54 HRC? Try EXOCARB® WXL® - List 3790 (pp. 620-622)
Don't require ultra-high performance? Try HY-PRO®CARB - List HP419 & HP419L (pp. 720-721)

Work Material

List No.	P					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 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
4590	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	○

○ good ◎ best

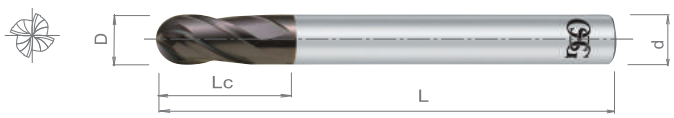
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List 4430

True 4 Flute, Regular Length, Ball End

SPEED FEED P890 | CARBIDE | WXS® | REG | 30° | SHRINK h6

Radius Tolerance	
1/4≤D≤1/2	+0 / -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.

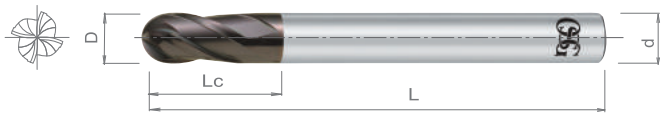
HTE

List 4530

True 4 Flute, Regular Length, Ball End

SPEED FEED P892 | CARBIDE | WXS® | REG | 30° | SHRINK h6

Radius Tolerance	
6≤D≤12	+0 / -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.

HTE

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
4430	▢	▢	▢	▢	▢	○	○	○	▢						▢	▢	▢
4530	▢	▢	▢	▢	▢	○	○	○	▢						▢	▢	▢

○ good ▢ best

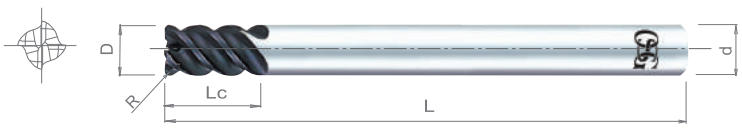
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List 4445

SPEED FEED P891 | CARBIDE | WXS® | REG | 45° | SHRINK h6

4 Flute, Regular Length, High Helix, Corner Radius

Radius Tolerance	
1/8≤D≤1/2	+0 / -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 WXS® coating only.

HTE

Work Material

List No.	P					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 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
4445	▢	▢	▢	▢	▢	○	○	○	▢						▢	▢	▢

○ good ▢ best

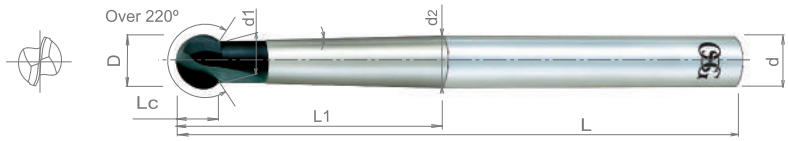
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List 4513

SPEED FEED P893 | CARBIDE | WXS® | REG | 30° | SHRINK h6

2 Flute, Regular Length, Ball End, Sphere Type

Radius Tolerance	
1≤D≤12	+0 / -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.

HTE

Work Material

List No.	P					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 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
4513	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎

○ good ◎ best

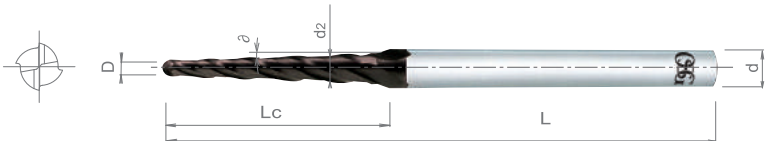
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List 4581

4 Flute, Tapered, Ball End, Rib Processing

SPEED FEED P894 | CARBIDE | WXS® | 25° | SHRINK h6

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.

HTE

Work Material

List No.	P					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 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
4581	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	○

○ good ◎ best

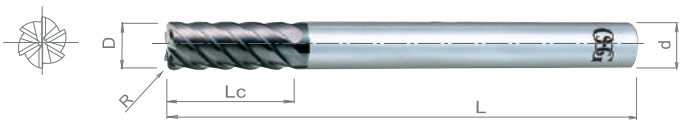
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List 4541

6 Flute, Regular Length, Corner Radius

SPEED FEED P895 | CARBIDE | WXS® | REG | 45° | SHRINK h6

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
45410000	3	0.2	60	8	6
45410001	3	0.5	60	8	6
45410002	4	0.2	70	11	6
45410003	4	0.5	70	11	6
45410004	4	1.0	70	11	6
45410005	5	0.2	80	13	6
45410006	5	0.5	80	13	6
45410007	5	1.0	80	13	6
45410008	6	0.2	90	13	6
45410009	6	0.5	90	13	6
45410010	6	1.0	90	13	6
45410011	6	1.5	90	13	6
45410012	6	2.0	90	13	6
45410013	8	0.5	100	19	8
45410014	8	1.0	100	19	8
45410015	8	1.5	100	19	8
45410016	8	2.0	100	19	8
45410017	10	0.5	100	22	10
45410018	10	1.0	100	22	10
45410019	10	1.5	100	22	10
45410020	10	2.0	100	22	10
45410021	10	3.0	100	22	10
45410022	12	0.5	110	26	12
45410023	12	1.0	110	26	12
45410024	12	1.5	110	26	12
45410025	12	2.0	110	26	12
45410026	12	3.0	110	26	12

Packed: 1 pc.
Available WXS® coating only.

HTE

Work Material

List No.	P					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 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
4541	◎	◎	◎	◎	◎	○	○	○	◎						◎	◎	◎

○ good ◎ best

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List 9010

2 Flute, Stub Length, Ball End

SPEED FEED P896 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

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

HTE

Packed: 1 pc.
Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.

List 9110

2 Flute, Stub Length, Ball End

SPEED FEED P896 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

Radius Tolerance	
1≤D≤10	+0 / -0.01mm

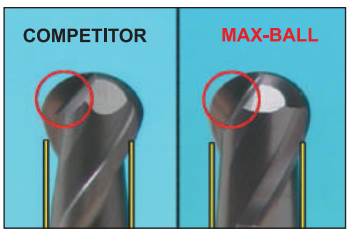


EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
	D	L	Lc	d
91100111	1	50	1.5	6
91100211	2	50	3.0	6
91100311	3	50	4.5	6
91100411	4	50	6.0	6

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

HTE

Packed: 1 pc.
Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.



Large chip room & core diameter improve chip evacuation while increasing rigidity.

Work Material

List No.	P					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 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
9010	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢		▢	▢	▢
9110	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢		▢	▢	▢

▢ good ▢ best

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List 9011

SPEED FEED P896 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

2 Flute, Stub Length, Long Shank, Ball End

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

HTE

Packed: 1 pc. Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.

List 9111

SPEED FEED P896 | CARBIDE | WXS® | STUB | 30° | SHRINK h6

2 Flute, Stub Length, Long Shank, Ball End

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

HTE

Packed: 1 pc. Available WXS® coating only.
Designed for faster speeds and feeds with larger depth of cut.

Work Material

List No.	P					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 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
9011	▢	▢	▢	▢	▢	○	○	○	▢			○	○		▢	▢	○
9111	▢	▢	▢	▢	▢	○	○	○	▢			○	○		▢	▢	○

○ good ▢ best

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List 9140

SPEED FEED P900-901 | CARBIDE | WXS® | REG | 45° | SHRINK h6

6 Flute, Regular Length

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.

HTE

List 9144

SPEED FEED P900-901 | CARBIDE | WXS® | REG | 45° | SHRINK h6

6 Flute, Regular Length, Corner Radius

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.

HTE

Work Material

List No.	P					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 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
9140	▢	▢	▢	▢	▢	○	○	○	▢						▢	▢	▢
9144	▢	▢	▢	▢	▢	○	○	○	▢						▢	▢	▢

○ good ▢ best

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List 9191

SPEED FEED P898 | CBN | BR | 30° | SHRINK h6

2 Flute, Ball End, CBN

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	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.

HTE

List 9192

SPEED FEED P899 | CBN | BR | 30° | SHRINK h6

2 Flute, Long Neck, Ball End, CBN

Radius Tolerance	
0.4≤D≤3	+0 / -0.05mm



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.

HTE

Work Material

List No.	P					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 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
9191															▢	▢	▢
9192															▢	▢	▢

▢ good ▢ best

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List 9181

SPEED FEED P897 | CBN | BR | 30° | SHRINK h6

2 Flute, Corner Radius, CBN



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

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

HTE

Packed: 1 pc.
Available Bright only.

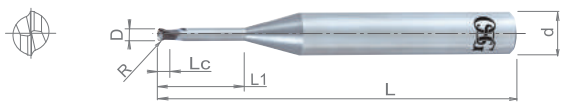
List 9182

SPEED FEED P897 | CBN | BR | 30° | SHRINK h6

2 Flute, Long Neck, Corner Radius, CBN

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

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

HTE

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														
	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
9181															▢	▢	▢
9182															▢	▢	▢

▢ good ▢ best

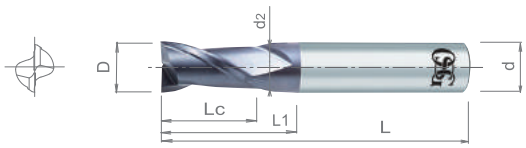
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List 7020

2 Flute, Stub Length

SPEED FEED P902-903 | CARBIDE | DIA | STUB | 30° | SHRINK h6

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.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7020										▢	▢					▢	

○ good ▢ best

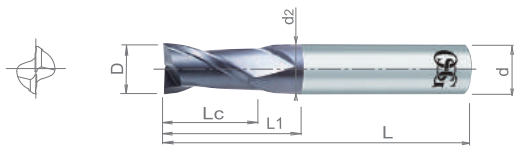
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List 7120

SPEED FEED P902-903 | CARBIDE | DIA | STUB | 30° | SHRINK h6

2 Flute, Regular Length

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.

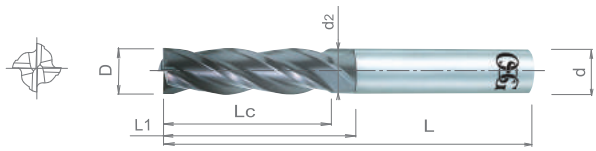
HTE

List 7040

SPEED FEED P902-903 | CARBIDE | DIA | REG | 30° | SHRINK h6

4 Flute, Regular Length

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.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7120										◎	◎					◎	
7040										◎	◎					◎	

○ good ◎ best

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List 7041

SPEED FEED P902-903 | CARBIDE | DIA | LONG | 30° | SHRINK h6

4 Flute, Long Length

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.

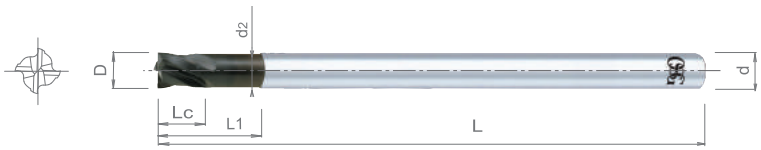
HTE

List 7042

SPEED FEED P902-903 | CARBIDE | DIA | STUB | 30° | SHRINK h6

4 Flute, Stub Length, Long Shank

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.

HTE

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 1010 1018	Med. 1035 1045	High 1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7041										▢	▢					▢	
7042										▢	▢					▢	

▢ good ▢ best

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List 7072

SPEED FEED P902-903 | CARBIDE | DIA | STUB | 30° | SHRINK h6

4 Flute, Stub Length, Long Shank, Corner Radius

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.

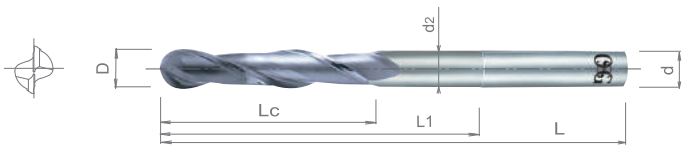
HTE

List 7010

SPEED FEED P902-903 | CARBIDE | DIA | REG | 30° | SHRINK h6

2 Flute, Regular Length, Ball End

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.

HTE

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)				
	1010 1018	1035 1045	1065	4140 4340													
7072										◎	◎					◎	
7010										◎	◎					◎	

○ good ◎ best

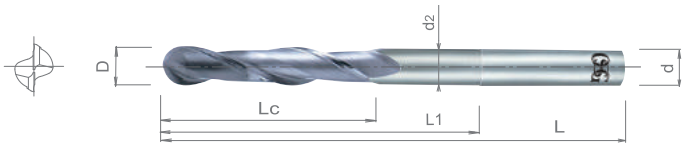
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List 7110

2 Flute, Regular Length, Ball End

SPEED FEED P902-903 | CARBIDE | DIA | REG | 30° | SHRINK h6

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.

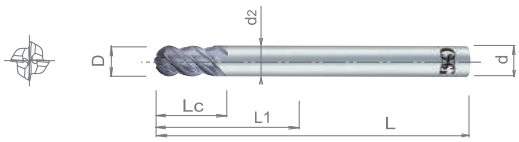
HTE

List 7030

4 Flute, Regular Length, Ball End

SPEED FEED P902-903 | CARBIDE | DIA | REG | 30° | SHRINK h6

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.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7110										▢	▢					▢	
7030										▢	▢					▢	

▢ good ▢ best

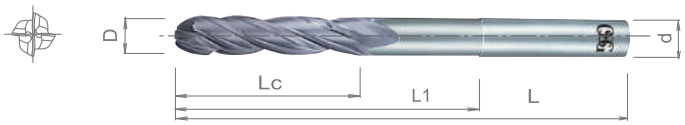
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List 7031

SPEED FEED P902-903 | CARBIDE | DIA | LONG | 30° | SHRINK h6

4 Flute, Long Length, Ball End

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.

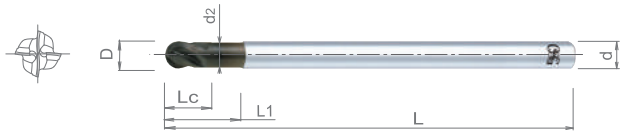
HTE

List 7032

SPEED FEED P902-903 | CARBIDE | DIA | STUB | 30° | SHRINK h6

4 Flute, Stub Length, Long Shank, Ball End

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.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7031										▢	▢					▢	
7032										▢	▢					▢	

○ good ▢ best

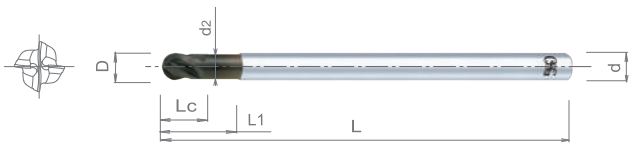
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List 7173

SPEED FEED P902-903 | CARBIDE | DIA | STUB | 30° | SHRINK h6

4 Flute*, Stub Length, Long Shank, Ball End

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	1.9	3
71730516	3.0	75	3.0	15.0	2.85	3
71730616	4.0	75	4.0	20.0	3.8	4
71730716	6.0	100	6.0	30.0	5.7	6
71730816	8.0	100	8.0	32.0	7.6	8
71730916	10.0	125	10.0	40.0	9.5	10
71731016	12.0	150	12.0	48.0	11.4	12

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.
*0.5mm is 2 flute.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7173										◎	◎					◎	

○ good ◎ best

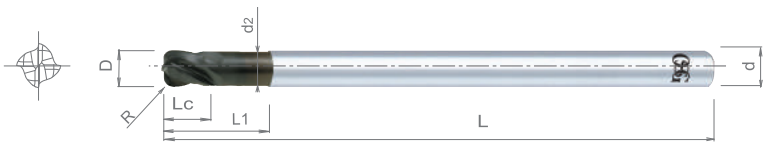
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List 7132

SPEED FEED P902-903 | CARBIDE | DIA | STUB | 30° | SHRINK h6

4 Flute, Stub Length, Long Shank, Corner Radius

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	3.8	4
71320316	6	0.5	100	6	30	5.7	6
71320416	6	1.0	100	6	30	5.7	6
71320516	8	0.5	100	8	30	7.6	8
71320616	8	1.0	100	8	32	7.6	8
71320716	10	0.5	125	10	40	9.5	10
71320816	10	1.0	125	10	40	9.5	10
71320916	12	0.5	150	12	48	11.4	12
71321016	12	1.0	150	12	48	11.4	12

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

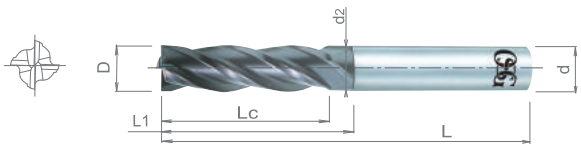
HTE

List 7140

SPEED FEED P902-903 | CARBIDE | DIA | REG | 30° | SHRINK h6

4 Flute (2 Flute for 0.5mm only), Regular Length

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	40	3	8	0.96	3
71400316	1.5	45	5	8	1.43	3
71400416	2	45	6	8	1.91	3
71400516	3	45	12	-	-	3
71400616	4	50	15	-	-	4
71400716	6	60	20	-	-	6
71400816	8	60	20	-	-	8
71400916	10	60	25	-	-	10
71401016	12	75	25	-	-	12

Packed: 1 pc. Available Diamond coating only.
12µm Coating Thickness.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7132										▢ best	▢ best					▢ best	
7140										▢ best	▢ best					▢ best	

▢ good ▢ best

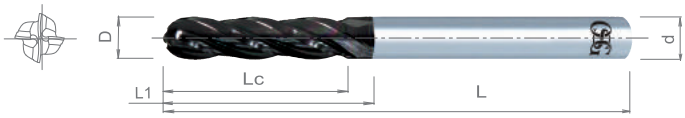
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List 7230

SPEED FEED P904 | CARBIDE | DIA | REG | 30° | SHRINK h6

2 or 4 Flute, Regular Length, Ball End, High Precision

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.

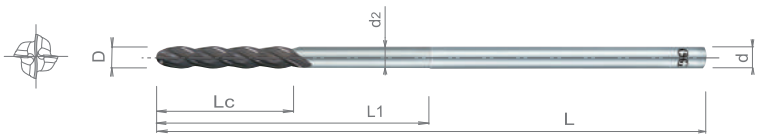
HTE

List 7231

SPEED FEED P904 | CARBIDE | DIA | REG | 30° | SHRINK h6

2 or 4 Flute, Regular Length, Long Reach, Ball End, High Precision

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.

HTE

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														
	1010 1018	1035 1045	1065	4140 4340		300	400	17-4 PH		6061 7075	Casting	Inconel	6Al4V (30 HRC)				
7230										◎	◎					◎	
7231										◎	◎					◎	

○ good ◎ best

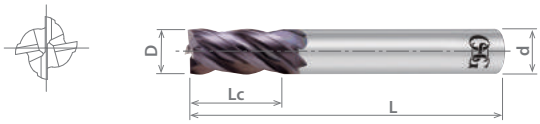
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List 2050

4 Flute, Multiple Lengths, Square End

SPEED FEED P905 | CARBIDE | EXO® | Var. | SHRINK h6

Milling Diameter Tolerance	
1/8≤D≤1	+0 / -0.0015"

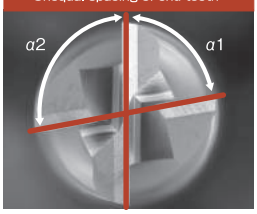


EDP Number	EDP Number w/ Weldon Flat	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
		D	L	Lc	d
205000111	-	1/8	1-1/2	3/8	1/8
205001111	-	3/16	2	7/16	3/16
205002111	-	1/4	2-1/2	7/16	1/4
205002211	-	1/4	2-1/2	3/4	1/4
205003111	-	5/16	2-1/2	13/16	5/16
205004111	205094111	3/8	2-1/2	1/2	3/8
205004211	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

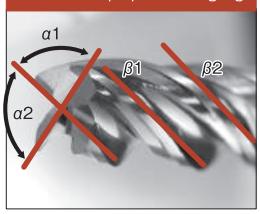
Packed: 1 pc. Available EXO® coating only.

HTE

Unequal spacing of end teeth



Variable-lead of peripheral cutting edge



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. 696)

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
2050	▢	▢	▢	▢	▢	▢	▢	▢	○			▢	▢	▢	○		

○ good ▢ best

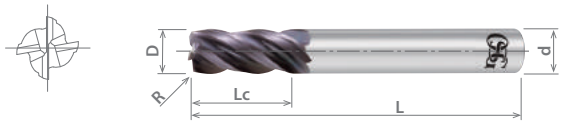
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List 2052

4 Flute, Multiple Lengths, Corner Radius

SPEED FEED P905 | CARBIDE | EXO® | Var. | SHRINK h6

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.

HTE

OSG's Performance & Savings

Don't require ultra-high performance? Try HY-PRO® CARB VGx® - List VG434 (p. 697)

Work Material

List No.	P					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 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
2052	▢	▢	▢	▢	▢	▢	▢	▢	○			▢	▢	▢	○		

○ good ▢ best

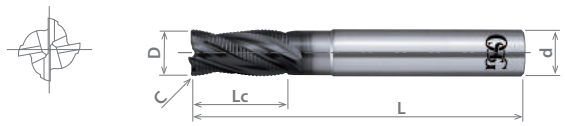
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List 3915 NEW!

4 Flute, Low Helix, Corner Chamfer

SPEED FEED P906 | CARBIDE | WXL® | Var. | SHRINK 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.

HTE

List 3920 NEW!

4 Flute, High Helix, Corner Chamfer

SPEED FEED P906 | CARBIDE | WXL® | Var. | SHRINK 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.

HTE

Work Material

List No.	P					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 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
3915	◎	◎	◎	○	○	○	○	○	◎	○			○	○			
3920	○	○	○	○	○	◎	◎	◎	○	○		○	◎	◎	○		

○ good ◎ best

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List 2015

SPEED FEED P907 | CARBIDE | TiAlN | REG | 40° | SHRINK h6

4 Flute, Regular Length, Corner Radius, Rougher

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.

HTE

Work Material

List No.	P					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 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
2015	▢	▢	▢	▢	▢	▢	▢	▢	○			▢	▢	▢	○		

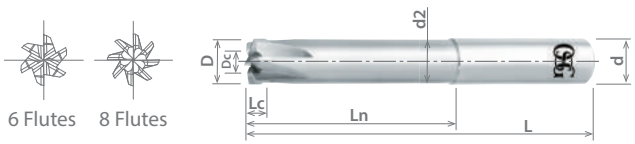
○ good ▢ best

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List 2080 NEW!

SPEED FEED P908 | CARBIDE | BR | SHRINK h6

6 & 8 Flute



EDP Number	Mill Diameter	Effective Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	No. of Flutes
	D	Dc	L	Lc	Ln	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

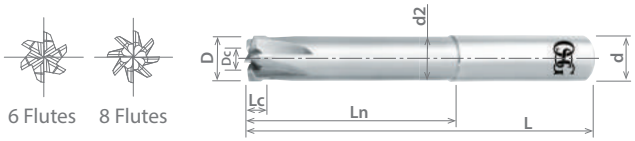
Packed: 1 pc.
Available Bright only.

HTE

List 2081 NEW!

SPEED FEED P908 | CARBIDE | BR | SHRINK h6

6 & 8 Flute



EDP Number	Mill Diameter	Effective Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter	No. of Flutes
	D	Dc	L	Lc	Ln	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.

HTE

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
2080													▢				
2081													▢				

▢ good ▢ best

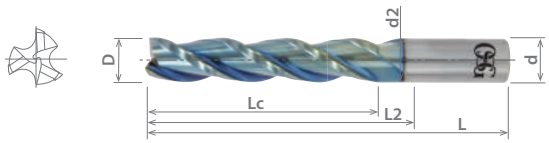
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List 2843 NEW!

SPEED FEED P909 | CARBIDE | DLC | MULTIPLE | 35° | SHRINK h6

3 Flute

Milling Diameter Tolerance	
5/8≤D≤1	+0 / -0.0008"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L2	d2	d
28431500	5/8	4	1	2.2	0.5991	5/8
28431000	5/8	4-1/2	2	-	-	5/8
28432500	3/4	4	1	2.2	0.6693	3/4
28432000	3/4	4-1/2	2	-	-	3/4
28433000	3/4	6-1/2	4	-	-	3/4
28435000	1	5	1-1/2	2.2	0.9213	1
28434500	1	4-1/2	2	-	-	1

Packed: 1 pc.
Available DLC coating only.

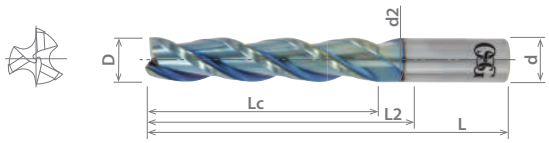
HTE

List 2943 NEW!

SPEED FEED P909 | CARBIDE | DLC | MULTIPLE | 35° | SHRINK h6

3 Flute

Milling Diameter Tolerance	
20≤D≤25	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L2	d2	d
8533259	20	100	30	55	18	20
8533361	20	110	50	-	-	20
8533400	20	160	100	-	-	20
8533265	25	100	37.5	55	23	25

Packed: 1 pc.
Available DLC coating only.

HTE

Work Material

List No.	P					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 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
2843										◎							
2943										◎							

○ good ◎ best

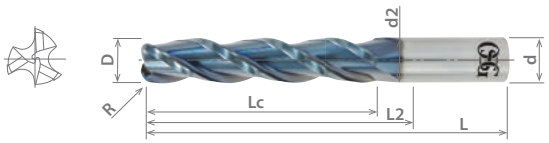
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List 2873 NEW!

3 Flute, Corner Radius

SPEED FEED P909 | CARBIDE | DLC | MULTIPLE | 30° | SHRINK h6

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	L2	d2	d
28731000	5/8	0.03	4	1	2.2	0.559	5/8
28731100	5/8	0.06	4	1	2.2	0.559	5/8
28731200	5/8	0.09	4	1	2.2	0.559	5/8
28731300	5/8	0.12	4	1	2.2	0.559	5/8
28731400	5/8	0.19	4	1	2.2	0.559	5/8
28731500	5/8	0.03	4-1/2	2	-	-	5/8
28731600	5/8	0.06	4-1/2	2	-	-	5/8
28731700	5/8	0.09	4-1/2	2	-	-	5/8
28731800	5/8	0.12	4-1/2	2	-	-	5/8
28732000	5/8	0.19	4-1/2	2	-	-	5/8
28732200	3/4	0.06	4	1-1/8	2.2	0.669	3/4
28732300	3/4	0.09	4	1-1/8	2.2	0.669	3/4
28732400	3/4	0.12	4	1-1/8	2.2	0.669	3/4
28732500	3/4	0.19	4	1-1/8	2.2	0.669	3/4
28732900	3/4	0.12	4-1/2	2	-	-	3/4
28733100	3/4	0.19	4-1/2	2	-	-	3/4
28733200	3/4	0.03	6-1/2	4	-	-	3/4
28733300	3/4	0.06	6-1/2	4	-	-	3/4
28733400	3/4	0.09	6-1/2	4	-	-	3/4
28733500	3/4	0.12	6-1/2	4	-	-	3/4
28733600	3/4	0.15	6-1/2	4	-	-	3/4
28733700	3/4	0.19	6-1/2	4	-	-	3/4
28735200	1	0.12	4-1/2	2	-	-	1
28735400	1	0.19	4-1/2	2	-	-	1
28735800	1	0.12	5	1-1/2	2.2	0.921	1
28735900	1	0.19	5	1-1/2	2.2	0.921	1

Packed: 1 pc.
Available DLC coating only.

HTE

Work Material

List No.	P					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 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
2873										◎							

○ good ◎ best

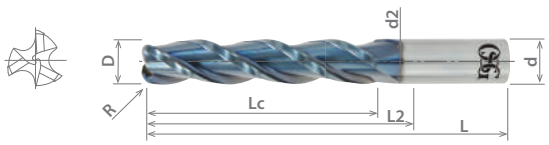
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List 2973 NEW!

3 Flute, Corner Radius

SPEED FEED P909 | CARBIDE | DLC | MULTIPLE | 30° | SHRINK h6

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	L2	d2	d
8533260	20	1.0	100	30	55	18	20
8533362	20	1.0	110	50	-	-	20
8533401	20	1.0	160	100	-	-	20
8533261	20	1.6	100	30	55	18	20
8533363	20	1.6	110	50	-	-	20
8533402	20	1.6	160	100	-	-	20
8533262	20	3.0	100	30	55	18	20
8533364	20	3.0	110	50	-	-	20
8533403	20	3.0	160	100	-	-	20
8533263	20	4.0	100	30	55	18	20
8533365	20	4.0	110	50	-	-	20
8533404	20	4.0	160	100	-	-	20
8533264	20	5.0	100	30	55	18	20
8533366	20	5.0	110	50	-	-	20
8533405	20	5.0	160	100	-	-	20
8533266	25	1.0	100	37.5	55	23	25
8533267	25	1.6	100	37.5	55	23	25
8533268	25	3.0	100	37.5	55	23	25
8533269	25	4.0	100	37.5	55	23	25
8533270	25	5.0	100	37.5	55	23	25

Packed: 1 pc.
Available DLC coating only.

HTE

Work Material

List No.	P					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 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
2973										◎							

○ good ◎ best

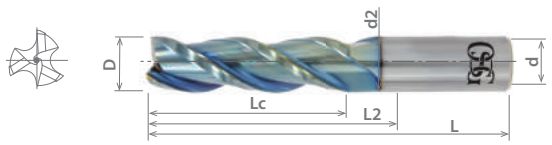
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List 2844 NEW!

SPEED FEED P909 | CARBIDE | DLC | STUB | COOLANT THROUGH | 30° | SHRINK h6

3 Flute, Coolant-Through

Milling Diameter Tolerance	
5/8≤D≤1	+0 / -0.0008"



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L2	d2	d
28440000	5/8	4	1	2.2	0.559	5/8
28440500	3/4	4	1-1/8	2.2	0.669	3/4
28441500	1	5	1-1/2	2.2	0.921	1

Packed: 1 pc.
Available DLC coating only.

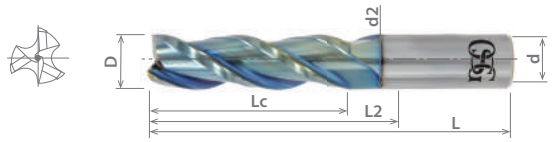
HTE

List 2944 NEW!

SPEED FEED P909 | CARBIDE | DLC | STUB | COOLANT THROUGH | 30° | SHRINK h6

3 Flute, Coolant-Through

Milling Diameter Tolerance	
20≤D≤25	+0 / -0.02mm



EDP Number	Mill Diameter	Overall Length	Length of Cut	Neck Length	Neck Diameter	Shank Diameter
	D	L	Lc	L2	d2	d
8533300	20	100	30.0	55	18	20
8533306	25	100	37.5	55	23	25

Packed: 1 pc.
Available DLC coating only.

HTE

Work Material

List No.	P					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 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
2844										▢							
2944										▢							

▢ good ▢ best

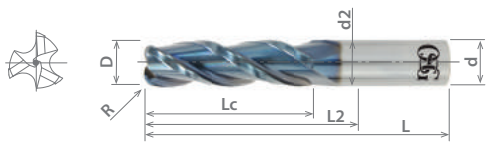
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 2874 NEW!

3 Flute, Coolant-Through, Corner Radius

SPEED FEED P909 | CARBIDE | DLC | STUB | COOLANT THROUGH | 30° | SHRINK h6

Milling Diameter Tolerance	
3/4≤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	L2	d2	d
28740500	3/4	0.06	4	1-1/8	2.2	0.669	3/4
28741000	3/4	0.09	4	1-1/8	2.2	0.669	3/4
28741500	3/4	0.12	4	1-1/8	2.2	0.669	3/4
28742000	3/4	0.19	4	1-1/8	2.2	0.669	3/4
28744000	1	0.12	5	1-1/2	2.2	0.921	1
28744500	1	0.19	5	1-1/2	2.2	0.921	1

Packed: 1 pc.
Available DLC coating only.

HTE

Work Material

List No.	P					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 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
2874										▢							

▢ good ▢ best

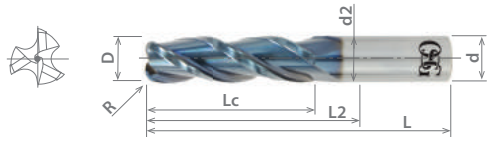
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List 2974 NEW!

SPEED FEED P909 | CARBIDE | DLC | STUB | COOLANT THROUGH | 30° | SHRINK h6

3 Flute, Coolant-Through, Corner Radius

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	L2	d2	d
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
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.

HTE

Work Material

List No.	P					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 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
2974										◎							

○ good ◎ best

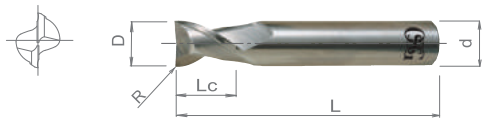
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List 2021

SPEED FEED P910 | CARBIDE | BR | DLC | STUB | 30° | SHRINK h6

2 Flute, Stub Length, Square & Corner Radius

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. DLC coating available on request.
Additional corner radii available upon request.

BLZ

Work Material

List No.	P					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 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
2021										◎	◎						

○ good ◎ best

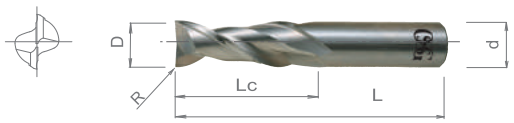
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List 2022

2 Flute, Regular Length, Square & Corner Radius

SPEED FEED P910 | CARBIDE | BR | DLC | REG | 30° | SHRINK h6

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

BLZ

Packed: 1 pc.
DLC coating available on request.
Additional corner radii 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	Med.	High														
	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
2022										◎	◎						

○ good ◎ best

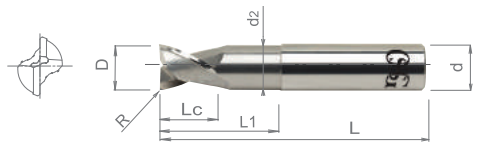
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List 2023

SPEED FEED P910 | CARBIDE | BR | DLC | REG | 30° | SHRINK h6

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.
DLC coating available on request.

BLZ

Work Material

List No.	P					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 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
2023										◎	◎						

○ good ◎ best

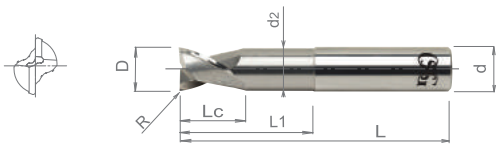
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 2024

SPEED FEED P910 | CARBIDE | BR | DLC | LONG | 30° | SHRINK h6

2 Flute, Long 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
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.
DLC coating available on request.

BLZ

Work Material

List No.	P					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 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
2024										◎	◎						

○ good ◎ best

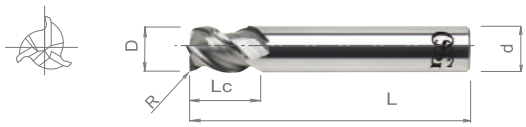
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List 2041

3 Flute, Stub Length, Square & Corner Radius

SPEED FEED P911 | CARBIDE | BR | DLC | STUB | 45° | SHRINK h6

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

BLZ

Packed: 1 pc.
DLC coating available on 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	Med.	High														
	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
2041										◎	◎						

○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 2042

3 Flute, Regular Length, Square & Corner Radius

SPEED FEED P912 | CARBIDE | BR | DLC | REG | 45° | SHRINK h6

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

BLZ

Packed: 1 pc.
DLC coating available on 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	Med.	High														
	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
2042										▢	▢						

▢ good ▢ best

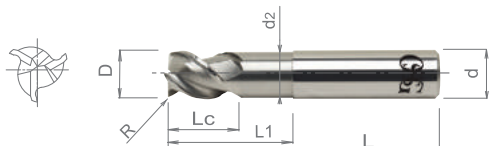
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List 2043

SPEED FEED P912 | CARBIDE | BR | DLC | REG | 45° | SHRINK h6

3 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
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.
DLC coating available on request.

BLZ

Work Material

List No.	P					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 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
2043										▢	▢						

▢ good ▢ best

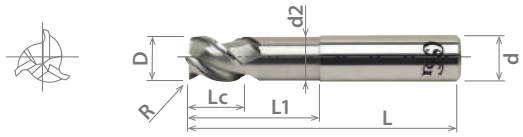
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List 2048

3 Flute, Long Length, Reduced Neck, Square & Corner Radius

SPEED FEED P912 | CARBIDE | BR | DLC | LONG | 45° | SHRINK h6

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.
DLC coating available on request.

BLZ

Work Material

List No.	P					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 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
2048										◎	◎						

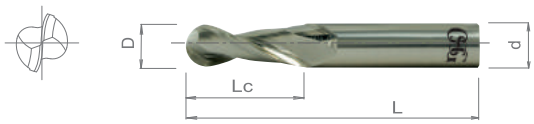
○ good ◎ best

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List 2010

SPEED FEED P915 | CARBIDE | BR | REG | 30° | SHRINK h6

2 Flute, Regular Length, Ball End



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.

BLZ

Work Material

List No.	P					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 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
2010										◎	◎						

○ good ◎ best

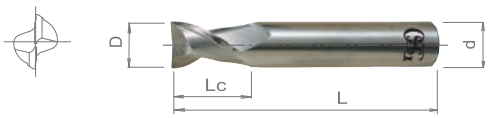
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List 8120

2 Flute, Regular Length

SPEED FEED P913-914 | CARBIDE | BR | REG | 30° | SHRINK h6

Milling Diameter Tolerance	
D≤12	+0 / -0.02mm
D>12	+0 / -0.03mm



EDP Number	Mill Diameter D	Overall Length L	Length of Cut Lc	Shank Diameter 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 D	Overall Length L	Length of Cut Lc	Shank Diameter 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

HTE

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														
	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
8120										◎	◎						

○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List VG441

SPEED FEED P916 | CARBIDE | TiAlN | 35° | SHRINK h6

4 Flute, Multiple Lengths, Square End

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.

HPC

Work Material

List No.	P					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 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
VG441	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▢ best

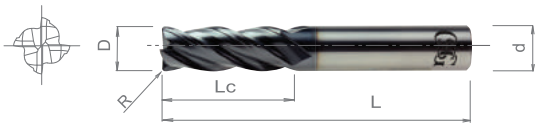
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List VG434

4 Flute, Multiple Lengths, Corner Radius

SPEED FEED P916 | CARBIDE | TiAlN | 35° | SHRINK h6

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.

HPC

Work Material

List No.	P					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 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
VG434	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▢ best

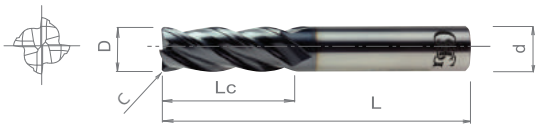
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List VG436

4 Flute, Multiple Lengths, Corner Chamfer

SPEED FEED P916 | CARBIDE | TiAlN | 35° | SHRINK h6

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.

HPC

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
VG436	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	○	

○ good ▢ best

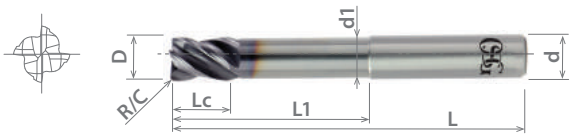
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List VG446

SPEED FEED P917 | CARBIDE | TiAlN | 35° | SHRINK h6

4 Flute, Multiple Lengths, Reduced Neck, Corner Radius/Corner Chamfer

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.

HPC

Work Material

List No.	P					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 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
VG446	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▢ best

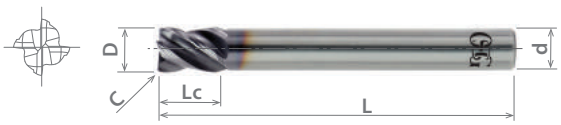
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List VG464

SPEED FEED P917 | CARBIDE | TiAlN | 35° | SHRINK h6

4 Flute, Multiple Lengths, Extended Length, Square End/Corner Chamfer

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.

HPC

Work Material

List No.	P					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 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
VG464	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	○	

○ good ▢ best

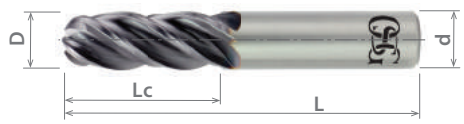
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List VG441BN

SPEED FEED P918 | CARBIDE | TiAlN | 35° | SHRINK h6

4 Flute, Multiple Lengths, Ball Nose

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.

HPC

Work Material

List No.	P					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 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
VG441BN	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	

○ good ◎ best

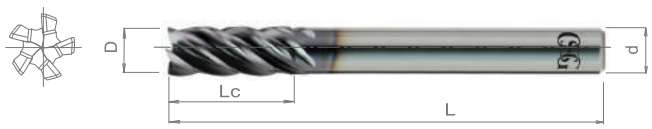
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List VG541

SPEED FEED P919 | CARBIDE | TiAlN | 38° | SHRINK h6

5 Flute, Multiple Lengths, Square End

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.

HPC

Work Material

List No.	P					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 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
VG541	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	○	

○ good ▢ best

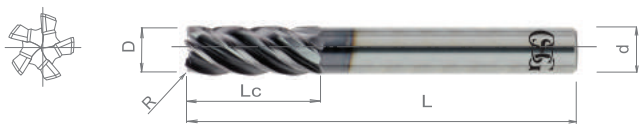
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List VG534

5 Flute, Multiple Lengths, Corner Radius

SPEED FEED P919 | CARBIDE | TiAlN | 38° | SHRINK h6

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	VG534-3755	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

HPC

Work Material

List No.	P					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 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
VG534	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▢ best

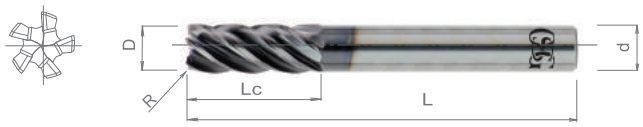
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List VG534 (Continued)

SPEED FEED P919 | CARBIDE | TiAlN | 38° | SHRINK h6

5 Flute, Multiple Lengths, Corner Radius

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.

HPC

Work Material

List No.	P					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 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
VG534	◎	◎	◎	◎	◎	◎	◎	◎	◎			◎	◎	◎	◎	○	

○ good ◎ best

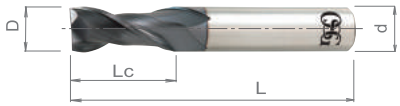
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List HP421, HP441

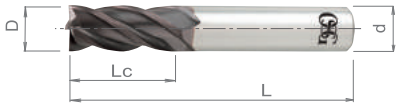
SPEED FEED P920-922 | CARBIDE | TiAlN | 35° | SHRINK h6

Inch Sizes

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)				
TiAlN	TiAlN	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 TiAlN coating only.

HPC

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3620 (p. 623) or EXOCARB® WXL® - List 3604 (p. 618)

Work Material

	P					M			K	N		S		H			
Chart applies to all list numbers above	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▣ best

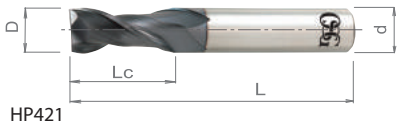
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List HP421, HP441

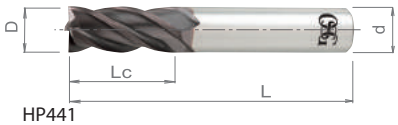
SPEED FEED P920-923 | CARBIDE | TiAlN | 35° | SHRINK h6

Metric Sizes

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.

HPC

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3722 (p. 637) or EXOCARB® WXS® - List 4540 (p. 646)

Work Material

	P					M			K	N		S		H			
Chart applies to all list numbers above	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▣ best

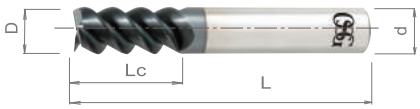
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List HP460

3 Flute, Inch Sizes, High Helix

SPEED FEED P923-924 | CARBIDE | TiAlN | 60° | SHRINK h6

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.

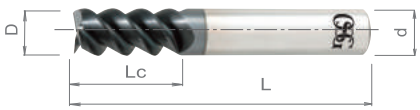
HPC

List HP460

3 Flute, Metric Sizes, High Helix

SPEED FEED P926-927 | CARBIDE | TiAlN | 60° | SHRINK h6

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.

HPC

Work Material

List No.	P					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 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
HP460	▢	▢	▢	▢		▢	▢	▢	▢				▢	▢	▢	▢	

▢ good ▣ best

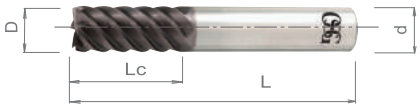
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List HP450

Multiple Flute, Inch Sizes

SPEED FEED P925 | CARBIDE | TiAlN | 50° | SHRINK h6

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.

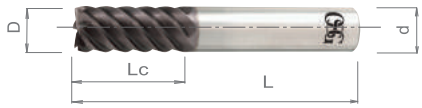
HPC

List HP450

Multiple Flute, Metric Sizes

SPEED FEED P925 | CARBIDE | TiAlN | 50° | SHRINK h6

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.

HPC

Work Material

List No.	P					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 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
HP450	○	○	○	○	○	○	○	○	○			○	○	○	○	○	

○ good ◎ best

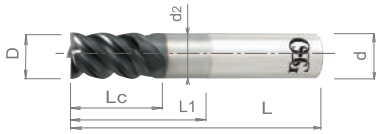
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List HP453

SPEED FEED P926-927 | CARBIDE | TiAlN | 50° | SHRINK h6

4 Flute, Metric Sizes, Super Tough Mills

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.

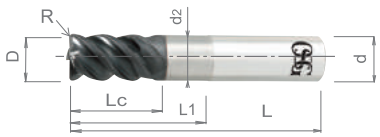
HPC

List HP456

SPEED FEED P926-927 | CARBIDE | TiAlN | 50° | SHRINK h6

4 Flute, Metric Sizes, Super Tough Mills, Corner Radius

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.

HPC

Work Material

List No.	P					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 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
HP453	▢	▢	▢	▢	▢	▢	▢	▢	▢					▢	▢	▢	
HP456	▢	▢	▢	▢	▢	▢	▢	▢	▢					▢	▢	▢	

▢ good ▣ best

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List HP451

4 Flute, Inch Sizes, Super Tough Mills

SPEED FEED P926-927 | CARBIDE | TiAlN | 50° | SHRINK h6

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

HPC

Packed: 1 pc.
Available TiAlN coating only.

List HP451

4 Flute, Metric Sizes, Super Tough Mills

SPEED FEED P926-927 | CARBIDE | TiAlN | 50° | SHRINK h6

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

HPC

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														
	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
HP451	▢	▢	▢	▢	▢	▢	▢	▢	▢					▢	▢	▢	

▢ good ▣ best

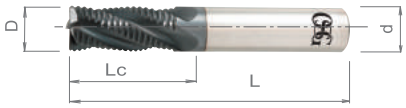
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List HP400

4 Flute, Inch Sizes, Rougher

SPEED FEED P928-929 | CARBIDE | TiAlN | 30° | SHRINK h6

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

HPC

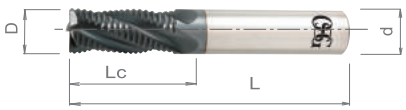
Packed: 1 pc.
Available TiAlN coating only.

List HP400

4 Flute, Metric Sizes, Rougher

SPEED FEED P928-929 | CARBIDE | TiAlN | 30° | SHRINK h6

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

HPC

Packed: 1 pc.
Available TiAlN coating only.

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® AERO - List 2015 (p. 678)

Work Material

List No.	P					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 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
HP400	○	○	○	○	○	○	○	○	○			○	○	○	○	○	

○ good ◎ best

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List HP410

2 Flute, Inch Sizes, Short Length, Necked

SPEED FEED P930 | CARBIDE | TiAlN | 30° | SHRINK h6

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.

HPC

List HP410

2 Flute, Metric Sizes, Short Length, Necked

SPEED FEED P930 | CARBIDE | TiAlN | 30° | SHRINK h6

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.

HPC

Work Material

List No.	P					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 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
HP410	▢	▢	▢	▢	▢				▢					▢	▢	▢	

▢ good ▢ best

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List HP410L

2 Flute, Metric Sizes, Short Length, Long Neck

SPEED FEED P930 | CARBIDE | TiAlN | 30° | SHRINK h6

Milling Diameter Tolerance	
0.5≤D≤2	+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
HP410L-0197	0.5	60	0.7	4	0.45	6
HP410L-0198	0.5	60	0.7	6	0.45	6
HP410L-0236	0.6	60	0.9	6	0.55	6
HP410L-0315	0.8	60	1.2	6	0.75	6
HP410L-0394	1.0	60	1.5	8	0.95	6
HP410L-0395	1.0	60	1.5	12	0.95	6
HP410L-0472	1.2	60	1.8	10	1.15	6
HP410L-0551	1.4	60	2.1	12	1.35	6
HP410L-0552	1.4	60	2.1	16	1.35	6
HP410L-0591	1.5	60	2.3	10	1.45	6
HP410L-0592	1.5	60	2.3	20	1.45	6
HP410L-0630	1.6	60	2.4	12	1.55	6
HP410L-0631	1.6	60	2.4	20	1.55	6
HP410L-0709	1.8	60	2.7	6	1.75	6
HP410L-0710	1.8	60	2.7	12	1.75	6
HP410L-0711	1.8	60	2.7	20	1.75	6
HP410L-0787	2.0	60	3.0	6	1.95	6
HP410L-0788	2.0	60	3.0	16	1.95	6
HP410L-0789	2.0	60	3.0	20	1.95	6

Packed: 1 pc.
Available TiAlN coating only.

HPC

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3791 (pp. 626-627)

Work Material

List No.	P					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 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
HP410L	▢	▢	▢	▢	▢				▢					▢	▢	▢	

▢ good ▣ best

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List HP411

4 Flute, Inch Sizes, Short Length, Long Neck

SPEED FEED P931 | CARBIDE | TiAlN | 30° | SHRINK h6

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.

HPC

List HP411

4 Flute, Metric Sizes, Short Length, Long Neck

SPEED FEED P931 | CARBIDE | TiAlN | 30° | SHRINK h6

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.

HPC

Work Material

List No.	P					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 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
HP411	▢	▢	▢	▢	▢				▢					▢	▢		

▢ good ▣ best

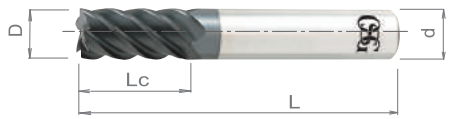
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List HP455

5 Flute, Inch Sizes, Corner Protection

SPEED FEED P932 | CARBIDE | TiAlN | 45° | SHRINK h6

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.

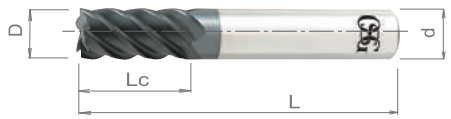
HPC

List HP455

5 Flute, Metric Sizes, Corner Protection

SPEED FEED P932 | CARBIDE | TiAlN | 45° | SHRINK h6

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.

HPC

Work Material

List No.	P					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 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
HP455	○	○	○	○	○	○	○	○	○			◎	◎	○	○	○	

○ good ◎ best

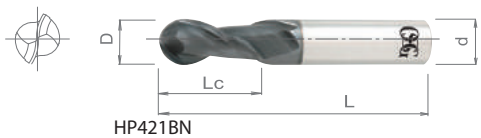
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List HP421BN, HP441BN

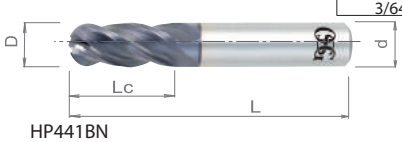
SPEED FEED P933-934 | CARBIDE | TiAlN | 35° | SHRINK h6

2 or 4 Flute, Inch Sizes, Ball End

Milling Diameter Tolerance	
3/64≤D≤1	+0 / -0.0015"



HP421BN



HP441BN

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List HP42BN1 (2 Flute)	List HP441BN (4 Flute)				
TiAlN	TiAlN	D	L	Lc	d
HP421-0469-BN	HP441-0469-BN	3/64	1-1/2	9/64	1/8
HP421-0625-BN	HP441-0625-BN	1/16	1-1/2	3/16	1/8
HP421-0781-BN	HP441-0781-BN	5/64	1-1/2	1/4	1/8
HP421-0938-BN	HP441-0938-BN	3/32	1-1/2	5/16	1/8
HP421-1094-BN	HP441-1094-BN	7/64	1-1/2	3/8	1/8
HP421-1250-BN	HP441-1250-BN	1/8	1-1/2	1/2	1/8
HP421-1406-BN	HP441-1406-BN	9/64	2	1/2	3/16
HP421-1562-BN	HP441-1562-BN	5/32	2	9/16	3/16
HP421-1719-BN	HP441-1719-BN	11/64	2	9/16	3/16
HP421-1875-BN	HP441-1875-BN	3/16	2	5/8	3/16
HP421-2031-BN	HP441-2031-BN	13/64	2-1/2	5/8	1/4
HP421-2188-BN	HP441-2188-BN	7/32	2-1/2	5/8	1/4
HP421-2500-BN	HP441-2500-BN	1/4	2-1/2	3/4	1/4
HP421-2812-BN	HP441-2812-BN	9/32	2-1/2	3/4	5/16
HP421-3125-BN	HP441-3125-BN	5/16	2-1/2	13/16	5/16
HP421-3438-BN	HP441-3438-BN	11/32	2-1/2	7/8	3/8
HP421-3750-BN	HP441-3750-BN	3/8	2-1/2	1	3/8
HP421-4062-BN	HP441-4062-BN	13/32	2-3/4	1	7/16
HP421-4375-BN	HP441-4375-BN	7/16	2-3/4	1	7/16
HP421-5000-BN	HP441-5000-BN	1/2	3	1	1/2
HP421-5625-BN	HP441-5625-BN	9/16	3-1/2	1-1/8	9/16
HP421-6250-BN	HP441-6250-BN	5/8	3-1/2	1-1/4	5/8
HP421-6875-BN	HP441-6875-BN	11/16	4	1-3/8	3/4
HP421-7500-BN	HP441-7500-BN	3/4	4	1-1/2	3/4
HP421-8750-BN	HP441-8750-BN	7/8	4	1-1/2	7/8
HP421-1000-BN	HP441-1000-BN	1	4	1-1/2	1

Packed: 1 pc.
Available TiAlN coating only.

HPC

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL - List 3610 (p. 615)

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														
	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
	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▣ best

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List HP421BN, HP441BN

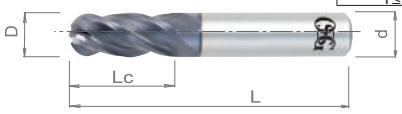
SPEED FEED P933-934 | CARBIDE | TiAlN | 35° | SHRINK h6

2 or 4 Flute, Metric Sizes, Ball End

Milling Diameter Tolerance	
1≤D≤25	+0 / -0.038mm



HP421BN



HP441BN

EDP Number		Mill Diameter	Overall Length	Length of Cut	Shank Diameter
List HP42BN1 (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.

HPC

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														
	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
	○	○	○	○	○	○	○	○	○			○	○	○	○	○	

○ good ◎ best

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List HP416

SPEED FEED P935-936 | CARBIDE | TiAlN | 30° | SHRINK h6

2 Flute, Inch Sizes, Ball End

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

HPC

Packed: 1 pc.
Available TiAlN coating only.

List HP416

SPEED FEED P935-936 | CARBIDE | TiAlN | 30° | SHRINK h6

2 Flute, Metric Sizes, Ball End

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

HPC

Packed: 1 pc.
Available TiAlN coating only.

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL®- List 3610 (p. 615) or
Try EXOCARB® WXL®- List 3710 (p. 616)

Work Material

List No.	P					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 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
HP416	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢		

▢ good ▣ best

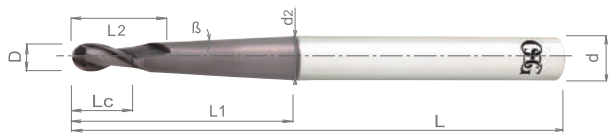
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List HP418

SPEED FEED P937-938 | CARBIDE | TiAlN | 30° | SHRINK h6

2 Flute, Inch Sizes, Pencil Neck, Ball End

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	2-1/4	0.500	0.375	2°	3/8
HP418-3750	3/8	4	0.600	2-1/4	0.750	0.500	2°	1/2

Packed: 1 pc.
Available TIALN coating only.

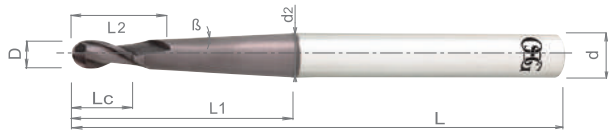
HPC

List HP418

SPEED FEED P937-938 | CARBIDE | TiAlN | 30° | SHRINK h6

2 Flute, Metric Sizes, Pencil Neck, Ball End

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.

HPC

Work Material

List No.	P					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 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
HP418	○	○	○	○	○	○	○	○	○			○	○	○	○		

○ good ◻ best

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List HP419

2 Flute, Inch Sizes, Necked, Ball End

SPEED FEED P939-940 | CARBIDE | TiAlN | 30° | SHRINK h6

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

HPC

Packed: 1 pc.
Available TiAlN coating only.

List HP419

2 Flute, Metric Sizes, Necked, Ball End

SPEED FEED P939-940 | CARBIDE | TiAlN | 30° | SHRINK h6

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

HPC

Packed: 1 pc.
Available TiAlN coating only.

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3790 (pp. 620-622)

Work Material

List No.	P					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 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
HP419	▢	▢	▢	▢	▢				▢					▢	▢		

▢ good ▢ best

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List HP419L

SPEED FEED P939-940 | CARBIDE | TiAlN | 30° | SHRINK h6

2 Flute, Metric Sizes, Long Neck, Ball End

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.

HPC

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3790 (pp. 620-622)

Work Material

List No.	P					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 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
HP419L	▢	▢	▢	▢	▢				▢					▢	▢		

▢ good ▣ best

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List HP413

2 Flute, Inch Sizes, Ball End

SPEED FEED P939-940 | CARBIDE | TiAlN | 30° | SHRINK h6

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

HPC

Packed: 1 pc.
Available TiAlN coating only.

List HP413

2 Flute, Metric Sizes, Ball End

SPEED FEED P939-940 | CARBIDE | TiAlN | 30° | SHRINK h6

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

HPC

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														
	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
HP413	▢	▢	▢	▢	▢				▢					▢	▢		

▢ good ▢ best

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List HP432, HP434

SPEED FEED P941-946 | CARBIDE | TiAlN | 35° | SHRINK h6

2 or 4 Flute, Inch Sizes, Corner Radius

Milling Diameter Tolerance	
1/8≤D≤1	+0 / -0.0015"



HP432



HP434

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.

HPC

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL®- List 3670 (p. 617)

Work Material

	P					M			K	N		S		H			
Chart applies to all list numbers above	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▣ best

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List HP432, HP434

2 or 4 Flute, Metric Sizes, Corner Radius

SPEED FEED P941-944 | CARBIDE | TiAlN | 35° | SHRINK h6

Milling Diameter Tolerance	
3≤D≤12	+0 / -0.038mm



HP432



HP434

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.

HPC

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL®- List 3670 (p. 617)

Work Material

	P					M			K	N		S		H			
Chart applies to all list numbers above	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▣ best

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List HP433

SPEED FEED P941-946 | CARBIDE | TiAlN | 35° | SHRINK h6

2 Flute, Metric Sizes, Corner Radius

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.

HPC

Work Material

List No.	P					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 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
HP433	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢		

▢ good ▣ best

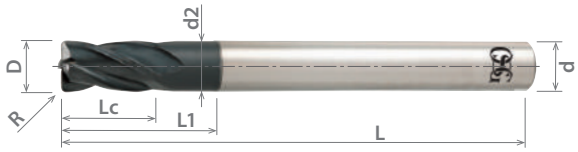
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List HP435

4 Flute, Metric Sizes, Corner Radius

SPEED FEED P941-944 | CARBIDE | TiAlN | 35° | SHRINK h6

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.

HPC

Work Material

List No.	P					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 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
HP435	○	○	○	○	○	○	○	○	○			○	○	○	○	○	

○ good ◎ best

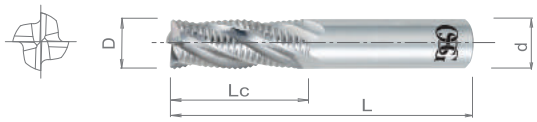
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List 400

4 Flute, Inch Sizes, Roughy Mills

SPEED FEED P952-953 | CARBIDE | BR | ROUGH | 30°

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.

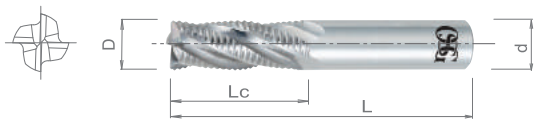
HYE

List 400

4 Flute, Metric Sizes, Roughy Mills

SPEED FEED P952-953 | CARBIDE | BR | ROUGH | 30°

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.

HYE

Work Material

List No.	P					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 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
400	▢	▢		▢		▢	▢	▢	▢	▢	▢			▢	▢	▢	

▢ good ▣ best

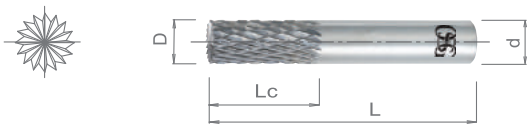
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List 415

CARBIDE | BR | 15°

Standard Cut, Toughy Mills, (For use on lighter finishing cuts)

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.

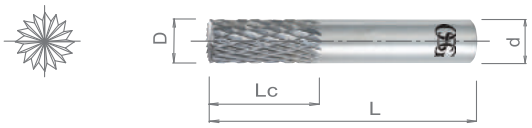
HYE

List 415C

CARBIDE | BR | 15°

Coarse Cut, Toughy Mills, (For use on heavy cuts)

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.

HYE

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														
	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
			▢	▢										▢	▢	▢	

▢ good ▣ best

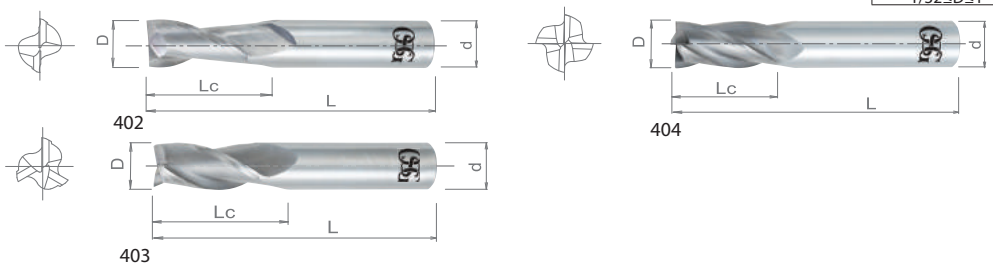
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List 402, 403, 404

2, 3, or 4 Flute, Inch Sizes

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

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

HYE

Work Material

List No.	P					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 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
402	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▢ best

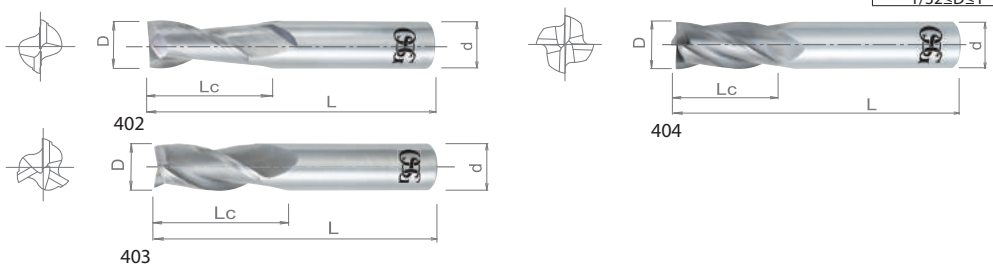
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 402, 403, 404 (Cont.)

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

2, 3, or 4 Flute, Inch Sizes

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.

HYE

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
402	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

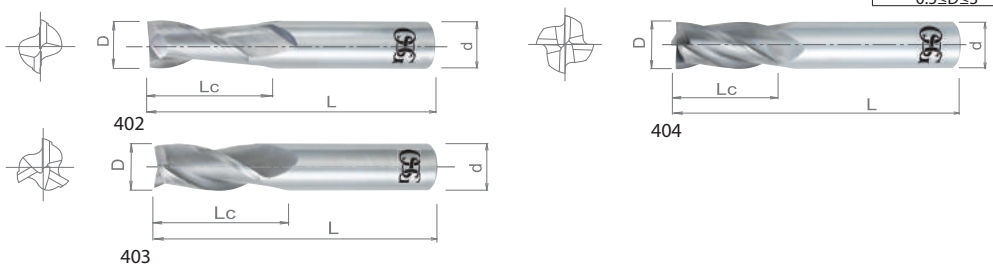
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 402, 403, 404

2, 3, or 4 Flute, Metric Sizes

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

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.

HYE

Work Material

List No.	P					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 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
402	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▢ best

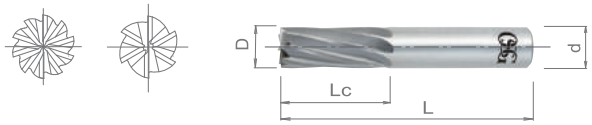
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List 408

Multiple Flute, Slow Spiral

SPEED FEED P947-948 | CARBIDE | BR | 15°

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.

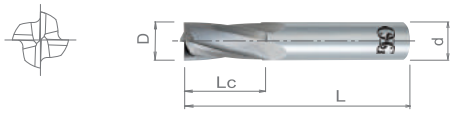
HYE

List 409

4 Flute, Slow Spiral

SPEED FEED P947-948 | CARBIDE | TiAlN | BR | 15°

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.

HYE

Work Material

List No.	P					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 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
408	▢	▢	▢	▢	▢				▢					▢	▢	▢	
409	▢	▢	▢	▢	▢				▢					▢	▢	▢	

▢ good ▣ best

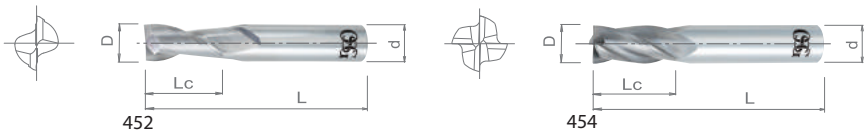
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 452, 454

2, or 4 Flute, Plus Tolerance

SPEED FEED P945-948 | CARBIDE | TiAlN | BR | 30°

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.

HYE

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														
	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
	○	○	○	○	○	○	○		○	○	○			○	○	○	

○ good ◎ best

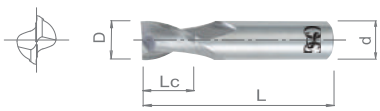
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List 412, 414

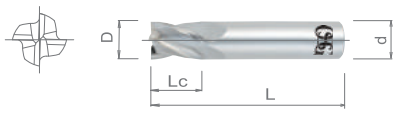
2 or 4 Flute, Inch Sizes, Stub Length

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

Milling Diameter Tolerance	
1/32≤D≤3/4	+0 / -0.002"



412



414

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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

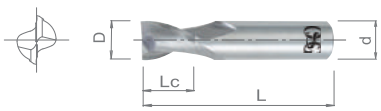
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List 412, 414

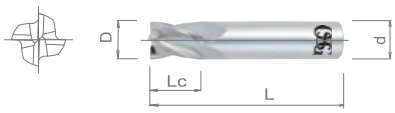
2 or 4 Flute, Metric Sizes, Stub Length

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

Milling Diameter Tolerance	
1≤D≤12	+0 / -0.05mm



412



414

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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

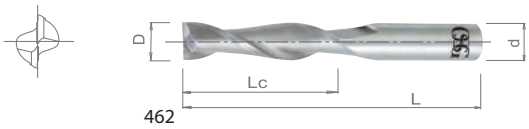
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List 462, 464

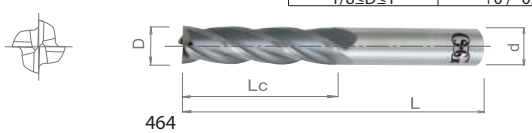
2 or 4 Flute, Inch Sizes, Long Length

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

Milling Diameter Tolerance	
1/8≤D≤1	+0 / -0.002"



462



464

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	464-500108	464-500011	1/2	4	2	1/2
462-5001	462-500108	–	464-5001	–	–	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.

HYE

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
462	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
464	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	▢

▢ good ▢ best

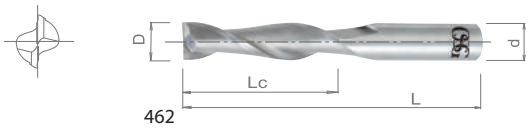
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List 462, 464

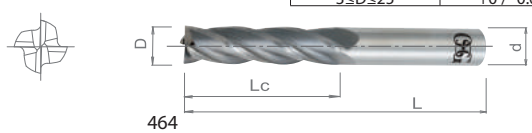
2 or 4 Flute, Metric Sizes, Long Length

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

Milling Diameter Tolerance	
3≤D≤25	+0 / -0.05mm



462



464

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.

HYE

OSG's Performance & Savings

Want to turbo-charge performance? Try EXOCARB® WXL® - List 3723 (p. 638) or EXOCARB® WXL® - List 3742 (p. 625)

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
462	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
464	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	▢

▢ good ▣ best

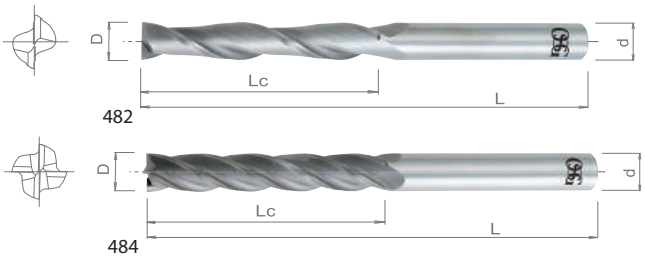
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List 482, 484

2 or 4 Flute, Inch Sizes, Extra Long Length

SPEED FEED P945-948 | CARBIDE | TiAlN | TiCN | BR | 30°

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.

HYE

Work Material

List No.	P					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 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
482	▢	▢	▢						▢	▢	▢			▢			
484	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		

▢ good ▣ best

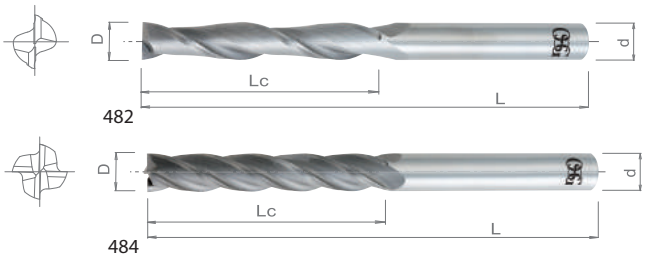
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List 482, 484

2 or 4 Flute, Metric Sizes, Extra Long Length

SPEED FEED P945-948 | CARBIDE | BR | 30°

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.

HYE

Work Material

List No.	P					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 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
482	▢	▢	▢						▢	▢	▢			▢			
484	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		

▢ good ▣ best

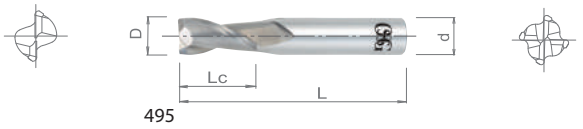
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List 495, 496

2 or 4 Flute, Corner Radius

SPEED FEED P945-948 | CARBIDE | TiAlN | BR | 30°

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	TiAlN	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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	▢

▢ good ▣ best

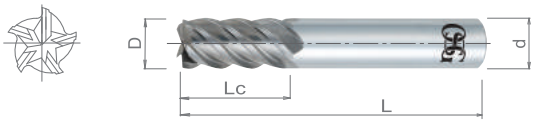
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List 455C

5 Flute, Corner Protection

SPEED FEED P947-948 | CARBIDE | TiAlN | TiCN | BR | 45°

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 0.010"~0.020"
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

HYE

Work Material

List No.	P					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 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
455C	▢	▢	▢	▢	▢				▢			▢	▢	▢	▢	▢	

▢ good ▢ best

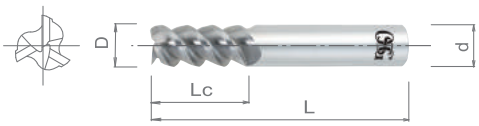
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 460C

SPEED FEED P945-946 | CARBIDE | BR | 60°

3 Flute, Inch Sizes, High Helix

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.

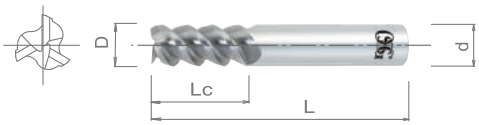
HYE

List 460C

SPEED FEED P945-946 | CARBIDE | BR | 60°

3 Flute, Metric Sizes, High Helix

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.

HYE

Work Material

List No.	P					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 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
460C	▢	▢	▢			▢	▢	▢	▢	▢	▢	▢		▢	▢		

▢ good ▣ best

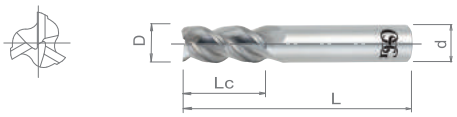
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List 445

3 Flute, Inch Sizes, RHS/RHC

SPEED FEED P945-946 | CARBIDE | BR | 45°

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.

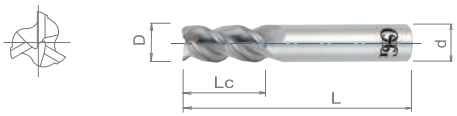
HYE

List 445

3 Flute, Metric Sizes, RHS/RHC

SPEED FEED P945-946 | CARBIDE | BR | 45°

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.

HYE

Work Material

List No.	P					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 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
445	▢	▢	▢	▢		▢	▢		▢	▢	▢			▢	▢		

▢ good ▢ best

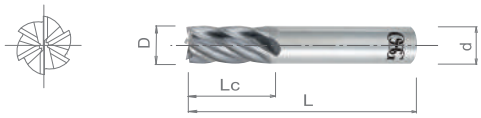
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List 461

6 Flute, Inch Sizes, RHS/RHC

SPEED FEED P947-948 | 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.

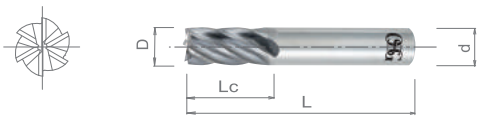
HYE

List 461

6 Flute, Metric Sizes, RHS/RHC

SPEED FEED P947-948 | 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.

HYE

Work Material

List No.	P					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 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
461	▢	▢	▢	▢	▢	▢	▢	▢	▢			▢	▢	▢	▢	▢	

▢ good ▣ best

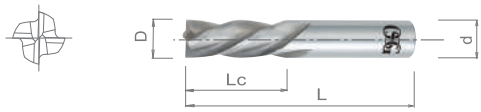
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List 447

4 Flute, LHS/RHC

SPEED FEED P947-948 | CARBIDE | TiAlN | BR | LH | 30°

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.

HYE

Work Material

List No.	P					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 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
447	○	○	○	○		○	○		○	○	○			○	○	○	

○ good ◎ best

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List 492, 494

2 or 4 Flute, Miniature

SPEED FEED P954 | CARBIDE | TiAlN | BR | 30°

Milling Diameter Tolerance	
0.015≤D≤0.060	+0 / -0.002"



492



494

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.

HYE

Work Material

	P					M			K	N		S		H			
Chart applies to all list numbers above	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		

▢ good ▣ best

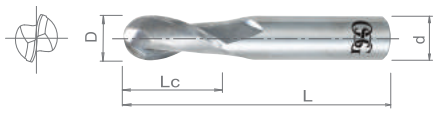
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List 402BN, 403BN, 404BN

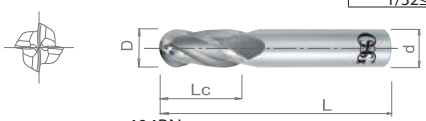
SPEED FEED P950-951 | CARBIDE | TiAlN | BR | 30°

2, 3, or 4 Flute, Ball End, Inch Sizes

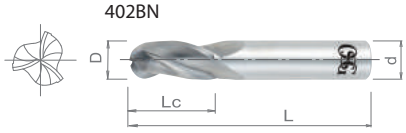
Milling Diameter Tolerance	
1/32≤D≤1	+0 / -0.002"



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
402-0312-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

HYE

Work Material

List No.	P					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 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
402BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

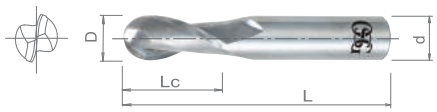
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 402BN, 403BN, 404BN (Cont.)

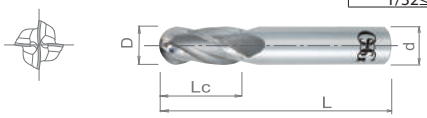
SPEED FEED P950-951 | CARBIDE | TiAlN | BR | 30°

2, 3, or 4 Flute, Ball End, Inch Sizes

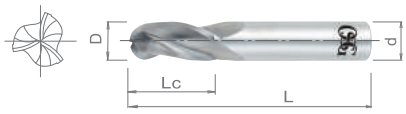
Milling Diameter Tolerance	
1/32≤D≤1	+0 / -0.002"



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.

HYE

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
402BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▢ best

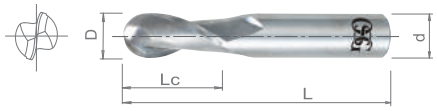
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 402BN, 403BN, 404BN

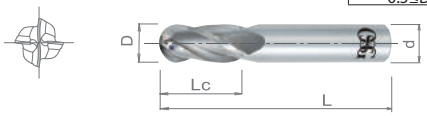
SPEED FEED P950-951 | CARBIDE | TiAlN | BR | 30°

2, 3, or 4 Flute, Ball End, Metric Sizes

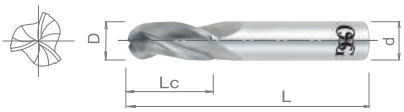
Milling Diameter Tolerance	
0.5≤D≤25	+0 / -0.05mm



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
402-0197-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.

HYE

Work Material

List No.	P					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 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
402BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		
403BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	
404BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▢ best

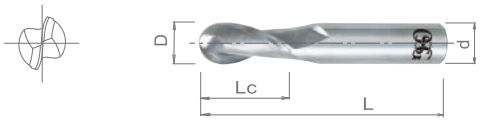
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 452BN

2 Flute, Ball End, Plus Tolerance

SPEED FEED P950 | CARBIDE | BR | 30°

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.

HYE

Work Material

List No.	P					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 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
452BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

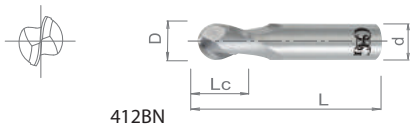
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 412BN, 414BN

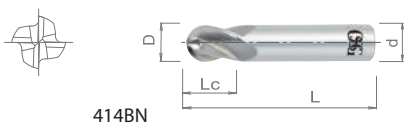
2 or 4 Flute, Inch Sizes, Stub Length, Ball End

SPEED FEED P950-951 | CARBIDE | TiAlN | TiCN | BR | STUB | 30°

Milling Diameter Tolerance	
1/32≤D≤3/4	+0 / -0.002"



412BN



414BN

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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

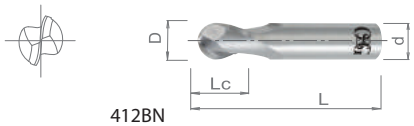
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 412BN, 414BN

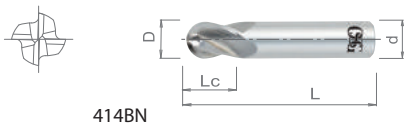
2 or 4 Flute, Metric Sizes, Stub Length, Ball End

SPEED FEED P950-951 | CARBIDE | TiAlN | TiCN | BR | STUB | 30°

Milling Diameter Tolerance	
1≤D≤12	+0 / -0.05mm



412BN



414BN

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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

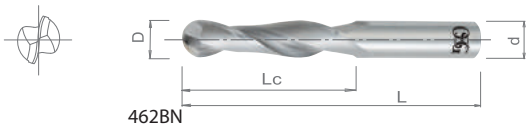
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 462BN, 464BN

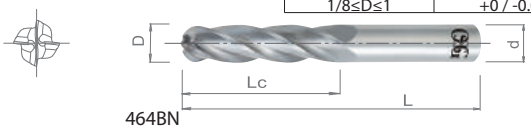
SPEED FEED P950-951 | CARBIDE | TiAlN | TiCN | BR | LONG | 30°

2 or 4 Flute, Inch Sizes, Long Length, Ball End

Milling Diameter Tolerance	
1/8≤D≤1	+0 / -0.002"



462BN



464BN

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.

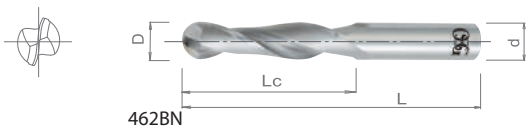
HYE

List 462BN, 464BN

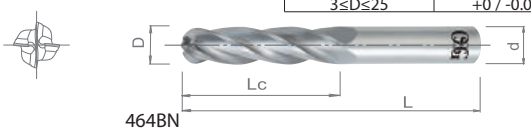
SPEED FEED P950-951 | CARBIDE | BR | LONG | 30°

2 or 4 Flute, Metric Sizes, Long Length, Ball End

Milling Diameter Tolerance	
3≤D≤25	+0 / -0.05mm



462BN



464BN

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.

HYE

Work Material

List No.	P					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 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
462BN	○	○	○	○	○	○	○		○	○	○			○	○		
464BN	○	○	○	○	○	○	○		○	○	○			○	○	○	

○ good ▢ best

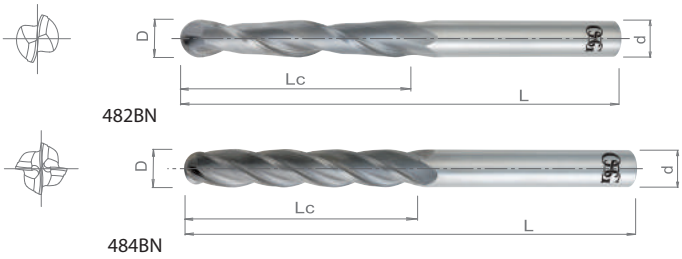
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 482BN, 484BN

SPEED FEED P950-951 | CARBIDE | TiAlN | BR | EXTRA LONG | 30°

2 or 4 Flute, Inch Sizes, Extra Long Length, Ball End

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	484-5000-BN11	7/16	6	3	7/16
482-5000-BN	–	484-5000-BN	–	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.

HYE

Work Material

List No.	P					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 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
482BN	▢	▢	▢						▢	▢	▢			▢			
484BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		

▢ good ▣ best

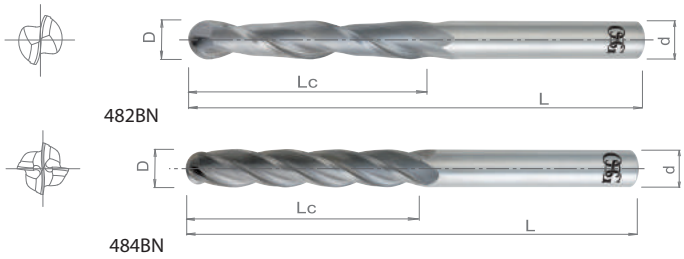
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 482BN, 484BN

SPEED FEED P950-951 | CARBIDE | BR | EXTRA LONG | 30°

2 or 4 Flute, Metric Sizes, Extra Long Length, Ball End

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.

HYE

Work Material

List No.	P					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 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
482BN	▢	▢	▢						▢	▢	▢			▢			
484BN	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢		

▢ good ▣ best

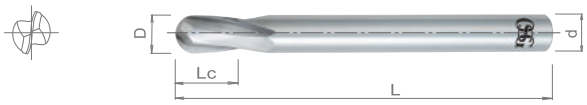
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List 497

2 Flute, Inch Sizes, Long Shank, Ball End

SPEED FEED P949 | CARBIDE | BR | 15°

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.

HYE

List 497

2 Flute, Metric Sizes, Long Shank, Ball End

SPEED FEED P949 | CARBIDE | BR | 15°

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	4
497-1968	5	63	7.5	5
497-2362	6	100	9	6
497-3150	8	100	12	8
497-3937	10	100	15	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	12
497-5512	14	127	21	14
497-6299	16	152	24	16
497-7087	18	152	27	18
497-7874	20	152	30	20

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

HYE

Work Material

List No.	P					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 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
497	▢	▢	▢	▢	▢	▢	▢		▢					▢	▢		

▢ good ▣ best

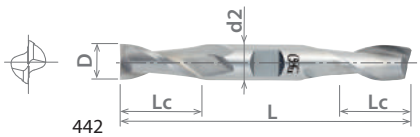
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List 442, 444

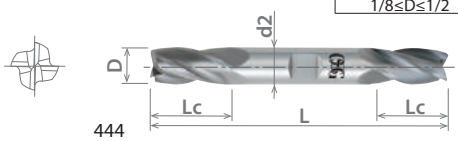
2 or 4 Flute

SPEED FEED P945-948 | CARBIDE | TiAlN | BR | 30°

Milling Diameter Tolerance	
1/8≤D≤1/2	+0 / -0.002"



442



444

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.

HYE

Work Material																		
	P					M			K	N		S		H			
Chart applies to all list numbers above	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▢ best

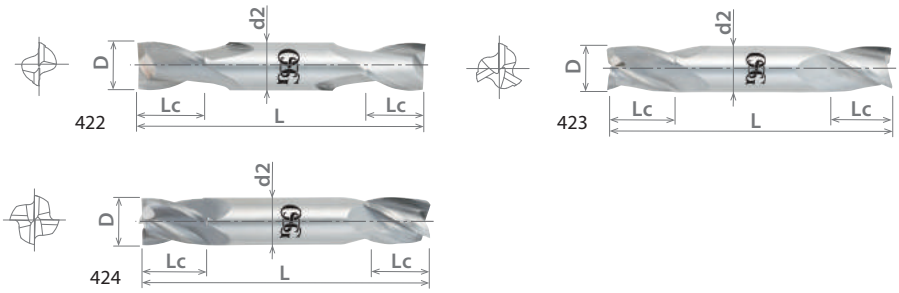
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 422, 423, 424

2, 3, or 4 Flute, Stub Length

SPEED FEED P945-948 | CARBIDE | TiAlN | BR | STUB | 30°

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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

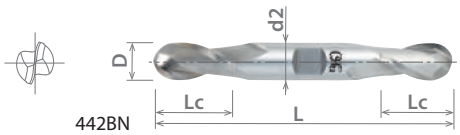
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List 442BN, 444BN

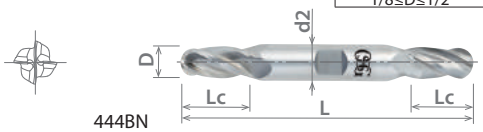
SPEED FEED P950-951 | CARBIDE | TiAlN | BR | 30°

2 or 4 Flute, Ball End

Milling Diameter Tolerance	
1/8≤D≤1/2	+0 / -0.002"



442BN



444BN

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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▢ best

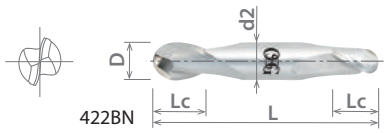
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List 422BN, 423BN, 424BN

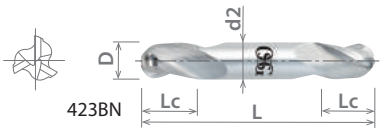
SPEED FEED P950-951 | CARBIDE | TiAlN | BR | STUB | 30°

2, 3, or 4 Flute, Stub Length, Ball End

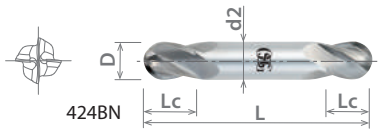
Milling Diameter Tolerance	
1/32≤D≤1/2	+0 / -0.002"



422BN



423BN



424BN

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.

HYE

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														
	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
	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢			▢	▢	▢	

▢ good ▣ best

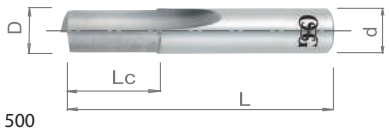
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List 500, 502

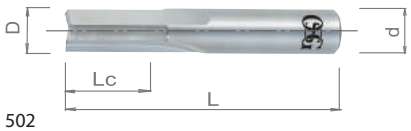
2 or 3 Flute, Straight

CARBIDE | BR

Milling Diameter Tolerance	
3/32≤D≤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.

HYE

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List 640

CARBIDE BR

Fiberglass Routers, Diamond Cut

Milling Diameter Tolerance	
1/16≤D≤1/2	+0 / -0.003"



Type 1 - No End Cut



Type 2 - Bur End



Type 3 - End Mill Cut

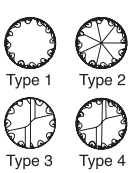


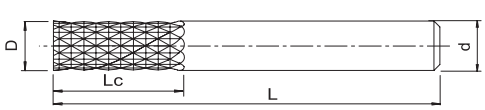
Type 4 - Drill Point

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.

HYE



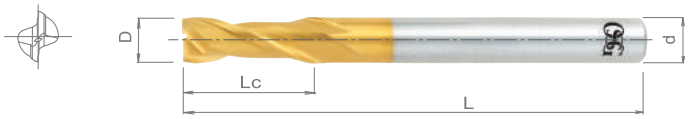


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List 673

VC10 | TiN | REG | 30°

2 Flute, Regular Length



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

EXM

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														
	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
673	▢	▢	▢	▣	▣	▣	▣	▣	▢	▢	▢		▢	▣	▢		

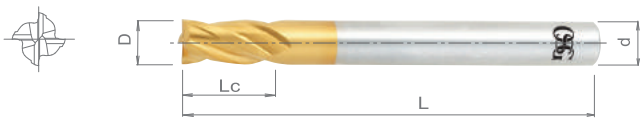
▢ good ▣ best

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List 676

VC10 | TiN | STUB | 30°

4 Flute, Stub Length, Center Hole (Smaller than 1/8)



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

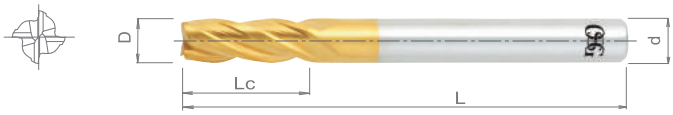
EXM

Packed: 1 pc.
Available TiN coating only.

List 677

VC10 | TiN | STUB | 30°

4 Flute, Regular Length, Center Hole (Smaller than 1/8)



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

EXM

Packed: 1 pc.
Available TiN coating only.

	Work Material																	
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
676	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	◎	○		
677	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	◎	○		

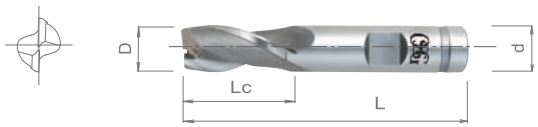
○ good ◎ best

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List 620

VC10 | BR | REG | 30°

2 Flute, Regular Length



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

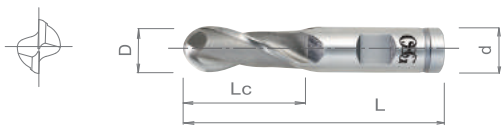
EXM

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

List 621

SPEED FEED P971 | VC10 | BR | REG | 30°

2 Flute, Regular Length, Ball End



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

EXM

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														
	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
620	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		
621	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		

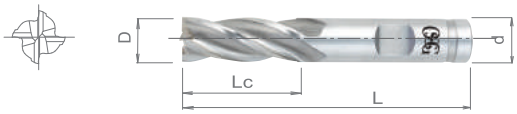
○ good ◎ best

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List 641

SPEED FEED P969-970 | VC10 | BR | REG | 30°

Multiple Flute, Regular Length



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

EXM

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														
	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
641	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		

○ good ◎ best

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List 644

SPEED FEED P971 | VC10 | BR | REG | 30°

Multiple Flute, Regular Length, Ball End



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

EXM

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														
	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
644	○	○	○	◎	◎	◎	◎	◎	◎	○	○		○	◎	○		

○ good ◎ best

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List 646

SPEED FEED P969-970 | VC10 | BR | LONG | 30°

Multiple Flute, Long Length



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

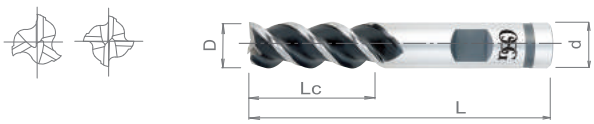
EXM

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

List 660

SPEED FEED P964 | VC10 | BR | REG | 50°

Multiple Flute, Regular Length, High Helix



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

EXM

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														
	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
646	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	◎	○		
660	○	○	○	◎	◎	◎	◎	◎	○	○	○		○	○			

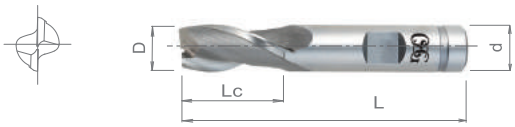
○ good ◎ best

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List 573

2 Flute, Regular Length

SPEED FEED P965 | HSSE | TiCN | BR | REG | 30°



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	5731908	5/8	3-7/16	1-5/16	5/8
5731900	5732008	21/32	3-5/16	1-5/16	1/2
5732000	5732108	11/16	3-5/16	1-5/16	1/2
5732400	5732308	11/16	3-7/16	1-5/16	5/8
5732100	5732408	23/32	3-5/16	1-5/16	1/2
5733200	5732608	3/4	3-9/16	1-5/16	3/4
5732600	5732708	25/32	3-5/8	1-1/2	5/8
5732700	5732808	13/16	3-5/8	1-1/2	5/8
5732800	5733008	27/32	3-5/8	1-1/2	5/8
5733700	5733208	7/8	3-3/4	1-1/2	7/8
5733400	5733408	29/32	3-3/4	1-1/2	3/4
5733000	5733508	15/16	3-5/8	1-1/2	5/8
5733500	5733708	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.

EXM

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														
	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
573	◎	◎	◎	◎	◎	○	○		◎	◎	◎		○	○	○		

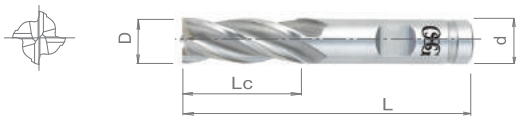
○ good ◎ best

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List 574

SPEED FEED P965-966 | HSSE | TiCN | BR | REG | 30°

Multiple Flute, Regular Length



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	7/16	3/8	4
5740400	5740408	7/32	2-7/16	1/2	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	5741908	5/8	3-3/4	1-5/8	5/8	4
5741900	5742008	21/32	3-5/8	1-5/8	1/2	4
5742000	5742108	11/16	3-5/8	1-5/8	1/2	4
5742400	5742308	11/16	3-3/4	1-5/8	5/8	4
5742100	5742408	23/32	3-5/8	1-5/8	1/2	4
5743200	5742608	3/4	3-7/8	1-7/8	3/4	4
5742600	5742708	25/32	4	1-7/8	5/8	6
5742700	5742808	13/16	4	1-7/8	5/8	6
5742800	5743008	27/32	4	1-7/8	5/8	6
5743700	5743208	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	5743508	15/16	4	1-7/8	5/8	4
5743500	5743708	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.

STE

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																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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	
574	◎	◎	◎	◎	◎	○	○		◎	◎	◎		○	○	○			

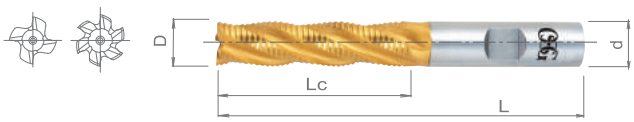
○ good ◎ best

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List 690

SPEED FEED P963 | HSSE | TiN | ROUGH | REG | 30°

Multiple Flute, Regular Length, Center Hole



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.

EXM

Work Material																		
	P					M			K	N		S		H			
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels			
	Low	Med.	High														
	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
690	○	○	○	○	○	◎	◎	○	○	○	○		○	◎	○		

○ good ◎ best

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List 450

Multiple Flute, Fine Pitch, Center Hole

SPEED FEED P955 | HSS-CO | TiCN | BR | FINE ROUGH | STUB | REG | LONG | 30°



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.

STE

Work Material

List No.	P					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 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
450	○	○	○	○	○	◎	○	○	○		○		○	○	○		

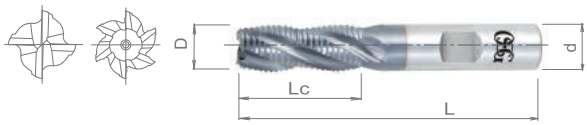
○ good ◎ best

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List 455

Multiple Flute, Roughing Cut, Fine Pitch

SPEED FEED P956 | HSS-CO | TiAlN | TiCN | FINE ROUGH | STUB | REG | LONG | 30°



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.

STE

Work Material

List No.	P					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 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
455	○	○	○	○	○	◎	◎	○	○		○		○	◎	○		

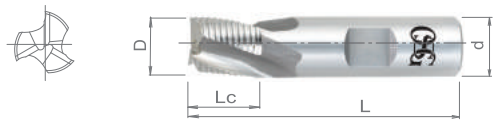
○ good ◎ best

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List 420

SPEED FEED P955 | HSS-CO | BR | FINE ROUGH | STUB | 25°

Stub Length, Center Cutting, Fine Pitch



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

STE

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

List 460

SPEED FEED P961-962 | HSS-CO | BR | FINE ROUGH | REG | LONG | 30°

Center Cutting, Fine Pitch



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

STE

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														
	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
420	▢	▢	▢	▢	▢	◎	▢	▢	▢		▢		▢	▢	▢		
460	▢	▢	▢	▢	▢	◎	▢	▢	▢		▢		▢	▢	▢		

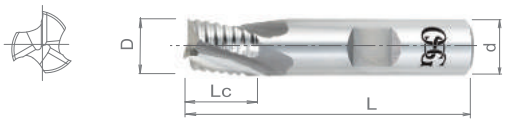
▢ good ◎ best

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List 410

SPEED FEED P959 | HSS-CO | BR | ROUGH | STUB | 25°

3 Flute, Stub Length, Regular Pitch



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.

STE

List 430E

SPEED FEED P958 | HSS-CO | BR | ROUGH | REG | MED | LONG | 35°

3 Flute, for Aluminum



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.

STE

Work Material

List No.	P					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 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
410	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢			
430E										◻	◻						

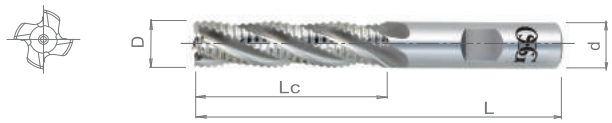
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List 490

SPEED FEED P959 | HSS-CO | BR | ROUGH | STUB | REG | MED | LONG | 30°

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.

STE

Work Material

List No.	P					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 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
490	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢			

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List 440

SPEED FEED P957 | HSS-CO | BR | ROUGH | REG | LONG | 30°

Multiple Flute, Regular Pitch, Ball End, General Purpose



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.

STE

Work Material

List No.	P					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 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
440	○	○	○	○	○	○	○	○	○	○	○		○	○			

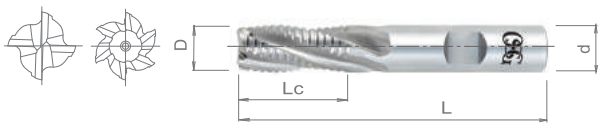
○ good ◎ best

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List 470

SPEED FEED P960 | HSS-CO | BR | ROUGH FINISH | STUB | REG | LONG | 25°

Multiple Flute, Rough & Finish



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

STE

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														
	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
470	○	○	○	○	○	○	○	○	○	○	○			○			

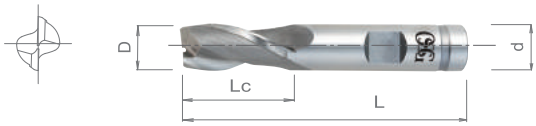
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List 520

SPEED FEED P967-968 | HSS-CO | TiN | BR | REG | 30°

2 Flute, Regular Length



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

STE

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														
	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
520	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

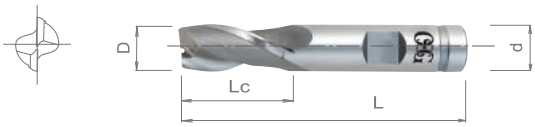
○ good ◎ best

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List 580

SPEED FEED P972 | HSS-CO | BR | REG | 30°

2 Flute, Regular Length



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5800100	3.0	2-5/16	3/8	3/8
5808100	3.5	2-5/16	7/16	3/8
5800200	4.0	2-5/16	7/16	3/8
5808200	4.5	2-5/16	7/16	3/8
5800300	5.0	2-5/16	1/2	3/8
5808300	5.5	2-5/16	1/2	3/8
5800400	6.0	2-5/16	1/2	3/8
5808400	6.5	2-5/16	1/2	3/8
5800500	7.0	2-5/16	9/16	3/8
5808500	7.5	2-5/16	9/16	3/8
5800600	8.0	2-5/16	9/16	3/8
5808600	8.5	2-5/16	9/16	3/8
5800700	9.0	2-5/16	9/16	3/8
5808700	9.5	2-5/16	9/16	3/8
5800800	10.0	2-1/2	13/16	3/8
5808800	10.5	2-1/2	13/16	3/8
5800900	11.0	2-1/2	13/16	3/8
5808900	11.5	2-1/2	13/16	3/8
5801100	12.0	3	1	1/2
5809100	12.5	3-1/8	1-1/8	1/2
5801200	13.0	3-1/8	1-1/8	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5809200	13.5	3-1/8	1-1/8	1/2
5801300	14.0	3-1/8	1-1/8	1/2
5809300	14.5	3-1/8	1-1/8	1/2
5801400	15.0	3-1/8	1-1/8	1/2
5802100	16.0	3-7/16	1-5/16	5/8
5802200	17.0	3-7/16	1-5/16	5/8
5802300	18.0	3-7/16	1-5/16	5/8
5803100	19.0	3-9/16	1-5/16	3/4
5803200	20.0	3-3/4	1-1/2	3/4
5803300	21.0	3-3/4	1-1/2	3/4
5804100	22.0	3-3/4	1-1/2	7/8
5804200	23.0	3-3/4	1-1/2	7/8
5805100	24.0	4-1/8	1-5/8	1
5805200	25.0	4-1/8	1-5/8	1
5805300	28.0	4-1/8	1-5/8	1
5806100	32.0	4-1/8	1-5/8	1-1/4
5806200	36.0	4-1/8	1-5/8	1-1/4
5806300	40.0	4-1/8	1-5/8	1-1/4
5806400	45.0	4-1/8	1-5/8	1-1/4
5806500	50.0	4-1/8	1-5/8	1-1/4

STE

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														
	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
580	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

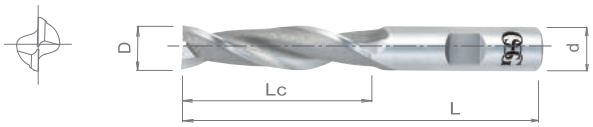
○ good ◎ best

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List 525

SPEED FEED P967-968 | HSS-CO | BR | LONG | 30°

2 Flute, Long Length



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

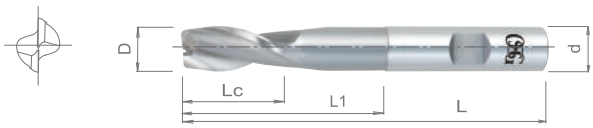
STE

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

SPEED FEED P967-968 | HSS-CO | BR | REG | 30°

2 Flute, Regular Length, Reduced Neck



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

STE

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														
	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
525	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
527	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

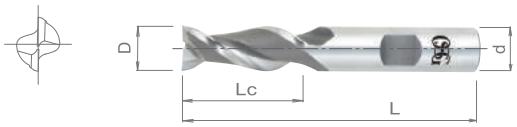
○ good ◎ best

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List 530

SPEED FEED P967-968 | HSS-CO | BR | REG | 45°

2 Flute, Regular Length, for Aluminum, High Helix



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

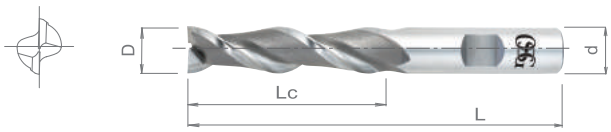
STE

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

List 535

SPEED FEED P967-968 | HSS-CO | BR | LONG | 45°

2 Flute, Long Length, for Aluminum, High Helix



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

STE

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														
	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
530	▢					▢	▢			▣	▣						
535	▢					▢	▢			▣	▣						

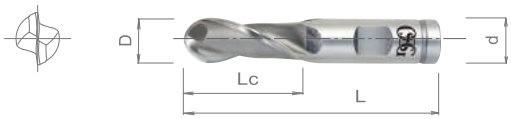
▢ good ▣ best

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List 521

SPEED FEED P971 | HSS-CO | BR | REG | 30°

2 Flute, Regular Length, Ball End



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

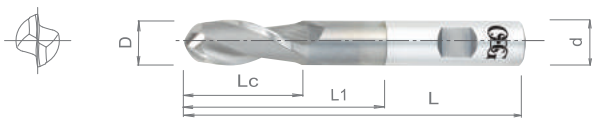
Pack: 1pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

STE

List 526

SPEED FEED P971 | HSS-CO | BR | REG | 30°

2 Flute, Regular Length, Ball End, Reduced Neck



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.

STE

Work Material

List No.	P					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 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
521	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
526	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

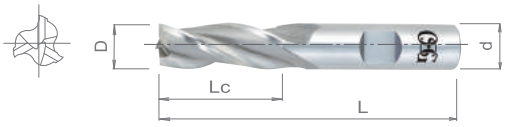
○ good ◎ best

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List 531

SPEED FEED P974 | HSS-CO | BR | REG | 30°

3 Flute, Regular Length



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

STE

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
531	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		

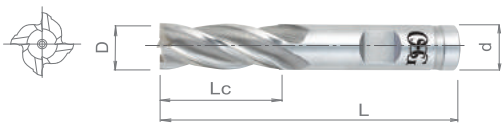
○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 581

SPEED FEED P973 | HSS-CO | BR | REG | 30°

Multiple Flute, Regular Length, Center Hole



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter	Number of Flutes
Bright	D	L	Lc	d	
5810100	3.0	2-5/16	3/8	3/8	4
5818100	3.5	2-3/8	7/16	3/8	4
5810200	4.0	2-3/8	7/16	3/8	4
5818200	4.5	2-3/8	1/2	3/8	4
5810300	5.0	2-7/16	9/16	3/8	4
5818300	5.5	2-7/16	9/16	3/8	4
5810400	6.0	2-7/16	5/8	3/8	4
5818400	6.5	2-7/16	5/8	3/8	4
5810500	7.0	2-1/2	11/16	3/8	4
5818500	7.5	2-1/2	3/4	3/8	4
5810600	8.0	2-1/2	3/4	3/8	4
5818600	8.5	2-1/2	3/4	3/8	4
5810700	9.0	2-1/2	3/4	3/8	4
5818700	9.5	2-1/2	3/4	3/8	4
5810800	10.0	2-1/2	3/4	3/8	4
5818800	10.5	2-11/16	1	3/8	4
5810900	11.0	2-11/16	1	3/8	4
5818900	11.5	2-11/16	1	3/8	4
5811100	12.0	3-1/4	1-1/4	1/2	4
5819100	12.5	3-1/4	1-1/4	1/2	4
5811200	13.0	3-1/4	1-1/4	1/2	4
5819200	13.5	3-3/8	1-3/8	1/2	4
5811300	14.0	3-3/8	1-3/8	1/2	4
5819300	14.5	3-3/8	1-3/8	1/2	4
5811400	15.0	3-3/8	1-3/8	1/2	4
5812100	16.0	3-3/4	1-5/8	5/8	4
5812200	17.0	3-3/4	1-5/8	5/8	4
5812300	18.0	3-3/4	1-5/8	5/8	4
5813100	19.0	3-7/8	1-5/8	3/4	4
5813200	20.0	4-1/8	1-7/8	3/4	4
5813300	21.0	4-1/8	1-7/8	3/4	4
5814100	22.0	4-1/8	1-7/8	7/8	4
5814200	23.0	4-1/8	1-7/8	7/8	4
5815100	24.0	4-1/2	2	1	4
5815200	25.0	4-1/2	2	1	4
5815300	28.0	4-1/2	2	1	6
5816100	32.0	4-1/2	2	1-1/4	6
5816200	36.0	4-1/2	2	1-1/4	6
5816300	40.0	4-1/2	2	1-1/4	6
5816400	45.0	4-1/2	2	1-1/4	6

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

STE

Work Material

List No.	P					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 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	
581	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○			

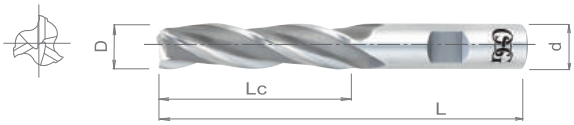
○ good ◎ best

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List 536

SPEED FEED P974 | HSS-CO | BR | LONG | 30°

3 Flute, Long Length



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

STE

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

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
536	▣	▣	▣	▣	▣	▢	▢	▢	▢	▢	▢		▢	▢	▢		

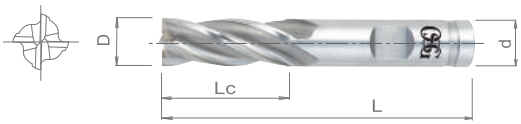
▢ good ▣ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 541

Multiple Flute, Regular Length

SPEED FEED P969-970 | HSS-CO | TiAlN | TiCN | TiN | BR | REG | 30°



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	–	–	–	1/2	2-1/2	1/2	1/2	4
5411100	5411105	5411008	–	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.

STE

Work Material

List No.	P					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 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
541	▢	▢	▢	▢	▢	○	○	○	○	○	○		○	○	○		

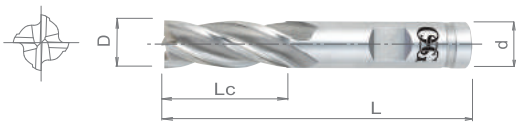
○ good ▢ best

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List 548

SPEED FEED P969-970 | HSS-CO | TiCN | BR | MED | 30°

4 Flute, Medium Length



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

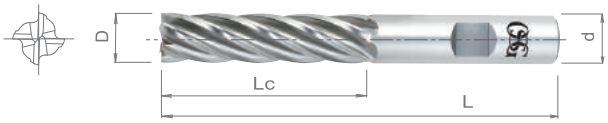
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

STE

List 546

HSS-CO | TiCN | BR | LONG | 30°

Multiple Flute, Long Length



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.

STE

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														
	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
	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		

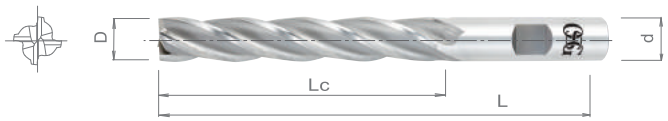
▢ good ▢ best

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List 558

Multiple Flute, Extra Long Length

HSS-CO | TiCN | BR | EXTRA LONG | 30°



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.

STE

Work Material

List No.	P					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 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
558	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		

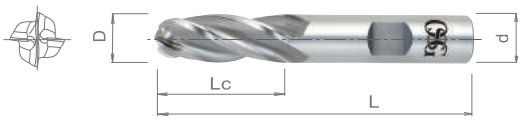
○ good ◎ best

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List 544

SPEED FEED P971 | HSS-CO | BR | REG | 30°

4 Flute, Regular Length, Ball End



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.

STE

Work Material

List No.	P					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 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
544	▢	▢	▢	▢	▢	○	○	○	○	○	○		○	○	○		

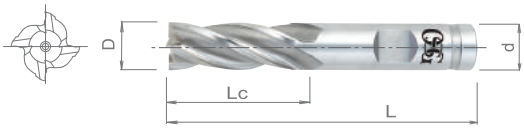
○ good ▢ best

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List 540

Multiple Flute, Regular Length, Center Hole

SPEED FEED P969-970 | HSS-CO | TiN | BR | REG | 30°



EDP Number		Mill Dia.	Overall Length	Length of Cut	Shank Dia.	No. of Flutes
Bright	TiN	D	L	Lc	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	L	Lc	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

STE

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

List No.	P					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 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
540	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		

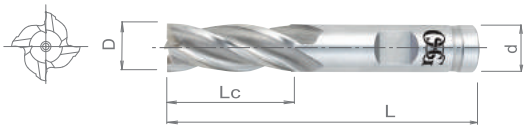
○ good ◎ best

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List 547

SPEED FEED P969-970 | HSS-CO | BR | MED | 30°

Multiple Flute, Medium Length, Center Hole



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

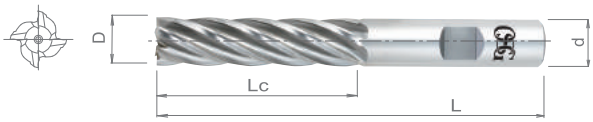
STE

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

SPEED FEED P969-970 | HSS-CO | BR | LONG | 30°

Multiple Flute, Long Length, Center Hole



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

STE

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														
	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
	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		

○ good ◎ best

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List 557

SPEED FEED P969-970 | HSS-CO | BR | EXTRA LONG | 30°

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.

STE

Work Material

List No.	P					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 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
557	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢	▢		▢	▢	▢		

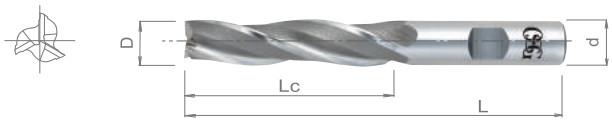
▢ good ▢ best

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List 591

SPEED FEED P975 | HSS-CO | BR | REG | LONG | EXTRA LONG | 25°

3 Flute, 1° Taper per Side



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

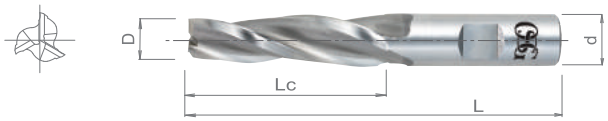
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

STE

List 593

SPEED FEED P976 | HSS-CO | BR | REG | LONG | EXTRA LONG | 25°

3 Flute, 2° Taper per Side



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.

STE

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														
	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
	▢	▢	▢	▣	▣	▢	▢	▢	▢	▢	▢		▢	▢	▢		

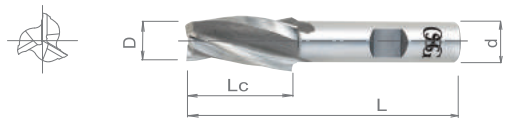
▢ good ▣ best

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List 594

SPEED FEED P976 | HSS-CO | BR | REG | LONG | EXTRA LONG | 25°

3 Flute, 3° Taper per Side



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.

STE

Work Material

List No.	P					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 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
594	▢	▢	▢	▣	▣	▢	▢	▢	▢	▢	▢		▢	▢	▢		

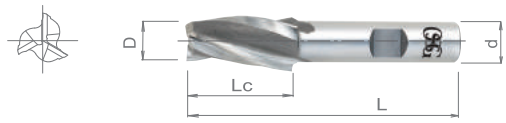
▢ good ▣ best

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List 595

SPEED FEED P977 | HSS-CO | BR | REG | LONG | EXTRA LONG | 25°

3 Flute, 5° Taper per Side



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.

STE

Work Material

List No.	P					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 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
595	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		

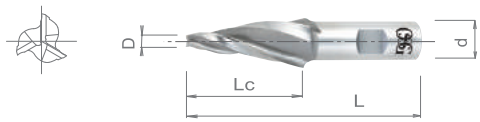
○ good ◎ best

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List 596

3 Flute, 7° Taper per Side

SPEED FEED P977 | HSS-CO | BR | REG | LONG | 25°



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

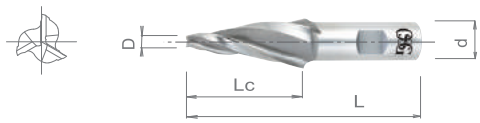
STE

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

List 597

3 Flute, 10° Taper per Side

SPEED FEED P978 | HSS-CO | BR | REG | LONG | 25°



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

STE

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														
	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
	○	○	○	◎	◎	○	○	○	○	○	○		○	○	○		

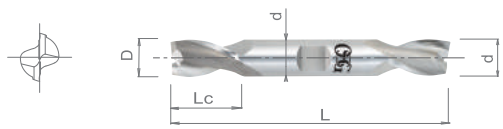
○ good ◎ best

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 522

SPEED FEED P967-968 | HSS-CO | TiN | BR | REG | 30°

2 Flute, Regular Length



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

STE

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														
	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
522	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

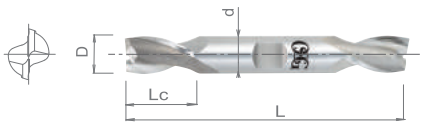
○ good ◎ best

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List 582

SPEED FEED P972 | HSS-CO | BR | REG | 30°

2 Flute, Regular Length



EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5827100	1.0	2-1/4	3/32	3/16
5827200	1.5	2-1/4	3/16	3/16
5827400	2.0	2-1/4	15/64	3/16
5827500	2.5	2-1/4	9/32	3/16
5820100	3.0	3-1/16	3/8	3/8
5828100	3.5	3-1/8	7/16	3/8
5820200	4.0	3-1/8	7/16	3/8
5828200	4.5	3-1/8	7/16	3/8
5820300	5.0	3-1/8	1/2	3/8
5828300	5.5	3-1/8	1/2	3/8
5820400	6.0	3-1/8	1/2	3/8
5828400	6.5	3-1/8	1/2	3/8
5820500	7.0	3-1/8	9/16	3/8
5828500	7.5	3-1/8	9/16	3/8
5820600	8.0	3-1/8	9/16	3/8
5828600	8.5	3-1/8	9/16	3/8
5820700	9.0	3-1/8	9/16	3/8
5828700	9.5	3-1/8	9/16	3/8
5820800	10.0	3-3/4	13/16	1/2
5828800	10.5	3-3/4	13/16	1/2

EDP Number	Mill Diameter	Overall Length	Length of Cut	Shank Diameter
Bright	D	L	Lc	d
5820900	11.0	3-3/4	13/16	1/2
5828900	11.5	3-3/4	13/16	1/2
5821100	12.0	3-3/4	13/16	1/2
5829100	12.5	3-3/4	13/16	1/2
5821200	13.0	4-1/2	1-1/8	5/8
5829200	13.5	4-1/2	1-1/8	5/8
5821300	14.0	4-1/2	1-1/8	5/8
5829300	14.5	4-1/2	1-1/8	5/8
5821400	15.0	4-1/2	1-1/8	5/8
5822100	16.0	5	1-5/16	3/4
5822200	17.0	5	1-5/16	3/4
5822300	18.0	5	1-5/16	3/4
5823100	19.0	5	1-5/16	3/4
5823200	20.0	5-1/2	1-9/16	7/8
5823300	21.0	5-1/2	1-9/16	7/8
5824100	22.0	5-1/2	1-9/16	7/8
5824200	23.0	5-7/8	1-5/8	1
5825100	24.0	5-7/8	1-5/8	1
5825200	25.0	5-7/8	1-5/8	1

STE

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.

Work Material

List No.	P					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 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
582	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

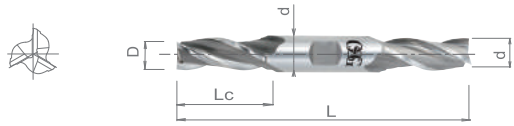
○ good ◎ best

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List 532

SPEED FEED P974 | HSS-CO | BR | REG | 30°

3 Flute, Regular Length



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.

STE

Work Material

List No.	P					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 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
532	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		

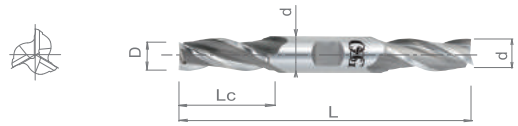
○ good ◎ best

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List 542

SPEED FEED P969-970 | HSS-CO | TiN | BR | REG | 30°

4 Flute, Regular Length, Center Hole



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.

STE

Work Material

List No.	P					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 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
542	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		

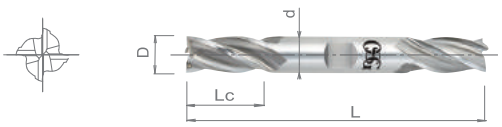
○ good ◎ best

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List 543

SPEED FEED P969-970 | HSS-CO | BR | REG | 30°

4 Flute, Regular Length



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

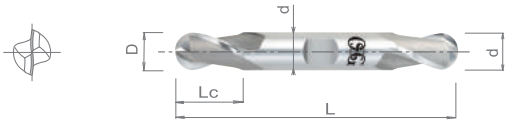
Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.

STE

List 523

SPEED FEED P971 | HSS-CO | BR | REG | 30°

2 Flute, Regular Length, Ball End



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.

STE

Work Material

List No.	P					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 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
543	◎	◎	◎	◎	◎	○	○	○	○	○	○		○	○	○		
523	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

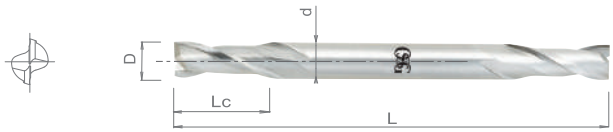
○ good ◎ best

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List 562

HSS-CO | BR | STUB | 30°

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

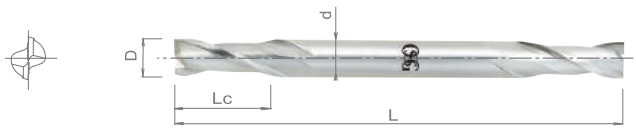
STE

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

List 563

HSS-CO | BR | REG | 30°

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

STE

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														
	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
562	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
563	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

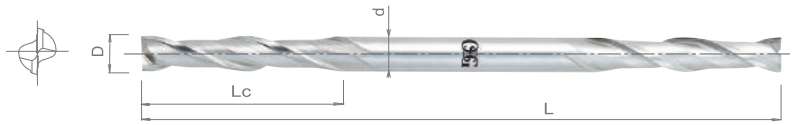
○ good ◎ best

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List 564

HSS-CO | BR | LONG | 30°

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

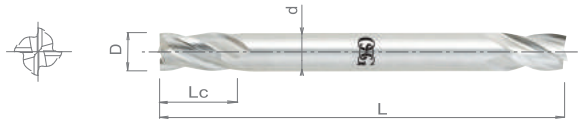
STE

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

List 566

HSS-CO | BR | STUB | 30°

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

STE

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														
	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
564	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		
566	◎	◎	◎	○	○	○	○	○	○	○	○		○	○	○		

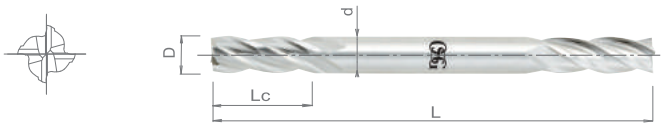
○ good ◎ best

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List 567

HSS-CO | BR | REG | 30°

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	3/16	3/16
5677400	3/32	2-1/4	9/32	3/16
5677600	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
5677800	5/32	2-1/4	7/16	3/16
5678000	3/16	2-1/4	1/2	3/16

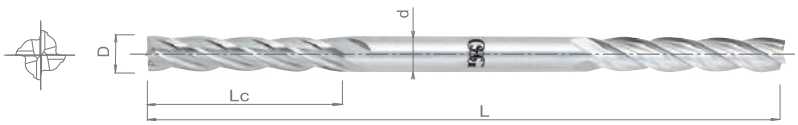
STE

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
Non-center cutting.

List 568

HSS-CO | BR | LONG | 30°

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	7/32	3/16
5687400	3/32	2-5/8	9/32	3/16
5687600	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
5687800	5/32	3-1/4	7/8	3/16
5688000	3/16	3-3/8	1	3/16

STE

Packed: 1 pc.
EDP's listed above are stocked standard, other coatings available upon request. Specify treatment at time of order.
Non-center cutting.

Work Material																		
	P					M			K	N		S		H				
List No.	Carbon Steels			Alloy Steels	Die Steels	Stainless Steels			Cast Iron	Aluminum		Nickel Alloy	Titanium	Hardened Steels				
	Low	Med.	High															
	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
567	◎	◎	◎	○	○	○	○	○	○	○	○		○	○	○		
568	◎	◎	◎	○	○	○	○	○	○	○	○		○	○	○		

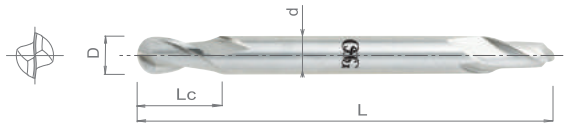
○ good ◎ best

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List 570

HSS-CO | BR | STUB | 30°

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

STE

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														
	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
570	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

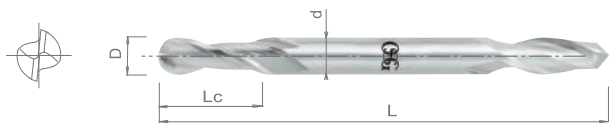
○ good ◎ best

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List 571

HSS-CO | BR | REG | 30°

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

STE

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

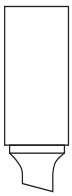
Work Material

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														
	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
571	◎	◎	○	○	○	○	○	○	○	○	○		○	○	○		

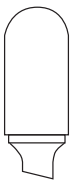
○ good ◎ best

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Shapes & SCTI Identification



Series SA
Cylindrical



Series SC
Cylindrical Ball Nose



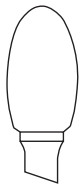
Series SF
Round Nose Tree



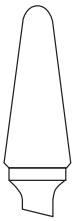
Series SG
Pointed Tree



Series SM
Pointed Cone



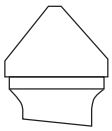
Series SE
Egg Shape



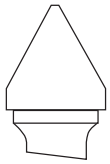
Series SL
14 Degree Included Angle



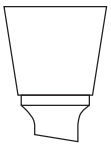
Series SD
Ball Shape



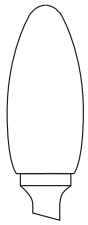
Series SK
90 Degree Included Angle



Series SJ
60 Degree Included Angle



Series SN
Inverted Taper

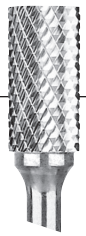


Series SH
Flame Shape

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.



Coarse and Fine Cuts are available on request.

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

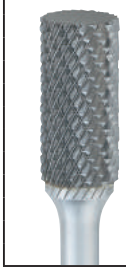
NOTE: Use lower speeds when cutting harder ferrous materials and higher speeds for softer non-ferrous materials.

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1/4" Shank

List 801 — Cylindrical

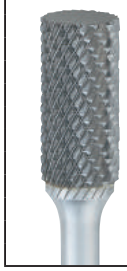
Inch

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	801-1250	SA-11*	1/8	1/2
	801-1875	SA-14*	3/16	5/8
	801-2500	SA-1*	1/4	5/8
	801-3125	SA-2	5/16	3/4
	801-3750	SA-3	3/8	3/4
	801-4375	SA-4	7/16	1
	801-5001	SA-5F	1/2	1/2
	801-5000	SA-5	1/2	1
	801-6250	SA-6	5/8	1
	801-7500	SA-16	3/4	3/4
	801-7501	SA-7	3/4	1
	801-1000	SA-9	1	1

For end cut add EC to EDP no.

6mm Shank

Metric

Medium Tough Cut	EDP Number	Style	Dia.	Flute Length
	801-1250-60	SA-11*	3	12
	801-1875-60	SA-14*	5	16
	801-2362	SA-1*	6	16
	801-3125-60	SA-2	8	19
	801-3750-60	SA-3	9	19
	801-4375-60	SA-4	11	25
	801-5001-60	SA-5F	12	12
	801-5000-60	SA-5	12	25
	801-6250-60	SA-6	16	25
	801-7500-60	SA-16	19	19
	801-7501-60	SA-7	19	25
	801-1000-60	SA-9	25	25

For end cut add EC to EDP no.

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

*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
	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

HYE

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1/4" Shank

List 901 — Cylindrical

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	901-1250	SA-11*	1/8	1/2
	901-1875	SA-14*	3/16	5/8
	901-2500	SA-1*	1/4	5/8
	901-3125	SA-2	5/16	3/4
	901-3750	SA-3	3/8	3/4
	901-4375	SA-4	7/16	1
	901-5001	SA-5F	1/2	1/2
	901-5000	SA-5	1/2	1
	901-6250	SA-6	5/8	1
	901-7500	SA-16	3/4	3/4
	901-7501	SA-7	3/4	1
	901-1000	SA-9	1	1

For end cut add EC to EDP no.

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	Flute Length
	901-1250-60	SA-11*	3	12
	901-1875-60	SA-14*	5	16
	901-2362	SA-1*	6	16
	901-3125-60	SA-2	8	19
	901-3750-60	SA-3	9	19
	901-4375-60	SA-4	11	25
	901-5001-60	SA-5F	12	12
	901-5000-60	SA-5	12	25
	901-6250-60	SA-6	16	25
	901-7500-60	SA-16	19	19
	901-7501-60	SA-7	19	25
	901-1000-60	SA-9	25	25

For end cut add EC to EDP no.

List 902 — Cylindrical Ball End

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	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	Diameter	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	Diameter	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

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

6mm Shank

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1/4" Shank

List 804 — Pointed Tree

Inch

Medium Tough Cut	EDP Number	Style	Diameter	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	Diameter	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	Diameter	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	Diameter	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	Diameter	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

*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	Diameter	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

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1/4" Shank

6mm Shank

List 904 — Pointed Tree

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	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

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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	Diameter	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	Diameter	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	Diameter	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

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

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1/4" Shank

6mm Shank

List 807 — 14° Included Angle

Inch

Medium Tough Cut	EDP Number	Style	Diameter	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

Metric

Medium Tough Cut	EDP Number	Style	Diameter	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	Diameter	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).

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1/4" Shank

6mm Shank

List 907 — 14° Included Angle

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	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

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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	Diameter	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

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

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1/4" Shank

6mm Shank

List 850 — 60° Cone

Inch

Medium Tough Cut	EDP Number	Style	Diameter	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	Diameter	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	Diameter	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	Diameter	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	Diameter	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

*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	Diameter	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

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1/4" Shank

List 950 — 60° Cone

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	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

List 951 — Flame Shape

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	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

List 952 — Inverted Taper

Inch

Medium Right Hand Spiral	EDP Number	Style	Diameter	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

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

6mm Shank

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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

Metric

Medium Right Hand Spiral	EDP Number	Style	Diameter	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

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1/4" Shank
6" Long Steel Shank

6mm Shank
152mm Long Steel Shank

List 861 — Cylindrical

Inch

Medium Tough Cut	EDP Number	Style	Diameter	Flute Length
	861-3750	SA-3L6	3/8	3/4
	861-5000	SA-5L6	1/2	1

Metric

Medium Tough Cut	EDP Number	Style	Diameter	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	Diameter	Flute Length
	862-3750	SC-3L6	3/8	3/4
	862-5000	SC-5L6	1/2	1

Metric

Medium Tough Cut	EDP Number	Style	Diameter	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	Diameter	Flute Length
	863-3750	SF-3L6	3/8	3/4
	863-5000	SF-5L6	1/2	1

Metric

Medium Tough Cut	EDP Number	Style	Diameter	Flute Length
	863-3750-60	SF-3L6	9	19
	863-5000-60	SF-5L6	12	25

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1/4" Shank
6" Long Steel Shank

6mm Shank
152mm 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

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

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1/4" Shank
6" Long Steel Shank

List 867 — 14º 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

Metric

Medium Tough Cut	EDP Number	Style	Diameter	Flute Length
	867-3750-60	SL-3L6	9	26
	867-5000-60	SL-5L6	12	28

6mm Shank
152mm Long Steel Shank

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

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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

HYE

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1/4" Shank - for Aluminum

6mm Shank

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

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

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

HYE

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.

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1/4" Shank - for Aluminum

6mm Shank

List 885 — Flame Shape

Inch

Aluminium Cut	EDP Number	Style	Diameter	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	Diameter	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	Diameter	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	Diameter	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	Diameter	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	Diameter
	888-2500	SD-1A*	1/4
	888-3750	SD-3A	3/8
	888-5000	SD-5A	1/2
	888-6250	SD-6A	5/8

*Indicates 1/4" brazed carbide shank 2" OAL; all others have 1/4" diameter hardened steel shank (3/8" diameter shanks available).

Metric

Aluminium Cut	EDP Number	Style	Diameter
	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 6mm brazed carbide shank 50mm OAL; all others have 6mm diameter hardened steel shank (9mm diameter shanks available).

HYE

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1/8" Shank Diameter — 1-1/2" Overall Length

HYE

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
EDP Number:	800-8002



Style:	SB-43
Size:	1/8 x 9/16
EDP Number:	800-8003



Style:	SC-42
Size:	1/8 x 9/16
EDP Number:	800-8004



Style:	SG-44
Size:	1/8 x 1/2
EDP Number:	800-8005



Style:	SF-42
Size:	1/8 x 1/2
EDP Number:	800-8006



Style:	SC-41
Size:	3/32 x 7/16
EDP Number:	800-8007



Style:	SA-41
Size:	1/16 x 1/4
EDP Number:	800-8008



Style:	SB-ECO
Size:	1/8
EDP Number:	800-8009



Style:	SE-41
Size:	1/8 x 7/32
EDP Number:	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
Inc. Taper Deg.:	14
EDP Number:	800-8012



Style:	SM-43
Size:	1/8 x 5/8
Inc. Taper Deg.:	7
EDP Number:	800-8013



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:	800-8015



Style:	SK-42
Size:	1/8 x 1/16
Inc. Taper Deg.:	90
EDP Number:	800-8016



Style:	SL-42
Size:	1/8 x 1/2
Inc. Taper Deg.:	8
EDP Number:	800-8017



Style:	SD-41
Size:	3/32
EDP Number:	800-8018



Style:	SD-42
Size:	1/8
EDP Number:	800-8019



Style:	SH-41
Size:	1/8 x 1/4
EDP Number:	800-8020

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3mm Shank Diameter — 38mm Overall Length

HYE

List 800 — Metric Sizes, Tough Cut

					
Style:	**SA-42**	**SA-43**	**SB-43**	**SC-42**	**SG-44**
Size:	2.38 x 11	3 x 14	3 x 14	3 x 14	3 x 12
EDP Number:	800-8001-30	800-8002-30	800-8003-30	800-8004-30	800-8005-30
					
Style:	**SF-42**	**SC-41**	**SA-41**	**SB-ECO**	**SE-41**
Size:	3 x 12	2.38 x 14	1.59 x 6	3	3 x 5.5
EDP Number:	800-8006-30	800-8007-30	800-8008-30	800-8009-30	800-8010-30
					
Style:	**SM-41**	**SM-42**	**SM-43**	**SN-42**	**SJ-42**
Size:	3 x 8	3 x 11	3 x 16	3 x 5	3 x 2.5
Inc. Taper Deg.:	12	14	7	10 INVERTED	60
EDP Number:	800-8011-30	800-8012-30	800-8013-30	800-8014-30	800-8015-30
					
Style:	**SK-42**	**SL-42**	**SD-41**	**SD-42**	**SH-41**
Size:	3 x 1.5	3 x 12	2.38	3	3 x 6
Inc. Taper Deg.:	90	8			
EDP Number:	800-8016-30	800-8017-30	800-8018-30	800-8019-30	800-8020-30

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1/8" Shank Diameter — 1-1/2" Overall Length

List 900 — Inch Sizes, Medium Right Hand Spiral

HYE



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

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3mm Shank Diameter — 38mm Overall Length

List 900 — Metric Sizes, Medium Right Hand Spiral

HYE



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

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1/4" Diameter Carbide Burs — 1/8" Hardened Steel Shank

HYE

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

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1/4" Diameter Carbide Burs — 1/8" Hardened Steel Shank

HYE

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
									
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
									
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

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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

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1/8" Shank Diameter — 1-1/2" Overall Length — Brazed Carbide

HYE

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

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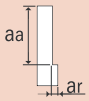
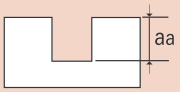
MILLING
Technical



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List 2055 - EXOPRO® UVX-Ni : 5 Flute - Corner Radius

Milling Nickel Based Heat Resistant Alloys

	Side Milling		Slotting	
SFM	125-150		125-150	
Depth of Cut	$a_{a=} \leq 0.5D$ $a_{r=} \leq 0.3D$ 		$a_{a=} \leq 0.5D$ 	
Mill Dia.	RPM	Feed (in/min)	RPM	Feed (in/min)
1/4	2100	11.0	1300	7.0
5/16	1600	10.0	1000	6.5
3/8	1400	10.0	900	6.0
1/2	1100	9.5	700	5.5
5/8	800	9.0	500	5.0
3/4	650	8.0	400	4.5
1	500	7.0	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.

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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)	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)		Clearance (in)
					Aa	Ar			Aa	Ar			Aa	Ar			Aa	Ar	
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

1. 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.
2. For 0.5R - 2.5R, the machining conditions are based on chucking the tool up to the base of the neck.
3. Highly rigid machines and tool holders should be used.
4. Tool vibrations should be kept at a minimum level for maximum accuracy.
5. In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
6. More stable high-feed machining in the corners can be attained by setting an R insertion or decelleration on the CAM or machine side.
7. When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
8. When cutting at greater than the recommended cutting angle, reduce the feed.

continued on next page

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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)	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)		Clearance (in)
					Aa	Ar			Aa	Ar			Aa	Ar			Aa	Ar	
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

1. The above mentioned conditions according to projection lengths are in tended as general guidelines for reference only. Adjustments should be made based on actual milling conditions.
2. For 0.5R - 2.5R, the machining conditions are based on chucking the tool up to the base of the neck.
3. Highly rigid machines and tool holders should be used.
4. Tool vibrations should be kept at a minimum level for maximum accuracy.
5. In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
6. More stable high-feed machining in the corners can be attained by setting an R insertion or decelleration on the CAM or machine side.
7. When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
8. When cutting at greater than the recommended cutting angle, reduce the feed.

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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	Contour Finishing		Aa
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	0.1	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	0.1	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	0.1	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	0.1	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	0.1	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	0.2	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	0.2	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	0.2	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	0.2	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	0.2	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	0.3	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	0.3	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	0.1	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	0.1	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	0.1	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	0.1	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	0.3	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	0.3	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	0.5	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	0.5	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	0.5	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	0.5	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	0.3	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

1. Adjust the speed, feed, and plunge depth in accordance with operating conditions, including the machining shape, machine rigidity, holder rigidity, and work holding force.
2. If the speed and feed rates cannot increase due to equipment performance, operate by reducing the speed and feed rates at the same ratio.
3. High cutting speeds and feed rates can cause cutter wear or reduce machining precision. Therefore, operate by reducing the feed rate as needed.
4. 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.
5. For precise, detailed machining, use a dedicated machine that operates quietly.
6. Operate by keeping the runout at the tip of the end mill below 5 microns (.0002").
7. To perform finish machining with a high level of efficiency, keep the speed and feed rates below 2 times.
8. To finish a flat surface, operate at a speed range with a minimal amount of equipment vibration, making sure than the feed rate does not cause the equipment to wobble.
9. To finish machine a curved surface using the corner radius tool, operate by changing the machining pitch.
10. Set the inclined cut angle approximately between 0.3° and 0.5°.

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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)	aa ar Depth of Cut (in)		Speed (RPM)	Feed (in/min)	aa ar Depth of Cut (in)		Speed (RPM)	Feed (in/min)	aa ar Depth of Cut (in)		Stock to Remove (in)
						Aa	Ar			Aa	Ar			Aa	Ar	
1	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

continued on next page

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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	R1.5	48	0.5°	2,600	102.4	0.0051	0.0354	2,600	35.4	0.0055	0.0354	2,600	31.5	0.0059	0.0472	0.0020
6	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

1. 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.
2. Highly rigid machines and tool holders should be used.
3. Tool vibrations should be kept at a minimum level for maximum accuracy.
4. In the case of linear machining, do not use the Ar value, instead refer to the Aa value.
5. Under general machining conditiona, air-blow cutting method is recommended.
6. More stable high-feed machining in the corners can be attained by setting an R insertion or deceleration on the CAM or machine side.
7. When cutting load fluctuates (in the corners, etc.) or when high-precision is required, be sure to control the rotational speed.
8. When cutting at greater than the recommended cutting angle, reduce the feed.
9. When the depth of cut is less than the specified amount as listed above, the feed rate can be increased up to 150%.
10. 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.

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For Standard LDR (Up to 6:1)

Speeds

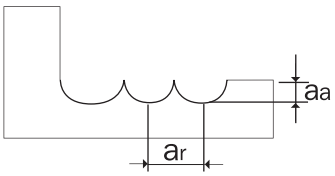
Diameter	Roughing & Semi-finishing			Finishing		
	RPM			RPM		
	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC
1/32	38,400 – 60,000	32,000 – 50,000	24,600 – 40,000	20,000 – 50,000	20,000 – 50,000	20,000 – 50,000
1/16	26,400 – 42,000	22,000 – 35,000	16,600 – 28,000	20,000 – 50,000	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

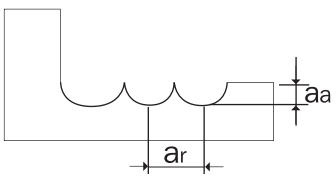
Diameter	Roughing & Semi-finishing			Finishing		
	RPM			RPM		
	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC
1/32	28,800 – 45,000	24,000 – 37,500	18,450 – 30,000	15,000 – 37,500	15,000 – 37,500	15,000 – 37,500
1/16	19,800 – 31,500	16,500 – 26,250	12,450 – 21,000	15,000 – 37,500	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 – 993,845	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

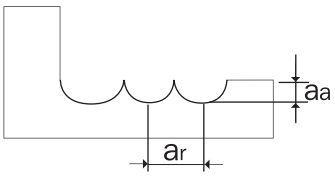
Diameter	Roughing & Semi-finishing			Finishing		
	RPM			RPM		
	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC	30 - 40 HRC	40 - 50 HRC	50 - 60 HRC
1/32	19,200 – 30,000	16,000 – 25,000	12,300 – 20,000	10,000 – 25,000	10,000 – 25,000	10,000 – 25,000
1/16	13,200 – 21,000	11,000 – 17,500	8,300 – 14,000	10,000 – 25,000	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



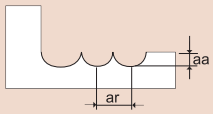
Radial Depths of Cut

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.

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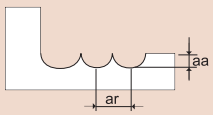
List 3610 - EXOCARB® WXL®: Ball End, Regular Length, 2 Flute

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	Dia / aa / ar D<1/16 / 0.05D / 0.2D 1/16≤D≤1/2 / 0.1D / 0.2D				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
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

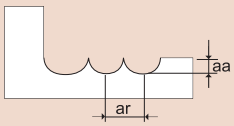
Hardness	–		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed	659 SFM		713 SFM		651 SFM		561 SFM	
Depth of Cut	a_a=0.02D a_r=0.05D		Dia / aa / ar D≤3/16 / 0.02D / 0.05D 1/4≤D≤3/8 / 0.05D / 0.1D D=1/2 / 0.4D / 0.2D				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
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.

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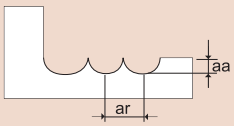
List 3710 - EXOCARB® WXL®: Ball End, Regular Length, 2 Flute

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.

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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	aa=1.2D ar=0.2D						aa=1D ar=0.1D		aa=1D 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
1/16	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

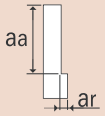
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC	
Work Material	Carbon Steels 1045, 1055		Alloy Steels 4140, 4340		Hardened Steels Pre-hardened Steels D2, H13, 17-4PH		Tool Steels, Hardened Steels Pre-hardened Steels, D2, H13		Hardened Steels Heat Resistant Steels	
Cutting Speed	1,560 SFM		1,380 SFM		960 SFM		600 SFM		130 SFM	
Depth of Cut					Dia / aa / ar D<1/8 / 1.5D / 0.01D 1/8≤D / 1.5D / 0.02D 5/8<D / 1.5D / 0.05D				Dia / aa / ar D≤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.

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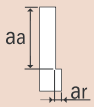
List 3604 - EXOCARB® WXL®: Regular Length, 4 Flute

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 						aa=1.0D ar=0.02D	
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

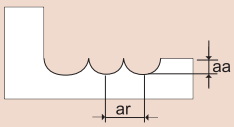
Hardness	–		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Aluminum Copper Alloy		Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels		Hardened Steels Pre-hardened Steels, P20, H13, S7, A2			
Cutting Speed	1,627 SFM		1,231 SFM		803 SFM		482 SFM	
Depth of Cut	Dia / aa / ar D<5/16 / 1.5D / 0.01D 5/16≤D / 1.5D / 0.02D 						Dia / aa / ar D<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
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.

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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	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)
0.1	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
0.2	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
	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
0.3	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
	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
0.4	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
	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
	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
0.5	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

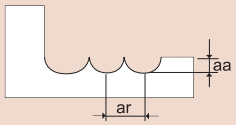
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page

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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	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
	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
1.2	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

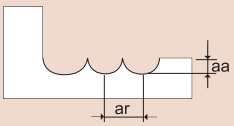
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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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	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)
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	0.0039	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
	22.00	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
	30.00	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
	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
2.0	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
	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
2.5	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

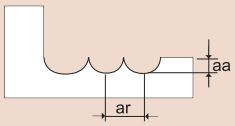
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page

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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

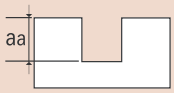
Hardness	–				Up to 32 HRC				33 to 41 HRC				42 to 50 HRC			
Work Material	Aluminum Copper Alloy				Cast Iron, Carbon Steel, Alloy Steels, Stainless, Die Steels				Hardened Steels Pre-hardened Steels, P20, H13, S7, A2							
Cutting Speed	388 SFM				324 SFM				263 SFM				233 SFM			
Depth of Cut																
Mill Dia.	L1	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
	35.00	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
	40.00	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
4.0	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
	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
	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
5.0	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
	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	0.0120

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 3620 - EXOCARB® WXL®: Stub Length, 2 Flute
List 3621 - EXOCARB® WXL®: Regular Length, 2 Flute

Slotting

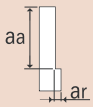
Hardness	–		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels Pre-hardened Steels, Stainless Steels			
Cutting Speed	52~522 SFM		33~251 SFM		33~186 SFM		33~159 SFM	
Depth of Cut	Dia. / aa D<1/8 / 0.3D 1/8≤D / 0.5D							
Mill Dia.	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.

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List 3704 - EXOCARB® WXL®: Stub Length, 4 Flute

Side Milling

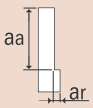
Hardness	–		Up to 32 HRC		33~41 HRC		42~50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels Prehardended Steels Stainless Steels			
Cutting Speed	516~990 SFM		248~254 SFM		143~184 SFM		129~164 SFM	
Depth of Cut			Dia. / aa / ar D<3 / 1.5D / 0.05D 3≤D / 1.5D / 0.10D				aa = 1.0D ar = 0.02D	
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.

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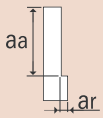
High Speed Milling

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	1597~1625 SFM		1197~1238 SFM		805~820 SFM		480~492 SFM	
Depth of Cut			Dia. / aa / ar D<3 / 1.5D / 0.01D 3≤D / 1.5D / 0.02D				aa = 1.0D ar = 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

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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 D≤20 / 2.5D / 0.05D 20<D / 2.5D / 0.1mm						Dia. / aa / ar D≤8 / 1D / 0.01D 8<D / 1D / 0.5mm		aa = 2.5D ar = 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	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.

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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		
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (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
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

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

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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		
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)
0.7	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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
1.4	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. 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

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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		
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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
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	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	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	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	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	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

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

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List 3791 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length (Continued)

Slotting

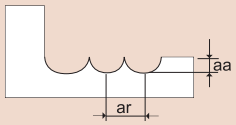
Hardness		–			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		45~376 SFM			41~309 SFM			41~309 SFM			40~258 SFM		
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)
3	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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.

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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	490 SFM	390 SFM	330 SFM	260 SFM	230 SFM	200 SFM	145 SFM
Depth of Cut				aa=0.1D ar=0.2D		aa=0.05D ar=0.1D	

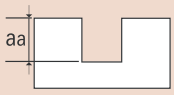
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	32,000	64.0	32,000	64.0	31,500	63.0	25,000	50.0	22,000	35.2	19,000	26.6	14,000	19.6
2	23,500	79.9	19,000	64.6	15,500	52.7	12,500	42.5	11,000	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.

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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	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	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	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	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	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	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

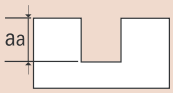
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page

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List 3720 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length (Continued)

Slotting

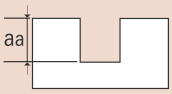
Hardness	–		Up to 32 HRC		33~41 HRC		42~50 HRC	
Work Material	Copper Copper Alloys		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels			
Cutting Speed	52~682 SFM		41~323 SFM		41~241 SFM		41~208 SFM	
Depth of Cut	Dia. / aa D<1 / 0.1D 1≤D<3 / 0.3D 3≤D / 0.5D							
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
4.9	13,500	28.0	6,300	14.2	4,700	6.7	4,000	4.9
5	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	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.

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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	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	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	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	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	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	9,500	21.3	4,800	10.6	3,500	5.1	3,000	3.9

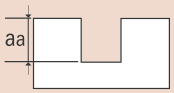
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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List 3721 - EXOCARB® WXL®: 2 Flute, Square End, Stub Length (Continued)

Slotting

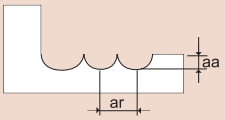
Hardness	–		Up to 32 HRC		33~41 HRC		42~50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels			
Depth of Cut			Dia. / aa D<1 / 0.1D 1≤D<3 / 0.3D 3≤D / 0.5D					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5.1	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	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	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	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	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	4,700	19.7	2,400	9.8	1,700	4.9	1,500	3.7
11	4,400	19.7	2,200	9.8	1,600	4.9	1,100	3.7
12	4,000	20.1	2,000	9.8	1,400	4.9	1,200	3.7
16	3,000	15.7	1,500	7.9	1,100	4.5	800	3.1
18	2,700	14.2	1,300	7.1	900	3.9	700	2.8
20	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.

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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)	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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.4	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
0.4	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
0.4	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
0.4	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
0.4	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
0.4	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

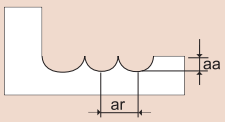
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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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)	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
0.4	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.6	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
0.6	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
0.6	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
0.6	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
0.6	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
0.6	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

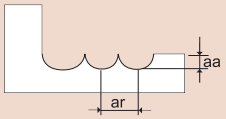
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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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)	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
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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

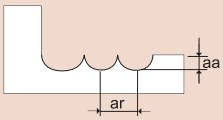
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

continued on next page

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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)	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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	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	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	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	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	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	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	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
2.5	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
2.5	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
2.5	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
2.5	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
2.5	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
2.5	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	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	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	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	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	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	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	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	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

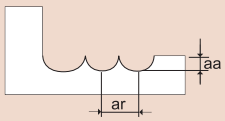
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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List 3712: 2 Flute, Ball End, Stub Length, Pencil Neck

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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.1	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.2	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.3	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
0.4	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
0.4	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
0.4	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
0.4	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
0.4	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

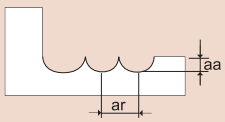
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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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)	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
0.4	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
0.4	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.5	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
0.6	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
0.6	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
0.6	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
0.6	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
0.6	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
0.6	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	354.3	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

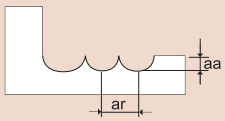
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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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				

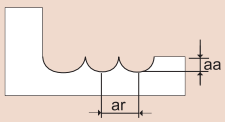
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle	Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)	
						Aa	Ar			Aa	Ar			Aa	Ar			Aa	Ar
0.75	1°	16	0.3°	30,000	94.5	0.0047	0.0118	24,000	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
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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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. 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									

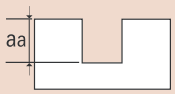
R (mm)	θn	L2 (mm)	Recom'd Cutting Angle	Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)		Speed (RPM)	Feed (in/min)	Depth of Cut (in)	
						Aa	Ar			Aa	Ar			Aa	Ar			Aa	Ar
1.5	0.5°	50	0.3°	10,000	25.6	0.0020	0.0039	8,000	19.7	0.0008	0.0020	7,500	19.7	0.0008	0.0020	6,200	15.7	0.0008	0.0020
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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
1.5	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	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	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	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	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	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	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	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
2.5	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
2.5	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
2.5	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
2.5	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
2.5	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
2.5	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	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	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	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	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	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	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	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	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.

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List 3722: 2 Flute, Square End, Regular 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	52~522 SFM	33~251 SFM	33~186 SFM	33~159 SFM
Depth of Cut	Dia. / aa D<1 / 0.1D 1≤D<3 / 0.3D 3≤D / 0.5D			

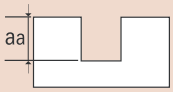
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.1	50,000	3.9	32,000	2.8	32,000	2.4	32,000	1.2
0.2	50,000	5.5	32,000	3.5	32,000	3.0	32,000	1.4
0.3	50,000	6.7	32,000	4.3	32,000	3.1	32,000	2.2
0.4	50,000	7.5	32,000	4.7	32,000	3.5	27,500	2.4
0.5	50,000	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	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	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	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	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	9,500	21.3	4,800	10.6	3,500	5.1	3,000	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.

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List 3722: 2 Flute, Square End, Regular Length (Continued)

Standard Milling

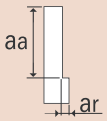
Hardness	–		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels			
Cutting Speed	52~522 SFM		33~251 SFM		33~186 SFM		33~159 SFM	
Depth of Cut			Dia. / aa D<1 / 0.1D 1≤D<3 / 0.3D 3≤D / 0.5D					
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
5.1	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	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	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	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	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	4,700	19.7	2,400	9.8	1,700	4.9	1,500	3.7
11	4,400	19.7	2,200	9.8	1,600	4.9	1,100	3.7
12	4,000	20.1	2,000	9.8	1,400	4.9	1,200	3.7
16	3,000	15.7	1,500	7.9	1,100	4.5	800	3.1
18	2,700	14.2	1,300	7.1	900	3.9	700	2.8
20	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.

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List 3723: 2 Flute, Square End, Long Length

Standard Milling

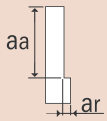
Hardness	–		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels			
Cutting Speed	66~116 SFM		46~76 SFM		39~76 SFM		57~67 SFM	
Depth of Cut	Dia. / aa / ar D<1 / 4D / 0.05D 1≤D / 4D / 0.01D		Dia. / aa / ar D<0.3 / 4D / 0.015D 0.3≤D<1 / 4D / 0.03D 1≤D<3 / 4D / 0.05D 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
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	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	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	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	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	2,000	8.3	1,400	3.7	1,400	2.6	1,300	3.9
5.1	1,900	8.3	1,400	3.7	1,400	2.6	1,200	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.

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List 3723: 2 Flute, Square End, Long Length (Continued)

Standard Milling

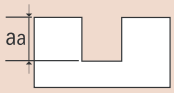
Hardness	–		Up to 32 HRC		33 to 41 HRC		42 to 50 HRC	
Work Material	Copper Copper Alloy		Mild Steels Carbon Steels		Hardened Steels, Pre-hardened Steels Stainless Steels			
Cutting Speed	66~116 SFM		46~76 SFM		39~76 SFM		57~67 SFM	
Depth of Cut	Dia. / aa / ar D<1 / 4D / 0.05D 1≤D / 4D / 0.01D		Dia. / aa / ar D<0.3 / 4D / 0.015D 0.3≤D<1 / 4D / 0.03D 1≤D<3 / 4D / 0.05D 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
5.2	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	1,600	8.3	1,200	3.7	1,200	2.6	1,000	3.9
8	1,100	7.9	900	3.7	900	2.6	800	3.9
10	900	7.9	700	3.5	700	2.6	630	3.7
12	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.

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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			Dia. / aa D<1 / 0.1D 1≤D<3 / 0.3D 3<D / 0.5D						Dia. / aa D<1 / 0.2D 1≤D / 0.5D		Dia. / aa D<1 / 0.1D 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

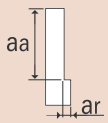
1. Use a rigid and precise machine and holder.
2. When chattering occurs, reduce the speed and feed simultaneously.
3. Use a suitable cutting fluid with high smoke retardant.

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List 3771: 4 Flute, Corner Radius, Regular Length

Side Milling

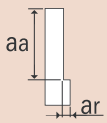
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steel Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	396 SFM		294 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=0.1D		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
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	Dia. / a_a / a_r D<3 / 1.5D / 0.01D 3≤D / 1.5D / 0.02D								Dia. / a_a / a_r D<8 / 1.0D / 0.01D 8≤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
6	24,000	220.8	21,000	184.8	14,760	118.1	9,000	72.0	4,800	32.6
7	20,400	212.2	18,000	172.8	13,200	121.4	7,920	69.7	4,200	33.6
8	18,840	226.1	16,320	176.3	12,000	124.8	7,200	72.0	3,840	33.8
9	17,220	222.2	15,060	176.4	10,980	120.2	6,600	69.6	3,480	32.5
10	15,600	218.4	13,800	176.6	9,960	115.5	6,000	67.2	3,120	31.2
11	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.

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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)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)
1	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	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	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	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	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	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	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	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	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	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	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	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	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	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	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

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List 3794: 4 Flute, Square End, Long Neck, Stub Length (Continued)

Slotting

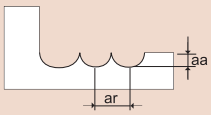
Hardness		–			Up to 32 HRC			33~41 HRC			42~50 HRC		
Work Material		Copper Copper Alloy			Mild Steels Carbon Steels			Hardened Steels Pre-hardened Steels Stainless Steels					
Cutting Speed		173~374 SFM			144~309 SFM			130~309 SFM			101~248 SFM		
D (mm)	L2 (mm)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)	Speed (RPM)	Feed (in/min)	a_a (in)
2	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	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	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	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	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	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	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.

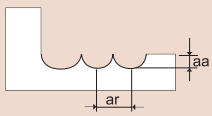
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List 4410: Ball End, Regular Length, 2 Flute

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

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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

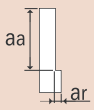
High Speed Light Milling

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

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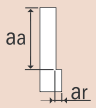
List 4440: Regular Length, Multiple Flute

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=1.5D a_r=0.05D arMax=less than 0.040"		a_a=1.5D a_r=0.03D arMax=less than 0.020"		a_a=1D a_r=0.02D arMax=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	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

	aa	ar
D≤1.5	1.5D	0.02D
1.5<D≤2.5	1.5D	0.05D
2.5<D	1.5D	0.1D

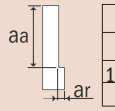
High Speed Light Milling

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=0.05D arMax=less than 0.020"		a_a=1D a_r=0.03D arMax=less than 0.020"		a_a=1D a_r=0.02D arMax=less than 0.008"		a_a=1D a_r=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	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

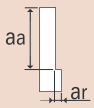
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List 4540: Regular Length, Multiple Flute

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	 aa / ar D≤1.5: 1.5D / 0.02D 1.5<D≤2.5: 1.5D / 0.05D 2.5<D: 1.5D / 0.1D arMax=less than 0.040"				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"			
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

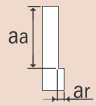
High Speed Light Milling

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	Feed in/min	Speed RPM	Feed in/min
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

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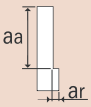
List 4471: Regular Length, Four Flute, Corner Radius

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	 aa / ar D=1/16: 1.5D / 0.05D D>1/16: 1.5D / 0.10D arMax=less than 0.04"				a_a=1.5D a_r=0.05D a_r Max=less than 0.04"		a_a=1.5D a_r=0.03D a_r Max=less than 0.02"		a_a=1.0D a_r=0.02D a_r Max=less than 0.02"	
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

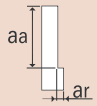
Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut			a_a=1.0D a_r=0.05D a_r Max = less than 0.02"		a_a=1.0D a_r=0.03D a_r Max = less than 0.02"		a_a=1.0D a_r=0.02D a_r Max = less than 0.008"		a_a=1.0D a_r=0.01D a_r Max = 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	Feed in/min
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.

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List 4571: Regular Length, 4 Flute, Corner Radius

Standard Milling

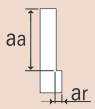
Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut					aa=1.5D ar=0.05D arMax=less than 0.04"		aa=1.5D ar=0.03D arMax=less than 0.02"		aa=1.0D ar=0.02D arMax=less than 0.02"	
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

	aa	ar
D=2	1.5D	0.05D
D>2	1.5D	0.10D

arMax=less than 0.04"

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

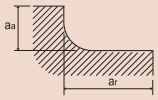
Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut			aa=1.0D ar=0.05D arMax=less than 0.02"		aa=1.0D ar=0.03D arMax=less than 0.02"		aa=1.0D ar=0.02D arMax=less than 0.008"		aa=1.0D 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	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.

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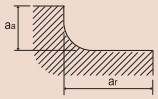
List 4470: Regular Length, Corner Radius, High Feed

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	 CR=Corner Radius aa: CR≤1/16 0.2xCR; CR>1/16 0.02" ar: 0.5D				aa: CR≤1/16" 0.2xCR; CR>1/16" 0.016" ar: 0.5D		aa: CR≤1/16" 0.1xCR; CR>1/16" 0.008" ar: 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

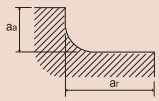
Hardness	Up to 40 HRC		40 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Tool Steels Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut	 CR=Corner Radius a_a=0.1CR a_r=0.3D				aa: CR≤1/16" 0.1xCR; CR>1/16" 0.008" ar: 0.3D		aa: CR≤1/16" 0.05xCR; CR>1/16" 0.004" 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
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.

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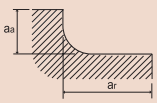
List 4570: Regular Length, Corner Radius, High Feed

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 CR≤2: aa 0.2xCR, ar 0.5D CR>2: aa 0.02", ar 0.5D				CR≤2: aa 0.2xCR, ar 0.5D CR>2: aa 0.016", ar 0.5D		CR≤2: aa 0.1xCR, ar 0.5D CR>2: aa 0.008", ar 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 a_a=0.1xCR a_r=0.3D				CR≤2: aa 0.1xCR, ar 0.3D CR>2: aa 0.008", ar 0.3D		CR≤2: aa 0.05xCR, ar 0.3D CR>2: aa 0.004", 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
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.

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List 4592: Corner Radius, Stub Length, 2 Flute, Long Neck, Rib Processing

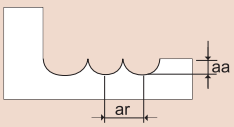
Standard Milling

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									a_a=120% a_r=120%		a_a=100% a_r=100%		a_a=60% a_r=80%	
		aa (in)						ar (in)	%'s of DOC's suggested on the left					
		R0.05	R0.1	R0.2	R0.3	R0.5	R1							
Dia.	L1								Speed RPM	Feed in/min	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
	1.5	0.00028	–	–	–	–	–	0.0047	31,900	17.9	26,400	14.8	19,800	11.1
	2	0.00020	0.00031	–	–	–	–	0.0040	31,900	12.8	26,400	10.6	19,800	7.9
	3	0.00008	0.00012	–	–	–	–	0.0030	27,500	4.4	23,100	3.7	18,700	3.0
	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
	2	0.00028	0.00039	–	–	–	–	0.0059	31,900	17.9	26,400	14.8	18,700	10.5
	3	0.00012	0.00020	–	–	–	–	0.0041	29,700	7.1	24,200	5.8	17,600	4.2
	4	0.00008	0.00012	–	–	–	–	0.0004	27,500	4.4	23,100	3.7	17,050	2.7
	5	0.00004	0.00008	–	–	–	–	0.0018	24,200	1.9	22,550	1.8	16,500	1.3
	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
	4	–	0.00020	–	–	–	–	0.0048	27,500	11.0	22,000	8.8	16,500	6.6
	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
	6	–	0.00028	0.0006	–	–	–	0.0094	23,100	27.7	19,800	23.8	14,850	17.8
	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
	6	0.00020	0.00039	0.0008	0.0010	–	–	0.0083	22,000	35.2	18,700	29.9	13,200	21.1
	8	0.00012	0.00024	0.0005	0.0006	–	–	0.0071	17,600	17.6	16,500	16.5	12,650	12.7
	10	0.00008	0.00016	0.0003	0.0004	–	–	0.0035	16,500	9.9	15,400	9.2	12,100	7.3
	12	0.00004	0.00012	0.0002	0.0003	–	–	0.0024	16,500	6.6	14,300	5.7	12,100	4.8
	16	–	–	0.0002	–	–	–	0.0012	13,200	5.3	13,200	5.3	11,550	4.6
	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
	8	–	–	0.0007	0.0009	–	–	0.0099	15,400	21.6	13,200	18.5	11,000	15.4
	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
	8	–	–	0.0010	0.0015	–	–	0.0150	13,200	26.4	11,000	22.0	7,700	15.4
	10	–	–	0.0007	0.0011	–	–	0.0115	13,200	18.5	11,000	15.4	7,700	10.8
	12	–	–	0.0005	0.0007	–	–	0.0106	13,200	13.2	11,000	11.0	7,150	7.2
	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
	10	–	0.00063	0.0013	0.0019	0.0024	–	0.0201	9,900	25.7	7,700	20.0	6,600	17.2
	12	–	0.00039	0.0008	0.0012	0.0015	–	0.0165	9,900	15.8	7,700	12.3	6,600	10.6
	16	–	0.00024	0.0005	0.0007	0.0009	–	0.0142	9,900	9.9	7,700	7.7	6,050	6.1
	20	–	0.00016	0.0003	0.0005	0.0006	–	0.0071	7,700	4.6	7,150	4.3	5,500	3.3
	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
	20	–	–	0.0008	–	0.0015	–	0.0177	7,700	12.3	6,600	10.6	4,950	7.9
	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
	12	–	–	0.0016	0.0024	0.0030	–	0.0354	8,800	28.2	7,700	24.6	5,500	17.6
	16	–	–	0.0011	0.0017	0.0020	–	0.0283	6,600	14.5	6,600	14.5	5,500	12.1
	20	–	–	0.0007	0.0011	0.0013	–	0.0241	6,600	9.2	6,600	9.2	5,500	7.7
	25	–	–	0.0005	0.0007	0.0009	–	0.0213	6,600	6.6	6,600	6.6	4,950	5.0
	30	–	–	0.0003	0.0005	0.0006	–	0.0106	5,500	3.3	5,500	3.3	4,400	2.6
	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
	20	–	–	0.0013	0.0019	0.0024	0.0079	0.0402	5,500	14.3	4,400	11.4	4,400	11.4
	25	–	–	0.0008	0.0012	0.0015	0.0024	0.0321	5,500	8.8	4,400	7.0	4,400	7.0
	30	–	–	0.0006	0.0008	0.0010	0.0016	0.0293	5,500	6.6	4,400	5.3	4,400	5.3
	40	–	–	0.0003	0.0005	0.0006	0.0009	0.0142	4,400	2.6	4,400	2.6	4,400	2.6
	50	–	–	0.0002	0.0003	0.0004	0.0006	0.0085	4,400	1.8	4,400	1.8	3,850	1.5

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List 4590: Ball End - Stub Length - 2 Flute - Long Neck - Rib Processing

Standard Milling

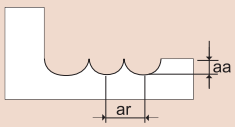
Hardness	Up to 20 HRC				20 to 30 HRC				30 to 38 HRC			
Work Material	Mild Steels, Carbon Steels, Cast Iron				Alloy Steels, Tool Steels				Hardened Steels, Pre-hardened Steels			
Depth of Cut												
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed 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

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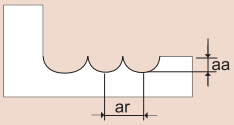
List 4590: Ball End - Stub Length - 2 Flute - Long Neck - Rib Processing (Continued)

Standard Milling

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	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
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

List 4590: Ball End - Stub Length - 2 Flute - Long Neck - Rib Processing (Continued)

Standard Milling

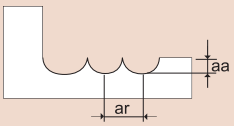
Hardness	38 to 45 HRC				45 to 55 HRC				55 to 60 HRC			
Work Material	Stainless Steels, Hardened Steels Pre-hardened Steels				Hardened Steels				Hardened Steels			
Depth of Cut												
Mill Dia.	L1	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	aa (in)	ar (in)	Speed RPM	Feed in/min	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
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

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List 4590: Ball End - Stub Length - 2 Flute - Long Neck - Rib Processing

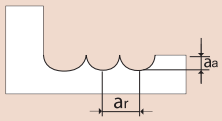
Standard Milling

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	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

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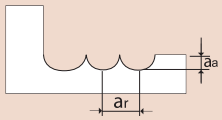
List 4430: True 4 Flute, Ball End, Regular Length

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

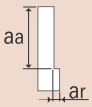
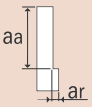
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	1080 SFM		870 SFM		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.

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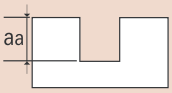
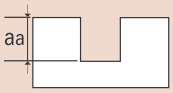
List 4445: 4 Flute, Corner Radius, High Helix, Regular Length

Standard 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	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	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	a_r=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	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.

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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

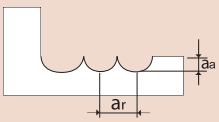
Hardness	Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 65 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Hardened Steels Pre-hardened Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	1,100 SFM		1,050 SFM		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.

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List 4513: Ball Nose, Regular Length, 2 Flute, Sphere Type

Profiling

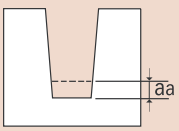
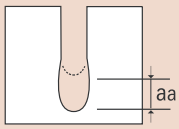
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Tool		Hardened Steels Pre-hardened Steels		Stainless Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	720 SFM		640 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	Feed in/min	Speed RPM	Feed in/min
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.

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List 4581: 4 Flute, Ball End, Tapered

Standard Milling

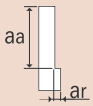
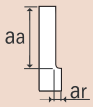
Hardness	Up to 20 HRC			20 to 30 HRC			30 to 38 HRC			38 to 45 HRC			45 to 55 HRC		
Work Material	Mild Steels Carbon Steels Cast Iron			Alloy Steels Tool Steels			Hardened Steels Pre-hardened Steels			Stainless Steels Hardened Steels			Hardened Steels		
Cutting Speed	400 SFM			330 SFM			300 SFM			240 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.

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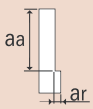
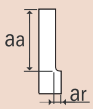
List 4541: 6 Flute, Corner Radius, Regular Length

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 D≤1.5 / 1.5D / 0.02D 1.5<D≤2.5 / 1.5D / 0.05D 2.5<D / 1.5D / 0.1D								Dia / aa / ar D≤1.5 / 1.5D / 0.02D 1.5<D / 1.5D / 0.05D				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	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

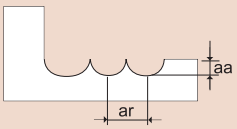
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Tool		Hardened Steels Pre-hardened Steels		Stainless Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Cutting Speed	1,450 SFM		1,300 SFM		960 SFM		800 SFM		500 SFM		400 SFM	
Depth of Cut	Dia / aa / ar D≤12 / 1D / 0.01D 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.

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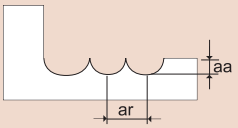
List 9010: MAX Ball Stub Length - 2 Flute
List 9110: MAX Ball Stub Length - 2 Flute
List 9011: MAX Ball Long Shank - 2 Flute
List 9111: MAX Ball Long Shank - 2 Flute

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										
					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			
									D≤10 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
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										
					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			
									D≤3/8 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
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.

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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	Hardened Steels					
Cutting Speed	258~598 SFM		258~495 SFM		196~397 SFM	
Depth of Cut (mm)	a_a=100%	a_r=100%	a_a=80%	a_r=80%	a_a=50%	a_r=50%
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.5	50,000	39.4	50,000	39.4	38,000	0.0
1	50,000	59.1	48,000	57.1	38,500	45.3
1.5	38,500	61.0	32,000	51.2	25,500	39.4
2	29,000	47.2	24,000	39.4	19,000	27.6
3	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

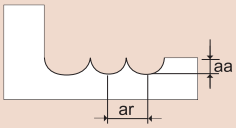
Hardness	Up to 50 HRC		50 to 60 HRC		60 to 68 HRC	
Work Material	Hardened Steels					
Cutting Speed	155~361 SFM		155~309 SFM		119~240 SFM	
Depth of Cut (mm)	a_a=100%	a_r=100%	a_a=60%	a_r=60%	a_a=40%	a_r=40%
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.5	30,000	23.6	30,000	23.6	23,000	18.5
1	30,000	35.4	30,000	34.3	23,000	27.2
1.5	23,000	36.6	19,000	30.7	15,500	23.6
2	17,500	28.3	14,500	23.6	11,500	16.5
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.

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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.

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List 9192: 2 Flute, Ball End, Super Long Neck, CBN, Stub Length

Standard Milling

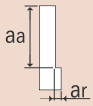
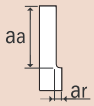
Hardness	30 to 45 HRC		45 to 55 HRC		55 to 60 HRC		60 to 68 HRC	
Work Material	Hardened Steels Pre-hardened Steels		Hardened Steels					
Depth of Cut	a_a=0.015D a_r=0.04D						a_a=0.01D a_r=0.03D	
Mill Dia. (mm)	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.4	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.

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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	Dia / aa / ar D≤1.5 / 1.5D / 0.02D 1.5<R / 1.5D / 0.05D 2.5<D / 1.5D / 0.1D								Dia / aa / ar D≤1.5 / 1.5D / 0.02D 1.5<R / 1.5D / 0.05D				a_a=1D a_r=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	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

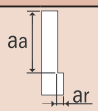
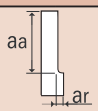
1. Use a rigid and precise machine and holder.
2. We suggest using an air blow. If using cutting fluids, use a high quality fluid with smoke retardant.
3. When the length of tool extension from the machine is long, reduce the speed and feed.

continued on next page

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List 9140: MAX-HARD Regular Length - Multiple Flute (Continued)
List 9144: Regular Length - Multiple Flute - Corner Radius (Continued)

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	Dia / aa / ar D≤12 / 1D / 0.01D 12<R / 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. 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.

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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

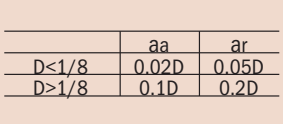
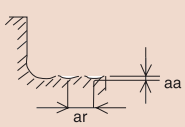
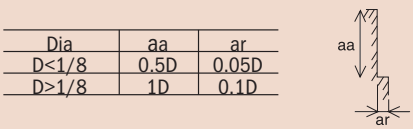
Work Material	Graphite		Green Ceramic Thermoset Plastic		Fiber Filler Plastics	
Cutting Speed	160-300 SFM		80-140 SFM		130-800 SFM	
Depth of Cut	Note 1: Please take light depth of cut when you run for High End Speed/Feed. Note 2: Please reduce speed and feed by 20% when L/D>3D. Note 3: Please reduce speed and feed by 30% when slotting > 0.5D.					
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

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List 7020 (continued) Stub Length - 2 Flute
List 7120 (continued) Regular Length - 2 Flute
List 7040 (continued) Inch - Stub Length - 4 Flute
List 7041 (continued) Long Length - 4 Flute
List 7042 (continued) Stub Length - 4 Flute Long Shank
List 7072 (continued) Inch, Stub Length - 4 Flute - Long Shank - Corner Radius
List 7010 (continued) Long Length - 2 Flute
List 7110 (continued) Ball End - Regular Length - 2 Flute
List 7030 (continued) Ball End - Regular Length - 4 Flute
List 7031 (continued) Ball End - Long Length - 4 Flute
List 7032 (continued) Inch - Ball End - Stub Length - 4 Flute - Long Shank
List 7173 (continued) Metric - Ball End - Stub Length - 4 Flute - Long Shank
List 7132 (continued) Metric - Stub Length - 4 Flute - Long Shank - Corner Radius
List 7140 (continued) Metric - Stub Length - 4 Flute

Standard

Work Material	Aluminum Alloys		MMC*		Copper Alloys	
Cutting Speed	160-800 SFM		100-750 SFM		328-649 SFM	
Depth of Cut						
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)

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List 7230: Ball End - Long Length - 2 & 4 Flute
List 7231: Ball End - Regular Length - 2 & 4 Flute - Long Reach

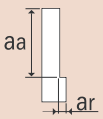
Die Mold Series

Work Material	Graphite		
Cutting Speed	160-300 SFM		
Depth of Cut	Note 1: Please take light depth of cut when you run for High End Speed/Feed. Note 2: Please reduce speed and feed by 20% when L/D>3D. Note 3: Please reduce speed and feed by 30% when slotting > 0.5D.		
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

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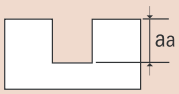
List 2050: Regular Length - 4 Flute
List 2052: Regular Length - 4 Flute - Corner Radius

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

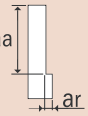
Hardness	–		Up to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		–	
Work Material	Mild Steels Carbon Steels Cast Iron		Alloy Steels Pre-hardened Steels Tool Steels		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels		Stainless Steels Titanium Alloys		High Temp. Alloys Inconel Hastelloy	
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	9932	26.8	8098	25.1	7487	20.2	7029	17.6	6876	17.2	2414	5.1
3/16	6621	31.1	5399	31.3	4991	22.5	4686	22.0	4584	21.5	1609	6.0
1/4	4966	28.3	4049	23.9	3744	21.7	3514	21.8	3438	21.0	1207	5.7
5/16	3973	24.2	3239	22.0	2995	21.9	2812	20.8	2750	20.4	966	6.3
3/8	3311	24.5	2699	22.9	2496	19.7	2343	19.2	2292	18.6	805	5.9
7/16	2838	22.7	2314	24.3	2139	18.2	2008	17.7	1965	17.5	690	5.8
1/2	2483	21.1	2025	17.8	1872	17.6	1757	16.7	1719	16.5	604	5.6
5/8	1986	22.2	1620	17.2	1497	14.7	1406	14.6	1375	14.6	483	4.4
3/4	1655	19.9	1350	15.4	1248	14.4	1171	13.7	1146	13.4	402	4.5
1	1242	17.8	1012	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.

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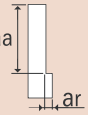
List 3915: 4 Flute, Low Helix, Corner Chamfer
List 3920: 4 Flute, High Helix, Corner Chamfer

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 Prehardened Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V	
Depth of Cut	$a_a \le 1.5D$ $a_r \le 0.3D$ 											
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
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
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
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
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
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. 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 properites.
4. During Dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

Slotting

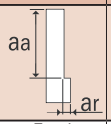
Hardness					Up to 30 HRC		Up to 45 HRC					
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels		Hardened Steel Prehardened Steel		Stainless Steel 304		Titanium Alloy Ti-6AL-4V	
Depth of Cut	$a_a \le 1D$ $a_r \le 0.472D$ 											
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	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
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
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
14	1,590	18.3	2,505	24.9	1,820	13.5	1,590	11.2	1,370	9.4	910	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
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. 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 properites.
4. During Dry (no fluid) milling, please use air blow to remove disposable chips from the milling area and to eliminate chip packing.

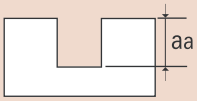
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List 2015: Regular Length, 4 Flute, Roughing

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

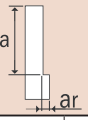
Slotting

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

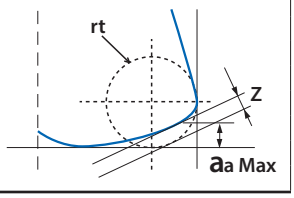
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List 2080: 6 & 8 Flute, Inch
List 2081: 6 & 8 Flute, Metric

Contour Milling

Work Material	Titanium Alloy Ti-6AL-4V
Cutting Speed	165 - 330 SFM
Depth of Cut	$a_a \leq 0.035D$ $a_r \leq 0.39D$ 

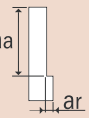
Mill Dia. in	Mill Dia. mm	Speed RPM	Feed in/min	Ramping Angle	R (rt)	Z
5/8	-	1500	164	2°	0.031	0.016
-	16	1490	175		0.033	0.018
3/4	-	1250	132		0.037	0.021
-	20	1190	140		0.039	0.022
-	25	850	189		0.047	0.029
1	-	935	192		0.049	0.030



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.

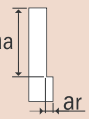
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List 2843: 3 Flute for Aluminum Alloy
List 2873: 3 Flute, Corner Radius
List 2844: 3 Flute, Coolant-Through, Square End
List 2874: 3 Flute, Coolant-Through, Corner Radius

Work Material	Aluminum Alloy	
Depth of Cut	$a_a \le 0.4D$ $a_r \le 1D$ 	
Mill Dia.	Speed RPM	Feed in/min
5/8	≤ 33000	≤ 945
3/4	≤ 33000	≤ 1015
1	≤ 33000	≤ 1285

1. The cutting conditions above are set for a highly-efficient machining center for aluminum alloys.
2. For lists 2844, 2874, (non coolant through) the chips must be removed forcibly by cutting fluid or air blow.

List 2943: 3 Flute for Aluminum Alloy
List 2973: 3 Flute, Corner Radius
List 2944: 3 Flute, Coolant-Through, Square End
List 2974: 3 Flute, Coolant-Through, Corner Radius

Work Material	Aluminum Alloy	
Depth of Cut	$a_a \le 0.4D$ $a_r \le 1D$ 	
Mill Dia.	Speed RPM	Feed in/min
20	≤ 33000	≤ 1015
25	≤ 33000	≤ 1285

1. The cutting conditions above are set for a highly-efficient machining center for aluminum alloys.
2. For lists 2944, 2974 (non coolant through) the chips must be removed forcibly by cutting fluid or air blow.

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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.

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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

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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

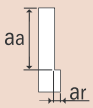
Slotting

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

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List 8120: Regular Length - 2 Flute

Side Milling

Work Material	Aluminum Alloys		Copper Alloys	
Cutting Speed	650 SFM		245 SFM	
Depth of Cut	aa=1.5D ar=0.1D			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
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

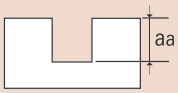
1. Use a rigid and precise machine and holder.
2. Use a water soluble cutting fluid.
3. Please adjust the speed and feed when the cutting depth is large or when machines with low rigidity are used.

continued on next page

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List 8120: Regular Length - 2 Flute (Continued)

Slotting

Work Material	Aluminum Alloys		Copper Alloys	
Cutting Speed	490 SFM		245 SFM	
Depth of Cut	a_a=1D			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
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.

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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

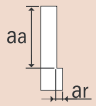
Work Material	Aluminum Alloy A6061, A7075		Aluminum Alloy Casting	
Cutting Speed	1190 SFM		1100 SFM	
Depth of Cut	Aa = 0.1D Ar = 0.2D			
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1/8	36,366	202.3	33,616	175.6
3/16	24,244	206.7	22,411	180.1
1/4	18,183	209.5	16,808	184.6
5/16	14,547	214.2	13,446	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.

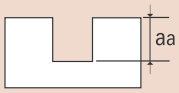
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List VG441: 4 Flute
List VG434: 4 Flute - Corner Radius
List VG436: 4 Flute - Corner Chamfer

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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=1.25D 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

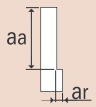
Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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=0.25D	
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	11240	35.8	8860	21.3	6,900	15.4	5,500	10.7	4,890	11.6	5,050	10.6	2,750	7.3
3/16	7495	38.5	5910	23.9	4,600	17.5	3,670	11.5	3,260	12.8	3,350	11.5	1,835	8.1
1/4	5620	37.9	4430	25.5	3,450	17.2	2,750	12.2	2,445	14.0	2,550	11.8	1,375	8.1
5/16	4500	39.4	3545	26.8	2,750	18.3	2,200	12.9	1,955	14.2	2,000	11.8	1,100	9.0
3/8	3750	38.2	2955	25.5	2,300	17.5	1,835	12.2	1,630	12.8	1,700	11.6	915	8.3
7/16	3210	37.1	2530	24.7	1,950	16.7	1,575	11.8	1,395	12.8	1,450	11.8	785	8.3
1/2	2810	37.2	2215	24.2	1,700	16.1	1,375	11.5	1,225	12.8	1,300	12.1	690	8.1
5/8	2250	33.1	1775	22.5	1,400	15.9	1,100	11.0	975	11.6	1,000	10.0	550	7.6
3/4	1875	31.1	1480	20.9	1,150	14.4	920	10.0	815	10.5	850	9.4	460	6.9
1	1405	26.7	1110	18.7	875	12.6	685	8.6	610	9.8	650	9.0	345	6.5

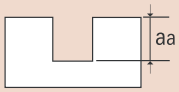
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List VG446: 4 Flute - Reduced Neck
List VG464: 4 Flute - Extended Length

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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	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

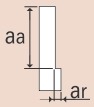
Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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	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

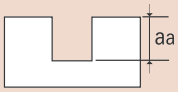
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List VG441BN: 4 Flute - Ball Nose

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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	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

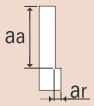
Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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=0.2D	
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	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

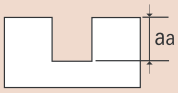
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List VG541: 5 Flute
List VG534: 5 Flute - Corner Radius

Side Milling

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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

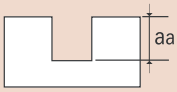
Slotting

Hardness	Up to 25 HRC		25 to 30 HRC		30 to 35 HRC		35 to 45 HRC		45 to 50 HRC		Less than 40 HRC		Less than 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

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List HP421

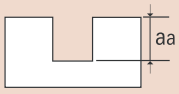
Slotting (Fractional)

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	Dia / aa: D<1/16 — 0.1D; 1/16<D<1/8 — 0.3D; 1/8<D — 0.5D					Dia / aa: D<1/16 — 0.02D; 1/16<D — 0.05D	Dia / aa: D<1/16 — 0.01D; 1/16<D<1/8 — 0.02D; 1/8<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
1/16	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	Hardened Steels Pre-hardened Steels Free Cutting	Hardened Steels Pre-hardened Steels Stainless Steels Non -Free Cutting	Hardened Steels	Hardened Steels
Cutting Speed	360 SFM	330 SFM	260 SFM	220 SFM	180 SFM	120 SFM	80 SFM
Depth of Cut	Dia / aa: D<1 — 0.1D; 1<D<3 — 0.3D; 3≤D — 0.5D					Dia / aa: D<1 — 0.02D; 1≤D — 0.05D	Dia / aa: D<1 — 0.01D; 1<D<3 — 0.02D; 3<D — 0.05D

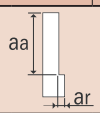
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	30,888	8.0	28,080	7.4	20,880	7.0	18,000	5.0	15,840	3.7	10,080	1.7	7,272	1.4
2	17,424	8.4	15,840	7.6	12,096	7.0	10,080	5.0	9,144	4.0	5,688	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 see page 922.

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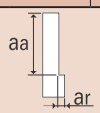
List HP441

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		D<1/8: aa 1.5D, ar 0.05D; 1/8<D: aa 1.5D, ar 0.1D				aa=1D ar=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	Speed RPM	Feed in/min
1/16	20825	15.4	18070	12.5	15670	11.2	10870	4.7	9915	4.2	6740	2.6	5400	1.6
3/32	16305	21.5	13720	18.1	11550	14.5	8075	5.4	6885	4.9	4185	2.9	2950	2
1/8	12060	28.4	10205	24	8700	16.9	7125	5.9	5475	5.2	3180	2.9	2290	2.2
5/32	9630	29.9	8060	25	7890	17.5	5170	6.3	4475	5.3	2655	3.3	1815	2.2
3/16	8075	33.7	6740	28.3	5930	19.4	4455	6.5	3935	5.7	2360	3.5	1565	2
1/4	7060	34.4	5090	28.9	4235	20	3375	6.9	3030	6.1	1775	3.3	1205	1.9
5/16	4820	33.6	4000	27.8	3330	19.8	2660	6.9	2360	6.1	1390	3.2	960	1.7
3/8	4005	33.6	3360	27.8	2795	19.8	2225	6.9	1970	6.1	1200	3.8	800	1.7
7/16	3440	33.6	2870	27.8	2405	19.8	1895	6.9	1690	6.1	1035	3.4	690	1.5
1/2	3010	32.7	2510	27.5	2090	19.7	1655	6.9	1475	6	900	2.7	600	1.3
5/8	2355	31.4	1995	26.1	1630	19.6	1325	6.1	1200	5.4	720	2.3	470	0.9
3/4	1920	29.7	1605	24.9	1350	15.7	1095	5	975	4.5	580	1.7	380	0.9
1	1485	23.3	1240	19.5	1050	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		D<1/8: aa 1.5D, ar 0.05D; 1/8<D: aa 1.5D, ar 0.1D				aa=1D ar=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	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

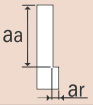
For High Speed see page 922.

continued on next page

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List HP421, HP441

High Speed Light Milling (Fractional)

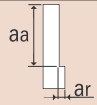
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC	
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels	
Cutting Speed	1,310 SFM		1,150 SFM		820 SFM		490 SFM		260 SFM	
Depth of Cut										
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

	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

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										
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

	aa	ar
D<8	1.5D	0.01D
8<D<16	1.5D	0.02D
16≤D	1.5D	0.05D

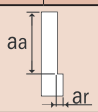
	aa	ar
D<8	1D	0.01D
8<D	1D	0.02D

Reduce feeds 50% for Series HP421 high speed Light Milling.

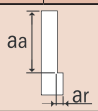
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List HP460

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

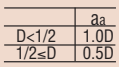
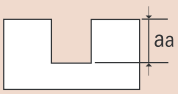
Side Milling (Metric)

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

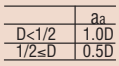
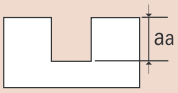
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List HP460 (continued)

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					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
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

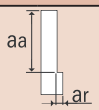
Slotting (Metric)

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					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
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

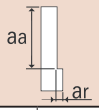
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List HP450

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		Alloyed 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

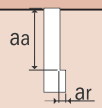
Side Milling (Metric)

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		Alloyed Steels Tool Steels		Hardened Steels Tool Steels		Hardened Steels Tool Steels		Titanium Alloy		Nickel Base Aigh-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

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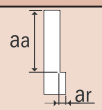
List HP451

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

List HP451, HP453, HP456

Side Milling (Metric)

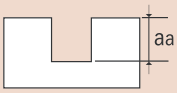
Hardness	–		–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Aluminum Alloy		Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys	
Cutting Speed	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
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

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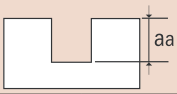
List HP451 (continued)

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	aa=1.0D								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	Speed RPM	Feed in/min
1/8	4,260	16.7	9,020	31.1	7,450	22	4,920	14	3,000	8.4	11,030	45
1/4	2,250	14.6	4,770	28.7	3,900	24.8	2,620	13.4	1,570	9.1	5,800	39.4
5/16	1,700	13	3,600	26	2,970	22.8	1,960	13.4	1,200	9.1	4,400	37.4
3/8	1,350	11.8	2,880	23.6	2,320	18.5	1,550	12.2	970	8.3	3,500	35.4
1/2	1,150	11.4	2,430	22.8	1,950	17.7	1,310	11.4	780	7.9	2,900	31.5
5/8	850	18.9	1,800	18.9	1,480	26.8	980	8.7	600	7.1	2,200	27.6
3/4	675	16.5	1,620	16.5	1,160	12.6	770	7.1	480	5.5	1,750	23.6

List HP451, HP453, HP456

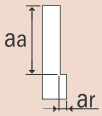
Slotting (Metric)

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	361 SFM		138 SFM		295 SFM		243 SFM		163 SFM		111 SFM	
Depth of Cut	aa=1.0D								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	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

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List HP400

Side Milling (Fractional)

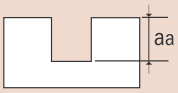
Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC	
Work Material	Cast Iron		Medium Steels Mild Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels		Stainless Steels Hardened Steels	
Cutting Speed	320-460 SFM		262-393 SFM		230-328 SFM		164-262 SFM		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

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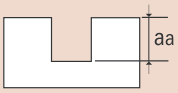
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List HP400

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	a_a=0.75D						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
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

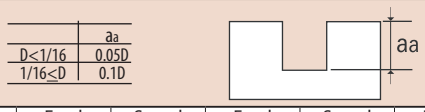
Slotting (Metric)

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	a_a=0.75D						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
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

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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							aa=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
1/32	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	6,510	14.8	5,510	12.2	5,010	8	3,000	2.4	1,500	0.9
3/16	5,340	12	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%.

List HP410, HP410L

Slotting (Metric)

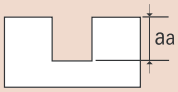
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless 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							aa=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
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%.

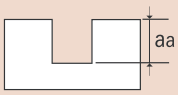
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List HP411

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		Hardened Steels Pre-hardened Steels (Free-Cutting)		Hardened Steels Pre-hardened Steels (Nonfree-Cutting)		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
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
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

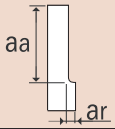
Slotting (Metric)

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

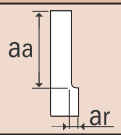
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List HP455

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	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
1/8	4,806	13.1	4,332	5.2	3,444	4
5/32	3,780	13.1	3,420	5.2	2,754	4
3/16	3,186	13.9	2,886	5.2	2,292	4
7/32	2,742	14.2	2,454	5.2	1,956	4
1/4	3,240	14.2	2,130	5.2	1,716	4
9/32	2,142	14.2	1,896	5.2	1,554	4
5/16	1,884	14.2	1,668	5.2	1,380	4
3/8	1,590	14.2	1,440	5.2	1,158	4
7/16	1,368	14.2	1,242	5.2	990	4
1/2	1,194	14.6	1,080	5.2	864	4
9/16	1,056	15.7	954	5.2	762	4
5/8	948	16.6	864	5.2	684	4
3/4	768	16.7	696	4.9	558	4
7/8	672	15.1	612	4.4	486	3.6
1	588	13.1	528	4	432	3.1

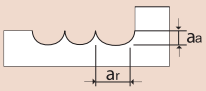
Side Milling (Metric)

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	48 m/min		43 m/min		36 m/min	
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
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

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List HP421BN, HP441BN

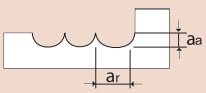
Profiling Milling (Fractional)

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	9,500	39	7,900	29.9	6,300	20.9	5,550	17.3	4,700	13	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	2,100	9.4
3/8	5,900	57.1	4,700	45.3	3,900	35	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	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.

continued on next page

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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)		Tool Steels Ti Alloys		Stainless Inconel		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											
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	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	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	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	8,750	81.5	8,750	81.5	6,050	41.7
5/16	11,650	146.1	10,150	128	9,050	83.9	7,250	67.7	7,250	67.7	5,000	35.4
3/8	9,800	122	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
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

	a_a	a_r
D < 5/32	0.02D	0.05D
5/32 < D	0.13"	0.05D

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											
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

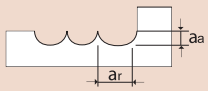
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5/32 < D	0.13"	0.05D

Increase feeds 40% to 50% for Series HP441BN.

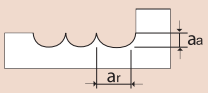
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List HP416

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)

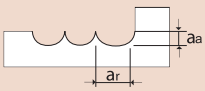
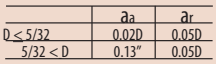
Hardness	–		Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Cast Iron		Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels 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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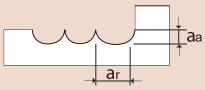
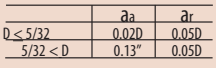
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List HP416 (continued)

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											
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

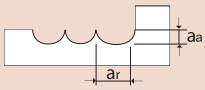
High Speed Light Milling (Metric)

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											
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

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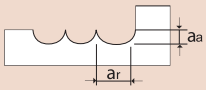
List HP418

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	

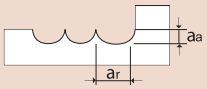
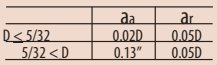
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
1	40,070	37.6	40,070	37.6	39,443	30.4	31,304	19.7	27,548	14.0	23,791	10.3	17,530	6.8
2	29,588	46.0	24,042	37.6	19,722	30.4	15,892	19.7	13,983	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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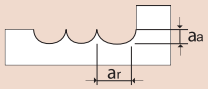
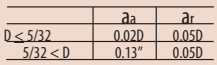
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List HP418 (continued)

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											
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

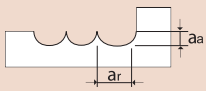
High Speed Light Milling (Metric)

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											
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

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List HP419, HP413

Profiling Milling (Fractional)

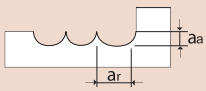
Hardness	–	Up to 20 HRC	20 to 30 HRC	30 to 38 HRC	38 to 45 HRC	45 to 55 HRC	55 to 60 HRC
Work Material	Cast Iron	Mild Steels Carbon Steels	Alloy Steels Tool Steels Ti Alloys (Annealed)	Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)	Hardened Steels Pre-hardened Steels Stainless 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

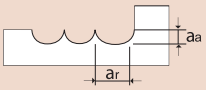
Reduce feeds 10% to 20% for Series HP419L.

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List HP419, HP413 (continued)

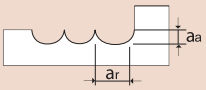
High Speed Light Milling (Fractional)

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									a_a / a_r D ≤ 5/32: 0.02D / 0.05D 5/32 < R: 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

High Speed Light Milling (Metric)

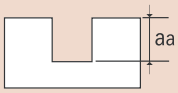
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC		55 to 60 HRC	
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless 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									a_a / a_r D ≤ 5/32: 0.02D / 0.05D 5/32 < R: 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.

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List HP432

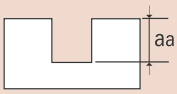
Slotting (Fractional)

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			D<1/16: aa 0.1D 1/16<D<1/8: aa 0.3D 1/8<D: aa 0.5D								D<1/16: aa 0.02D 1/16<D: aa 0.05D		D<1/16: aa 0.01D 1/16<D<1/8: aa 0.02D 1/8≤D: aa 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
1/8	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			D<1/16: aa 0.1D 1/16<D<1/8: aa 0.3D 1/8<D: aa 0.5D								D<1/16: aa 0.02D 1/16<D: aa 0.05D		D<1/16: aa 0.01D 1/16<D<1/8: aa 0.02D 1/8≤D: aa 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
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

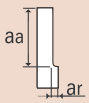
For side milling, increase feeds 20% to 50%.

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List HP434

Side Milling (Fractional)

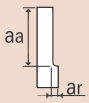
Hardness	–	Up to 20 HRC	20 to 30 HRC	30 to 38 HRC	38 to 45 HRC	45 to 55 HRC	55 to 60 HRC
Work Material	Cast Iron	Mild Steels Carbon Steels	Alloy Steels Tool Steels Ti Alloys (Annealed)	Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)	Hardened Steels Pre-hardened Steels Stainless 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		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	

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		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	

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

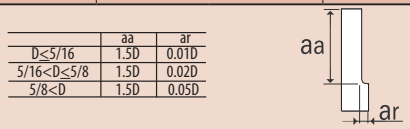
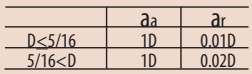
For Slotting, reduce feeds 20% to 50%.

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List HP432, HP434

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										
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

	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

	aa	ar
D≤5/16	1D	0.01D
5/16<D	1D	0.02D

Reduce feeds 50% for Series HP432 High speed Light Milling.

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List HP432, HP434, HP433, HP435

High Speed Light Milling (Metric)

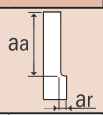
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 38 HRC		38 to 45 HRC		45 to 55 HRC	
Work Material	Mild Steels Carbon Steels		Alloy Steels Tool Steels Ti Alloys (Annealed)		Hardened Steels Pre-hardened Steels Ti Alloys (Solution Treated and Aged)		Hardened Steels Pre-hardened Steels Stainless Steels Inconel Ni Based Alloys		Hardened Steels	
Cutting Speed	1,310 SFM		1,150 SFM		820 SFM		490 SFM		260 SFM	
Depth of Cut	D≤8: aa 1.5D, ar 0.01D 8<D≤16: aa 1.5D, ar 0.02D 16<D: aa 1.5D, ar 0.05D						D≤8: aa 1D, ar 0.01D 8<D: aa 1D, ar 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.

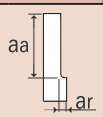
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Standard 2 Flute and 3 Flute Carbide

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	aa=1.5D 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
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	aa=1.5D 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
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

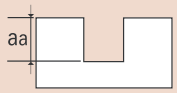
(1) Increase speeds & feeds 5-10% for Series 412 and 422. (2) Reduce speeds & feeds 20-30% for Series 462. (3) Reduce speeds & feeds 40-50% for Series 482. (4) Increase speeds & feeds 20-30% for 402 TiN. (5) Column for Hardened Steels (40-50 HRC) is for Series 402 TiN and 403 TiN only. (6) Increase speeds & feeds 20-30% for Series 403 and 445. (7) Increase speeds & feeds 20-40% for Series 403 TiN.

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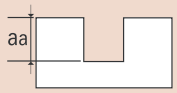
Standard 2 Flute and 3 Flute Carbide (continued)

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	D<1/32: aa = 0.25D; 1/32<D<5/64: aa = 0.5D; 5/64<D: aa = 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	8,000	0.6	6,000	0.3
3/64	31,500	7.9	14,000	5.5	12,500	3	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	D<0.8: aa = 0.25D; 0.8<D<2: aa = 0.5D; 2<D: aa = 1D 					

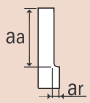
Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.3	100,000	7.1	31,500	3.9	30,000	1.4	22,400	0.7	21,200	0.5	16,000	0.3
0.5	62,000	7.9	22,400	4.9	19,000	1.6	13,000	0.8	12,000	0.6	9,500	0.3
0.8	40,000	7.9	16,000	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.

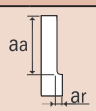
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Standard 4 Flute and Multiple Flute Carbide

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
.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.

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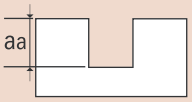
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Standard 4 Flute and Multiple Flute Carbide (continued)

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						

	aa
D<1/32	0.2D
1/32<D<5/64	0.3D
5/64<D	0.5D

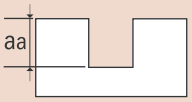


Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
.030	40,000	11.0	16,000	6.9	14,000	3.5	8,000	1.4	8,000	0.8	6,000	0.4
3/64	31,500	11.0	14,000	7.9	12,500	4.1	7,500	1.7	7,000	0.8	4,800	0.4
1/16	21,200	11.0	9,500	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	2,120	5.5	1,600	4.3	1,300	1.7	800	0.9
5/16	4,000	16.5	1,800	13	1,600	5.5	1,200	4.3	1,000	1.7	600	0.9
3/8	3,150	16.5	1,400	13	1,250	5.5	1,000	4.3	800	1.7	480	0.9
1/2	2,650	16.5	1,180	13	1,060	5.5	820	4.3	700	1.7	400	0.9
5/8	2,000	16.5	900	13	800	5.5	640	4.7	500	2.0	300	0.7
3/4	1,600	16.5	710	13	630	5.5	500	4.7	400	2.0	240	0.6
1	1,250	16.5	560	13	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						

	aa
D<0.8	0.2D
0.8<D<2	0.3D
2<D	0.5D

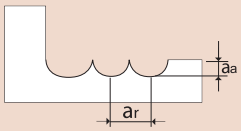


Mill Dia.	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min	Speed RPM	Feed in/min
0.8	40,000	11.0	16,000	6.9	14,000	3.5	8,000	1.4	8,000	0.8	6,000	0.4
1	31,500	11.0	14,000	7.9	12,500	4.1	7,500	1.7	7,000	0.8	4,800	0.4
1.5	21,200	11.0	9,500	7.9	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

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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		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

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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	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	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	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	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.

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Standard Ball Nose Carbide 4 Flute and Multiple 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		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 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		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.

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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

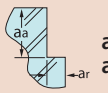
Hardness	Up to 20 HRC		20 to 30 HRC		35 to 45 HRC		45 to 55 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	110 SFM		85 SFM		56 SFM		43 SFM	
Depth of Cut	 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

continued on next page

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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
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

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List 492, 494: Miniature

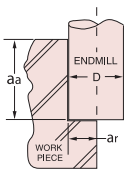
Hardness	–		Up to 145 Brinell		Up to 20 HRC		20 to 30 HRC		30 to 40 HRC	
Work Material	Aluminum Aluminum Alloys Plastics Wood		Mild Steels Cast Iron Brass Bronze		Mild Steel Forging Hard Brass and Bronze Copper		Medium Tensile Steels Unalloyed Titanium Tool Steels Heat Resistant Ferritic Low Alloys		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

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List 420: Stub Length - Multiple Flute - Fine Pitch
List 450: Multiple Flute - Fine Pitch - Center Hole

Side Milling

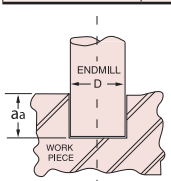
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Tensile Steels Mild Steels		High Tensile Steels Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels Tool Steels Medium Strength Stainless Steels and Titanium Alloys		Heat Resistant High Alloys 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	8,000	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



aa= 1.5 x D
ar=0.5 x D

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



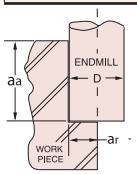
aa=0.8 x D

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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 71B 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

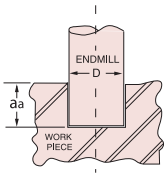


1/4″ up to 1″;
∂a= 1.5 x D
∂r=0.5 x D

1-1/4″ up to 2″;
∂a= 1.5 x D
∂r=0.5 x 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



∂a=0.8 x D

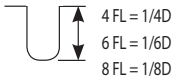
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List 440: Ball End - Multiple Flute - General Purpose - Regular Pitch

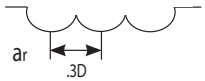
Slotting

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%.



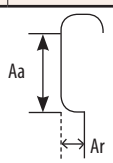
For Profiling Cut:
Stepover (ar) = .3D



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)

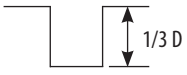


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List 430E: For Aluminum - 3 Flute

Slotting

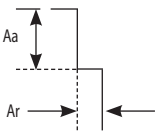
Work Material	Aluminum Aluminum Alloys	
Cutting Speed	195-330 SFM	
Mill Dia.	Speed RPM	Feed in/min
3/8	3,550	15.0
1/2	2,500	15.0
5/8	2,000	13.4
3/4	1,800	13.5
7/8	1,400	11.9
1	1,250	11.3
1-1/4	1,000	9.5
1-1/2	800	8.0
2	630	6.3



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

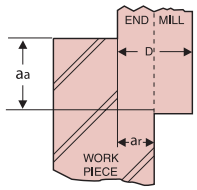


Aa = 1.5D
Ar = 0.15D

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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/in2) Mild Steel Forgings Cast Iron Brass and Bronze Copper		High Tensile Steels (115x103~145x103 Lb/in2) Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels (145x103~200x103 Lb/in2) 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



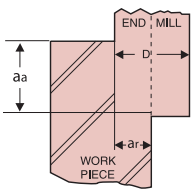
1/2" up to 1 1/8"; aa= 1.5 x D, ar= 0.5 x D
1 1/4" up to 2"; aa= 1 x D, ar= 0.5 x D

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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/in2) Mild Steel Forgings Cast Iron Brass and Bronze Copper		High Tensile Steels (115 x 103~145 x 103 Lb/in2) Unalloyed Titanium Heat Resistant Ferritic Low Alloys		High Tensile Steels (145 x 103 ~200 x 103 Lb/in2) 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

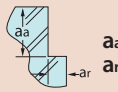
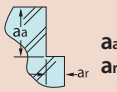


1/2" up to 1 1/8"; aa= 1.5 x D, ar= 0.3 x D
1 1/4" up to 2"; aa= 1 x D, ar= 0.3 x D

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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	 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
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	 up to 12mm a_a=1.0D over 12mm a_r= 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	2,040	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

continued on next page

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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	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

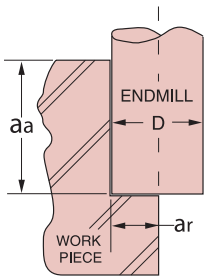
Hardness	Up to 20 HRC		20 to 30 HRC		30 to 40 HRC		40 to 50 HRC	
Work Material	Medium Carbon Steels Mild Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Pre-hardened Steels Stainless Steels Die & Alloy Steels		Hardened Steels	
Cutting Speed	110-140 SFM		85 SFM		56 SFM		43 SFM	
Depth of Cut	 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

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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	13-148 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



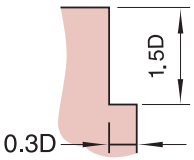
1/2" Up to 1-1/8"; $a_a = 1.5 \times D$, $a_r = 0.5 \times D$
1-1/4" Up to 2"; $a_a = 1 \times D$, $a_r = 0.5 \times D$

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List 660: Super High-Helix - Regular Length - Multiple Flute

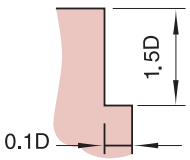
Semi-Roughing Cut

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



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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	20-30 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

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.

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Slotting with 2FL

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	0.000025	1.0	20,000	0.0000224	0.9	14,000	0.000018	0.5
1/32	16,000	0.000071	2.3	11,800	0.000063	1.5	7,100	1.00005	0.8
3/64	10,000	0.00014	2.8	7,500	0.000125	1.9	4,500	0.0001	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	0.0002	1.1
3/32	5,000	0.00040	4.0	3,750	0.000355	2.6	2,240	0.00028	1.3
7/64	4,500	0.000475	4.3	3,350	0.000425	2.9	2,000	0.000335	1.4
1/8	4,000	0.00056	4.5	3,000	0.0005	3.0	1,800	0.0004	1.5
9/64	3,550	0.00067	4.8	2,650	0.0006	3.1	1,600	0.000475	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	0.0011	5.5	1,900	0.0010	3.8	1,120	0.0008	1.8
1/4	2,000	0.0016	6.4	1,500	0.0014	4.3	900	0.00112	2.0
5/16	1,600	0.00224	7.1	1,180	0.0020	4.8	710	0.0016	2.3
3/8	1,400	0.00265	7.4	1,060	0.00236	5.0	630	0.0019	2.4
7/16	1,120	0.00335	7.5	850	0.0030	5.1	500	0.0025	2.5
1/2	1,000	0.00375	7.5	750	0.00315	4.8	450	0.00265	2.4
9/16	900	0.0040	7.3	670	0.00355	4.8	400	0.0030	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	0.0040	4.3	315	0.00355	2.3
3/4	710	0.00475	6.8	530	0.0040	4.3	315	0.00355	2.3
13/16	630	0.0050	6.3	475	0.0040	3.8	280	0.0040	2.3
7/8	560	0.0053	5.9	425	0.0040	3.4	250	0.0040	2.0
15/16	500	0.0056	5.6	375	0.0040	3.0	224	0.0040	1.8
1	500	0.0056	5.6	375	0.0040	3.0	224	0.0040	1.8
1-1/8	450	0.0056	5.0	335	0.0040	2.6	200	0.0040	1.6
1-1/4	400	0.0060	4.8	300	0.0040	2.4	180	0.0040	1.5
1-3/8	355	0.0060	4.3	265	0.0040	2.1	160	0.0040	1.3
1-1/2	315	0.0063	4.0	236	0.0040	1.9	140	0.0040	1.1
1-5/8	315	0.0063	4.0	236	0.0040	1.9	140	0.0040	1.1
1-3/4	280	0.0063	3.5	212	0.0040	1.8	125	0.0040	1.0
1-7/8	250	0.0063	3.1	190	0.0040	1.5	112	0.0040	0.9
2	250	0.0063	3.1	190	0.0040	1.5	112	0.0040	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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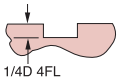
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Slotting with 2FL (Continued)

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	0.000015	0.3	6,300	0.0000095	0.1	20,000	0.00003	2.4
1/32	5,000	0.0000425	0.4	3,150	0.0000265	0.1	20,000	0.000075	3.0
3/64	3,150	0.000085	0.5	2,000	0.000056	0.3	20,000	0.00014	5.5
1/16	2,500	0.000118	0.6	1,600	0.00008	0.3	20,000	0.0002	8.0
5/64	2,000	0.00017	0.6	1,250	0.000112	0.3	16,000	0.00028	9.0
3/32	1,600	0.000236	0.8	1,000	0.00016	0.4	12,500	0.000375	9.4
7/64	1,400	0.00028	0.8	900	0.0002	0.4	11,200	0.000425	9.5
1/8	1,250	0.000335	0.9	800	0.000236	0.4	10,000	0.0005	10.0
9/64	1,120	0.0004	0.9	710	0.00028	0.4	9,000	0.0006	10.8
5/32	1,000	0.000475	1.0	630	0.000335	0.4	8,000	0.00071	11.4
11/64	900	0.00056	1.0	560	0.0004	0.5	7,100	0.0008	11.4
3/16	800	0.00067	1.1	500	0.000475	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	0.0010	0.6	4,000	0.0019	15.3
3/8	450	0.0016	1.5	280	0.00118	0.6	3,550	0.00212	15.0
7/16	355	0.00212	1.5	224	0.0014	0.6	2,800	0.00265	14.9
1/2	315	0.00236	1.5	200	0.0018	0.8	2,500	0.0030	15.0
9/16	280	0.0028	1.6	180	0.0020	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	0.0025	0.8	1,800	0.00375	13.5
3/4	224	0.00355	1.6	140	0.0025	0.8	1,800	0.00375	13.5
13/16	200	0.0040	1.6	125	0.0028	0.8	1,600	0.0040	12.8
7/8	180	0.0040	1.5	112	0.00315	0.8	1,400	0.00425	11.9
15/16	160	0.0040	1.3	100	0.00355	0.8	1,250	0.0045	11.3
1	160	0.0040	1.3	100	0.00355	0.8	1,250	0.0045	11.3
1-1/8	140	0.0040	1.1	90	0.0040	0.8	1,120	0.00475	10.6
1-1/4	125	0.0040	1.0	80	0.0040	0.6	1,000	0.00475	9.5
1-3/8	112	0.0040	0.9	71	0.0040	0.6	900	0.0050	9.0
1-1/2	100	0.0040	0.8	63	0.0040	0.5	800	0.0050	8.0
1-5/8	100	0.0040	0.8	63	0.0040	0.5	800	0.0050	8.0
1-3/4	90	0.0040	0.8	56	0.0040	0.5	710	0.0050	7.1
1-7/8	80	0.0040	0.6	50	0.0040	0.4	630	0.0050	6.3
2	80	0.0040	0.6	50	0.0040	0.4	630	0.0050	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



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Side Milling with 4FL, 6FL

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	0.0002	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	1.0002	2.9
3/32	5,600	0.0004	9.0	4,500	0.000355	6.4	2,800	1.00028	3.1
7/64	5,000	0.000475	9.5	4,000	0.000425	6.8	2,500	0.000335	3.4
1/8	4,500	0.00056	10.1	3,550	0.0005	7.1	2,240	0.0004	3.6
9/64	4,000	0.00067	10.8	3,150	0.0006	7.5	2,000	0.000475	3.8
5/32	3,550	0.0008	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	0.0011	12.4	2,240	0.0010	9.0	1,400	0.0008	4.5
1/4	2,240	0.0016	14.4	1,800	0.0014	10.1	1,120	0.00112	5.0
5/16	1,800	0.00224	16.1	1,400	0.0020	11.3	900	0.0016	5.8
3/8	1,600	0.00265	17.0	1,250	0.00236	11.8	800	0.0019	6.1
7/16	1,250	0.00335	16.8	1,000	0.0030	12.0	630	0.0025	6.3
1/2	1,120	0.00375	16.8	900	0.00315	11.4	560	0.00265	5.9
9/16	1,000	0.0040	16.0	800	0.00355	11.4	500	0.0030	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	0.0050	14.3	560	0.00375	8.4	355	0.0040	5.6
7/8	630	0.0053	13.4	500	0.00375	7.5	315	0.0040	5.0
15/16	560	0.0056	12.5	450	0.00375	6.8	280	0.0040	4.5
1	560	0.0056	12.5	450	0.00375	6.8	280	0.0040	4.5
1-1/8	500	0.0056	11.3	400	0.00375	6.0	250	0.0040	4.0
1-1/4	450	0.0060	10.8	355	0.00375	5.4	224	0.0040	3.6
1-3/8	400	0.0060	9.6	315	0.00375	4.8	200	0.0040	3.3
1-1/2	355	0.0063	9.0	280	0.00375	4.3	180	0.0040	2.9
1-3/4	315	0.0063	11.9	250	0.00375	5.6	160	0.0040	3.9
2	280	0.0063	10.6	224	0.00375	5.0	140	0.0040	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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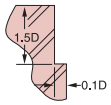
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Side Milling with 4FL, 6FL (Continued)

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	0.000118	1.1	1,600	0.00008	0.5	20,000	0.0002	16.0
5/64	2,000	0.00017	1.4	1,250	0.000112	0.5	20,000	0.00028	22.4
3/32	1,600	0.000236	1.5	1,000	0.00016	0.6	20,000	0.000375	30.0
7/64	1,400	0.00028	1.5	900	0.0002	0.8	18,000	0.000425	30.6
1/8	1,250	0.000335	1.6	800	0.000236	0.8	16,000	0.0005	32.0
9/64	1,120	0.0004	1.8	710	0.00028	0.8	14,000	0.0006	33.6
5/32	1,000	0.000475	1.9	630	0.000335	0.9	12,500	0.00071	35.5
11/64	900	0.00056	2.0	560	0.0004	0.9	11,200	0.0008	35.9
3/16	800	0.00067	2.1	500	0.000475	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	0.0010	1.3	6,300	0.0019	47.9
3/8	450	0.0016	2.9	280	0.00118	1.4	5,600	0.00212	47.5
7/16	355	0.00212	3.0	224	0.0014	1.3	4,500	0.00265	47.8
1/2	315	0.00236	3.0	200	0.0018	1.5	4,000	0.0030	48.0
9/16	280	0.0028	3.1	180	0.0020	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	0.0025	1.4	2,800	0.00375	42.0
3/4	224	0.00355	3.1	140	0.0025	1.4	2,800	0.00375	42.0
13/16	200	0.0040	3.3	125	0.0028	1.4	2,500	0.0040	40.0
7/8	180	0.0040	2.9	112	0.00315	1.4	2,240	0.00425	38.1
15/16	160	0.0040	2.5	100	0.00355	1.4	2,000	0.0045	36.0
1	160	0.0040	2.5	100	0.00355	1.4	2,000	0.0045	36.0
1-1/8	140	0.0040	2.3	90	0.0040	1.5	1,800	0.00475	34.3
1-1/4	125	0.0040	2.0	80	0.0040	1.3	1,600	0.00475	30.4
1-3/8	112	0.0040	1.8	71	0.0040	1.1	1,400	0.0050	28.0
1-1/2	100	0.0040	1.6	63	0.0040	1.0	1,250	0.0050	25.0
1-3/4	90	0.0040	2.1	56	0.0040	1.4	1,120	0.0050	33.6
2	80	0.0040	1.9	50	0.0040	1.3	1,000	0.0050	30.0

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 cut, increase RPM 30-50%.

1-1/2"; 4 Flutes
1-3/4", 2", 6 Flutes



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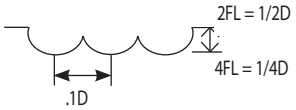
List 521 Single End - Regular Length - 2 Flute
List 523 Double End - Regular Length - 2 Flute
List 526 Single End - Regular Length - 2 Flute - Extension Type
List 544 Single End - Regular Length - 4 Flute
List 621 EXOMILL VC-10® - Ball End - Regular Length - 2 Flute
List 644 EXOMILL VC-10® - Ball End - 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%



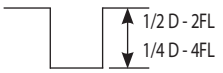
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List 580: Single End - Regular Length - 2 Flute
List 582: Double End - Regular Length - 2 Flute

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	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
For 4 Flute end mills - (1/4) diameter of the tool
In case of deeper operation, slow down feed by 20-50%

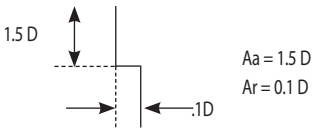


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List 581: Regular Length - Multiple Flute - Center Hole

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



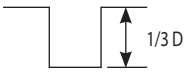
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List 531: Single End - Regular Length - 3 Flute
List 532: Double End - Regular Length - 3 Flute
List 536: Single End - Long Length - 3 Flute

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		260-300 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

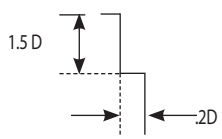
When using List Number 536, reduce speeds and feeds by 10%.
Depth of Cut:
For 3 Flute end mills - (1/3) diameter of the tool



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



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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		25-45 SFM		16-32 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

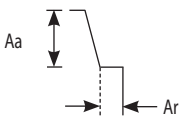
Cutting Depth = (1/3)D



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		150-350 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	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



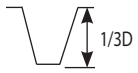
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List 593: 2˚ Taper on Side - 3 Flute
List 594: 3˚ Taper on Side - 3 Flute

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		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
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

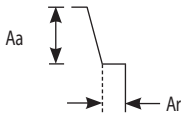
Cutting Depth = (1/3)D



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



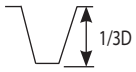
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List 595: 5˚ Taper on Side - 3 Flute
List 596: 7˚ Taper on Side - 3 Flute

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		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
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

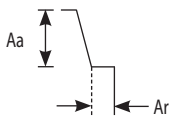
Cutting Depth = (1/3)D



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



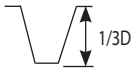
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List 597: 10˚ Taper on Side - 3 Flute

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 Austentitic Alloys Nickel Base Alloys		Heat Resistant High Alloys Austentitic 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	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

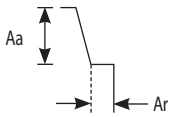
Cutting Depth = (1/3)D



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 Austentitic Alloys Nickel Base Alloys		Heat Resistant High Alloys Austentitic 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



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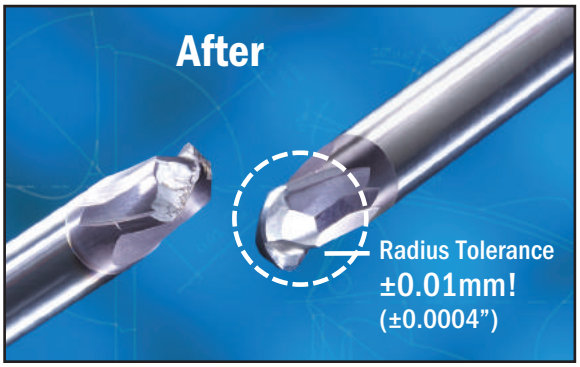
End Mill
Reconditioning

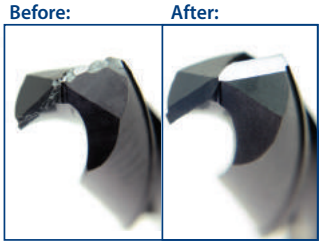


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OSG Tool Reconditioning

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.

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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.



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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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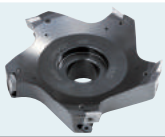
OSG PHOENIX®

	List	Product	Brand/Name	Inch/ Metric	Size Range	Features	Page
DRILLING	52400 78310 78PXD 7808H	 NEW!	OSG PHOENIX® PXD	Inch Metric	0.551-1.023” 14.00-25.99mm	Exchangeable Head Drill, 3D & 5D	992-998
DRILLING	52502 78031 52503 78032 52504 78033 52505 78027 78P5D 7808H		OSG PHOENIX® PD	Inch Metric Inch Metric Inch Metric Inch Metric	0.625-2.500” 15.00-63.00mm 0.625-2.500” 15.00-63.00mm 0.625-2.500” 15.00-63.00mm 0.625-2.500” 15.00-63.00mm	Indexable Drill, 2D, 3D, 4D & 5D	999-1015
DRILLING	78001 78PHP 7808H	 NEW SIZES	OSG PHOENIX® PHP	Metric	14.00-40.00mm	High Performance Drill, 3D	1016-1018
MILLING	52700 78020 78PAS 7808H		OSG PHOENIX® PAS	Inch Metric	2.000-6.000” 50-125mm	45° Face Mill, Square Insert	1019-1021
MILLING	52800 78120 78PAO 7808H		OSG PHOENIX® PAO	Inch Metric	2.000-8.000” 50-200mm	45° Face Mill, Octagon Insert	1022-1026
MILLING	78013 78011 78012 78010 52601 78016 78PSE 7808H	 NEW SIZES	OSG PHOENIX® PSE	Inch Metric Inch Metric Inch Metric	0.625-1.500” 16-63mm 2.000-6.000” 40-125mm 0.625-1.500” 16-40mm	90° Shoulder Cutter	1027-1037
MILLING	53000 78029 53001 78028 78PSE 7808H		OSG PHOENIX® PSEL	Inch Metric Inch Metric	1.000-1.500” 25-50mm 2.000-3.000” 50-80mm	90° Roughing Cutter	1038-1042
MILLING	52900 78030 52901 78130 78PSF 7808H		OSG PHOENIX® PSF	Inch Metric Inch Metric	1.000-1.500” 25-40mm 2.000-3.000” 50-80mm	90° Shoulder Cutter, Square insert	1043-1046
MILLING	53100 78131 78PSTW 7808H	 NEW!	OSG PHOENIX® PSTW	Inch Metric	2.000-5.000” 50-125mm	90° Shoulder Face Mill, 2-Sided Triangle Insert	1047-1050
MILLING	78005 78003 78004 78002 52602 78017 78PRC 7808H	 NEW SIZES	OSG PHOENIX® PRC	Inch Metric Inch Metric Inch Metric	1.000-1.500” 20-63mm 2.000-6.000” 50-100mm 1.000-1.500” 20-40mm	Radius Cutter	1051-1058
MILLING	78009 78007 78008 78006 52603 78015 78PHC 7808H	 NEW SIZES	OSG PHOENIX® PHC	Inch Metric Inch Metric Inch Metric	1.000-1.500” 25-63mm 2.000-6.000” 40-100mm 1.000-1.500” 25-40mm	High Feed Radius Cutter	1059-1068

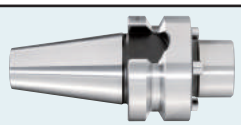
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	List	Product	Brand/Name	Inch/ Metric	Size Range	Features	Page
MILLING	6420 6450 78PDR 7808H		OSG PHOENIX® PDR	Metric Metric	40-50mm 63-125mm	Deep Feed Radius Cutter	1069-1071
	52100 78014 52604 78114 78PFB 7808H	 NEW SIZES	OSG PHOENIX® PFB	Inch Metric Inch Metric	0.375-1.250″ 6-32mm 0.375-1.000″ 10-30mm	Finishing Ball End Mill	1072-1079
	52200 78320 52605 78220 78PFR 7808H	 NEW SIZES	OSG PHOENIX® PFR	Inch Metric Inch Metric	0.375-1.250″ 6-32mm 0.375-1.000″ 10-32mm	Finishing Radius End Mill	1080-1090
	52600 78019 78025 78125	 NEW!	OSG PHOENIX® SF	Inch Metric	0.375-1.500″ 10-40mm	Screw Fit Cutter	1091-1094
	78PXSE 78PXVC 78PXSM 78PXNL 78PXNH 78PXRE 78PXDR 78PXBE 78PXBM 52300 78018 7808H	 NEW!	OSG PHOENIX® PXM	Inch, Metric	0.500-1.000″, 12-25mm	Exchangeable Head End Mill	1095-1111

EXOCARB® DISC CUTTER®

MILLING	6440 6540		EXOCARB® DISC CUTTER® S	Metric	80-125mm	Face Milling Cutter for Small Machines, Roughing	1114-1115
	6441 6541		DISC CUTTER® PRO	Metric	80-125mm	Face Milling Cutter for Small Machines, Finishing	1116-1117

EXOCARB® Arbor

DISC CUTTER® Arbors	6640		EXOCARB® Arbor	Metric	80-125mm	Face Mill Arbor for Small Machines, BT30	1118
				Metric	80-125mm	Face Mill Arbor for Small Machines, CAT40	1118
				Metric	80-125mm	Face Mill Arbor for Small Machines, HSK40A	1118

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PHOENIX® Lines

OSG PHOENIX® PXD
Exchangeable head drill series for efficient, precise hole processing.

OSG PHOENIX® PD
Indexable drill series for efficient, stable hole processing.

OSG PHOENIX® PHP
High performance 3D indexable drill.

OSG PHOENIX® PAS
45° indexable facemills with 2-sided square insert.

OSG PHOENIX® PAO
45° indexable facemills with 2-sided octagon insert.

OSG PHOENIX® PSE
Multifunctional 90° indexable end mills and facemills.

OSG PHOENIX® PSEL
90° indexable roughing end mills and facemills.

OSG PHOENIX® PSF
90° indexable shoulder end mills and facemills.

OSG PHOENIX® PSTW
90° indexable shoulder facemills with 2-sided triangle insert

OSG PHOENIX® PRC
Button insert end mills and facemills for contour milling applications.

OSG PHOENIX® PHC
High feed end mills and facemills for maximum metal removal rates in a variety of applications.

OSG PHOENIX® PDR
Deep feed radius end mills and facemills for deeper depths of cut versus conventional high feed cutters.

OSG PHOENIX® PFB
High precision indexable finish ballnose end mills for superior surface finish and tool life.

OSG PHOENIX® PFR
High precision indexable finish radius end mills for superior surface finish and tool life.

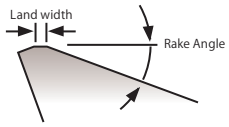
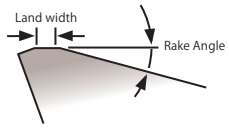
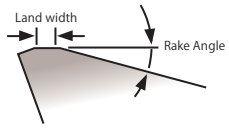
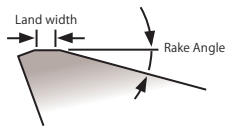
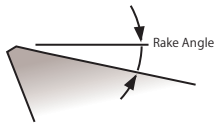
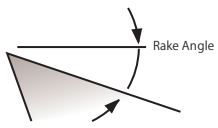
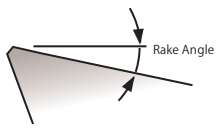
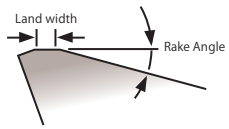
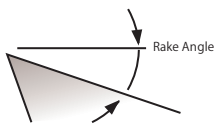
OSG PHOENIX® SF
Modular indexable end mills for a variety of applications

OSG PHOENIX® PXM
Exchangeable head end mill series for superior surface finish and precision in a variety of applications.

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Material Class	Grade	Coating Method	Hardness (HRA)	Surface Treament		Features
				Main Component	Coating Thickness	
P	XC3025	CVD	90.8	TiCN + TiN + Al_2O_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_2O_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	89.6	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.
	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 Machining Steel** A grade for hole drilling. Composed of a tough, high strength carbide material with a wear-resistant thick film 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.
	XP9020	PVD	91.9	TiAlN	3 µm	**For Steel, Stainless Steel, Cast Iron and Non-Ferrous Materials** A grade for hole drilling. Composed of a tough carbide material with an anti-chipping and wear-resistant grade.
	XP9040	PVD	91.9	TiAlN	3 µm	**For Machining Steel and Stainless Steel** A grade for hole drilling. Composed of a tough carbide material with an anti-chipping and wear-resistant coating.
M	XP2025	PVD	91.0	TiAlN	5 µm	**For Machining Steel and Stainless Steel** Composed of a tough, high-strength carbide material with an anti-chipping and wear resistant coating.
	XP2040	PVD	89.6	TiAlN	5 µm	**For Machining Steel and Stainless Steel** A grade for general purpose milling. Composed of a tough, high-strength carbide material with an anti-chipping and wear-resistant coating.
K	XC1015	CVD	92.0	TiCN + Al_2O_3	10 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 Machining Cast Iron** Composed of a tough, high-strength carbide material with highly rigid cutting edge 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.
	XP1425	PVD	91.8	Cr Composite multilayer	7 µm	**For Machining Cast Iron** A grade for hole drilling. Composed of a tough, high strength carbide material with a wear-resistant thick film coating.
	XC9025	CVD	90.8	TiCN + Al_2O_3	6 µm	**For Machining Cast Iron** A grade for hole drilling in 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.
	CK110	-	92.2	-	-	**For Machining Non-Ferrous Materials** A grade for hole drilling. Composed of a non-coated carbide material with a sharp cutting edge and polished surface.
	CF225	-	91.8	-	-	**For Machining Non-Ferrous Materials** A grade for hole drilling. Composed of a non-coated carbide material with an anti-chipping and wear-resistant properties.
	XC4505	CVD	92.0	DIA	12 µm	**For Machining Non-Ferrous Materials** Micro crystal diamond provides a coating layer with excellent strength.
S	XC5035	CVD	89.3	TiN + Ti(CN) + Al_2O_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 Materials** 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 Materials** Composed of a tough, high-strength carbide material with excellent thermal conductivity.

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Machining Method	Chip Breaker	Cutting Edge Cross-Section (Approximate)	Rake Angle	Application
Milling	GL		25°	For milling stainless steel: a breaker with a large rake angle and a small flat land to reduce cutting force.
	GM		15° 35° (PAS) 25° (PSTW)	For milling various materials from steel to cast iron: a breaker with a superior balance of rake angle and flat land.
	GR		7° 35° (PAS) 2° (PSTW)	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		3°	For milling high hardened steel: a breaker with sharpness and excellent rigidity.
	SM		15° 25° (PSTW)	For milling difficult materials: a breaker with a sharp cutting edge to reduce cutting force and provide smooth chip evacuation.
	NM		30°	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.
Drilling	DM		10°	For drilling various materials from steel to cast iron: a general purpose breaker with an ideal rake angle.
	DR		9°	For drilling cast iron: a highly rigid breaker with an optimal land width and rake angle.
	DN		10°	For drilling non-ferrous materials: a breaker with a sharp cutting edge and polish treatment for excellent chip evacuation.

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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

Cutter Diameter

Example:
150 = 1.50"
080 = 80 mm

Insert Size

Example:
12 = 12 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

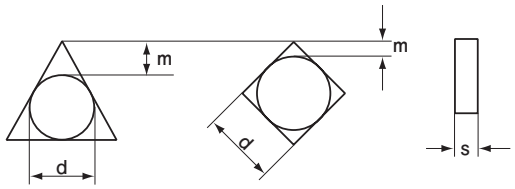
Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

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	–

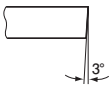
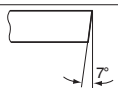
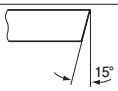
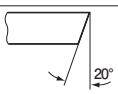
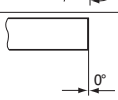
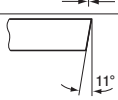
Tolerance



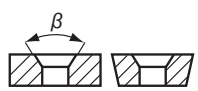
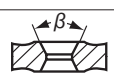
Symbol	Inscribed Circle Tolerance (mm)	Corner Height Tolerance (mm)	Thickness Tolerance (mm)
A	±0.025	±0.005	±0.025
C	±0.025	±0.013	±0.025
E	±0.025	±0.025	±0.025
H	±0.013	±0.013	±0.025
K*	±0.05~±0.15	±0.013	±0.025
M*	±0.05~±0.15	±0.08~±0.18	±0.13
N*	±0.05~±0.15	±0.08~±0.18	±0.025

*Sintered insert shown on the side

Clearance Angle

A	3°	
C	7°	
D	15°	
E	20°	
N	0°	
P	11°	
X	Special Dimension	

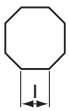
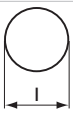
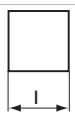
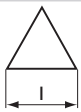
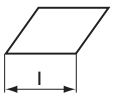
Special Cutting and Fastening Feature

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	

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15	05	08	S	R	-	GM
(5)	(6)	(7)	(8)	(9)	-	(10)

Length of the Cutting Edge

O	
R	
S	
T	
Z	

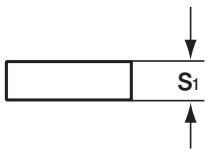
Corner Radius Symbol

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

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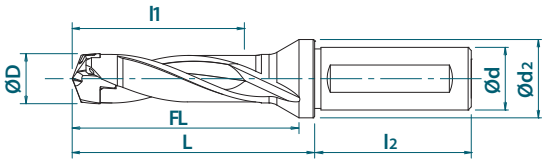
List 52400 NEW!

PXD 3D (Inch)

SPEED FEED P998 | COOLANT THROUGH | INDEX.

Recommended Materials: p998
Accessories & Inserts: p994-997





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.

PXT

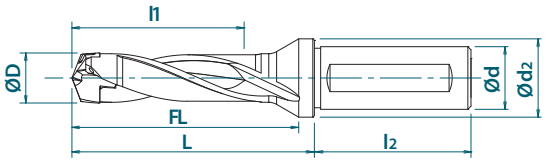
List 52400 NEW!

PXD 5D (Inch)

SPEED FEED P998 | COOLANT THROUGH | INDEX.

Recommended Materials: p998
Accessories & Inserts: p994-997





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.

PXT

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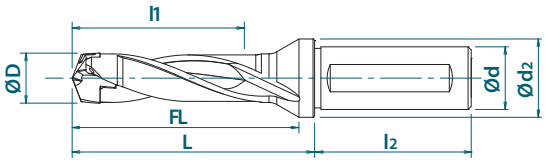
List 78310

SPEED FEED P998 | COOLANT THROUGH | INDEX.

Recommended Materials: p998
Accessories & Inserts: p994-997

PXD 3D (Metric)





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	l1	FL	L	l2	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.

PXT

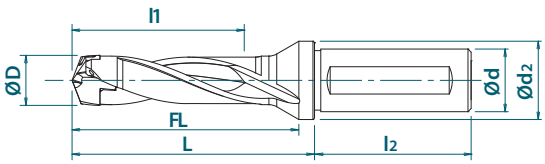
List 78310 NEW!

SPEED FEED P998 | COOLANT THROUGH | INDEX.

Recommended Materials: p998
Accessories & Inserts: p994-997

PXD 5D (Metric)





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	l1	FL	L	l2	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.

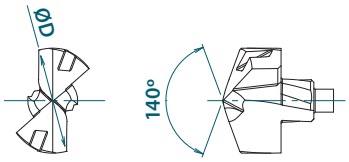
PXT

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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
7831351		PXDH1495-PC	-	14.95	0.5886		XP3425
7831150		PXDH1500-PC	-	15.00	0.5906	3	XP3425
52401001		PXDH5938-PC	19/32	15.08	0.5938		XP3425
7831352		PXDH1525-PC	-	15.25	0.6004		XP3425
7831155		PXDH1550-PC	-	15.50	0.6102		XP3425
52401002		PXDH6250-PC	5/8	15.88	0.6250		XP3425
7831160		PXDH1600-PC	-	16.00	0.6299	4	XP3425
7831165		PXDH1650-PC	-	16.50	0.6496		XP3425
52401003		PXDH6563-PC	21/32	16.67	0.6563		XP3425
7831167		PXDH1670-PC	-	16.70	0.6575		XP3425
7831170		PXDH1700-PC	-	17.00	0.6693	5	XP3425
7831353		PXDH1725-PC	-	17.25	0.6791		XP3425
52401004		PXDH6875-PC	11/16	17.46	0.6875		XP3425
7831175		PXDH1750-PC	-	17.50	0.6890		XP3425
7831180		PXDH1800-PC	-	18.00	0.7087	6	XP3425
52401005		PXDH7188-PC	23/32	18.26	0.7188		XP3425
7831185		PXDH1850-PC	-	18.50	0.7283		XP3425
7831187		PXDH1870-PC	-	18.70	0.7362		XP3425
7831190		PXDH1900-PC	-	19.00	0.7480	7	XP3425
52401006		PXDH7500-PC	3/4	19.05	0.7500		XP3425
7831354		PXDH1925-PC	-	19.25	0.7579		XP3425
7831195		PXDH1950-PC	-	19.50	0.7677		XP3425
52401007		PXDH7813-PC	25/32	19.85	0.7813		XP3425
7831200		PXDH2000-PC	-	20.00	0.7874	8	XP3425
7831205		PXDH2050-PC	-	20.50	0.8071		XP3425
52401008		PXDH8125-PC	13/16	20.64	0.8125		XP3425
7831207		PXDH2070-PC	-	20.70	0.8150		XP3425
7831210		PXDH2100-PC	-	21.00	0.8268	9	XP3425
7831355		PXDH2125-PC	-	21.25	0.8366		XP3425
52401009		PXDH8438-PC	27/32	21.43	0.8438		XP3425
7831215		PXDH2150-PC	-	21.50	0.8465		XP3425
7831220		PXDH2200-PC	-	22.00	0.8661	10	XP3425
52401010		PXDH8750-PC	7/8	22.23	0.8750		XP3425
7831224		PXDH2240-PC	-	22.40	0.8819		XP3425
7831225		PXDH2250-PC	-	22.50	0.8858		XP3425
7831230		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
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
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
7831254		PXDH2540-PC	1	25.40	1.0000		XP3425

Packed: 1 pc.

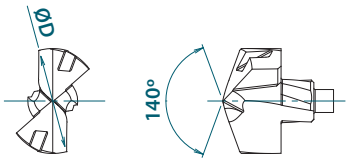
PXI

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List 78PXD NEW SIZES!

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		XP1425
7831445		PXDH1450-KC	-	14.50	0.5709	2	XP1425
7831450		PXDH1500-KC	-	15.00	0.5906	3	XP1425
52402001		PXDH5938-KC	19/32	15.08	0.5938		XP1425
7831455		PXDH1550-KC	-	15.50	0.6102		XP1425
52402002		PXDH6250-KC	5/8	15.88	0.6250		XP1425
7831460		PXDH1600-KC	-	16.00	0.6299	4	XP1425
7831465		PXDH1650-KC	-	16.50	0.6496		XP1425
52402003		PXDH6563-KC	21/32	16.67	0.6563		XP1425
7831467		PXDH1670-KC	-	16.70	0.6575		XP1425
7831470		PXDH1700-KC	-	17.00	0.6693	5	XP1425
52402004		PXDH6875-KC	11/16	17.46	0.6875		XP1425
7831475		PXDH1750-KC	-	17.50	0.6890		XP1425
7831480		PXDH1800-KC	-	18.00	0.7087	6	XP1425
52402005		PXDH7188-KC	23/32	18.26	0.7188		XP1425
7831485		PXDH1850-KC	-	18.50	0.7283		XP1425
7831487		PXDH1870-KC	-	18.70	0.7362		XP1425
7831490		PXDH1900-KC	-	19.00	0.7480	7	XP1425
52402006		PXDH7500-KC	3/4	19.05	0.7500		XP1425
7831495		PXDH1950-KC	-	19.50	0.7677		XP1425
52402007		PXDH7813-KC	25/32	19.85	0.7813		XP1425
7831500		PXDH2000-KC	-	20.00	0.7874	8	XP1425
7831505		PXDH2050-KC	-	20.50	0.8071		XP1425
52402008		PXDH8125-KC	13/16	20.64	0.8125		XP1425
7831507		PXDH2070-KC	-	20.70	0.8150		XP1425
7831510		PXDH2100-KC	-	21.00	0.8268	9	XP1425
52402009		PXDH8438-KC	27/32	21.43	0.8438		XP1425
7831515		PXDH2150-KC	-	21.50	0.8465		XP1425
7831520		PXDH2200-KC	-	22.00	0.8661	10	XP1425
52402010		PXDH8750-KC	7/8	22.23	0.8750		XP1425
7831524		PXDH2240-KC	-	22.40	0.8819		XP1425
7831525		PXDH2250-KC	-	22.50	0.8858		XP1425
7831530		PXDH2300-KC	-	23.00	0.9055	11	XP1425
52402011		PXDH9063-KC	29/32	23.02	0.9063		XP1425
7831535		PXDH2350-KC	-	23.50	0.9252		XP1425
52402012		PXDH9375-KC	15/16	23.81	0.9375		XP1425
7831540		PXDH2400-KC	-	24.00	0.9449	12	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
7831554		PXDH2540-KC	1	25.40	1.0000		XP1425

Packed: 1 pc.

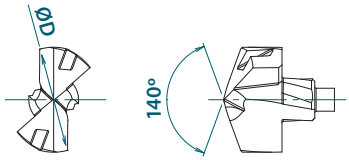
PXI

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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
7831750		PXDH1500-NC	-	15.00	0.5906	3	CF225
52403001		PXDH5938-NC	19/32	15.08	0.5938		CF225
7831755		PXDH1550-NC	-	15.50	0.6102		CF225
52403002		PXDH6250-NC	5/8	15.88	0.6250		CF225
7831760		PXDH1600-NC	-	16.00	0.6299	4	CF225
7831765		PXDH1650-NC	-	16.50	0.6496		CF225
52403003		PXDH6563-NC	21/32	16.67	0.6563		CF225
7831767		PXDH1670-NC	-	16.70	0.6575		CF225
7831770		PXDH1700-NC	-	17.00	0.6693	5	CF225
52403004		PXDH6875-NC	11/16	17.46	0.6875		CF225
7831775		PXDH1750-NC	-	17.50	0.6890		CF225
7831780		PXDH1800-NC	-	18.00	0.7087	6	CF225
52403005		PXDH7188-NC	23/32	18.26	0.7188		CF225
7831785		PXDH1850-NC	-	18.50	0.7283		CF225
7831787		PXDH1870-NC	-	18.70	0.7362		CF225
7831790		PXDH1900-NC	-	19.00	0.7480	7	CF225
52403006		PXDH7500-NC	3/4	19.05	0.7500		CF225
7831795		PXDH1950-NC	-	19.50	0.7677		CF225
52403007		PXDH7813-NC	25/32	19.85	0.7813		CF225
7831800		PXDH2000-NC	-	20.00	0.7874	8	CF225
7831805		PXDH2050-NC	-	20.50	0.8071		CF225
52403008		PXDH8125-NC	13/16	20.64	0.8125		CF225
7831807		PXDH2070-NC	-	20.70	0.8150		CF225
7831810		PXDH2100-NC	-	21.00	0.8268	9	CF225
52403009		PXDH8438-NC	27/32	21.43	0.8438		CF225
7831815		PXDH2150-NC	-	21.50	0.8465		CF225
7831820		PXDH2200-NC	-	22.00	0.8661	10	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		CF225
7831830		PXDH2300-NC	-	23.00	0.9055	11	CF225
52403011		PXDH9063-NC	29/32	23.02	0.9063		CF225
7831835		PXDH2350-NC	-	23.50	0.9252		CF225
52403012		PXDH9375-NC	15/16	23.81	0.9375		CF225
7831840		PXDH2400-NC	-	24.00	0.9449	12	CF225
7831845		PXDH2450-NC	-	24.50	0.9646		CF225
52403013		PXDH9688-NC	31/32	24.61	0.9688		CF225
7831850		PXDH2500-NC	-	25.00	0.9843	13	CF225
7831854		PXDH2540-NC	1	25.40	1.0000		CF225

Packed: 1 pc.

PXI

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List 7808H

PXD Accessories

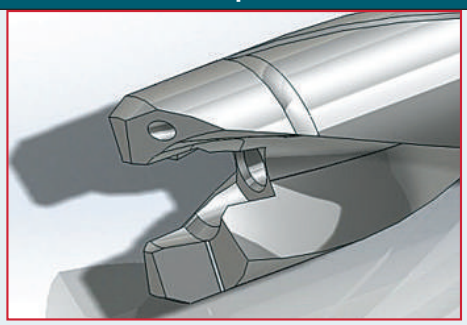
Appearance	EDP No.	Designation	Sheet Thickness (mm)	Applicable Head		
				Size	(inch)	(mm)
 Driver	7808282	PXDP1400-1890	1.5	1-6	Ø0.551-0.744	Ø14.0-18.9
	7808283	PXDP1900-2299	1.8	7-10	Ø0.748-0.901	Ø19.0-22.9
	7808284	PXDP2300-2699	2	11-13	Ø0.905-1.059	Ø23.0-26.9

Packed: 1 pc.

PXT

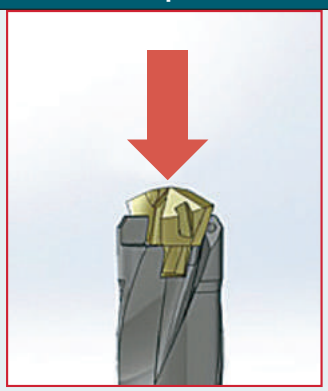
Mounting Procedure

Step 1



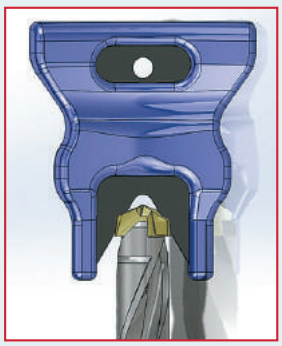
Clean attachment area with an air nozzle.
Any leftover cutting chips may prevent the head from being mounted properly and may cause damage to the tool.

Step 2



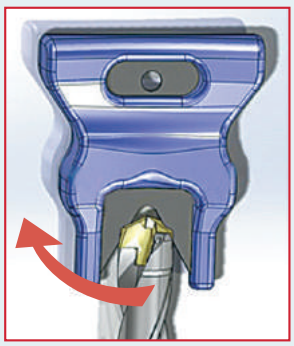
Manually attach the head.

Step 3



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.

Step 4



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.

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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	◻	▢	▢	▢		
XP1425	KC	Yes	▢	▢	▢	◻		
CF225	NC	Yes					◻	▢

▢ good ◻ best

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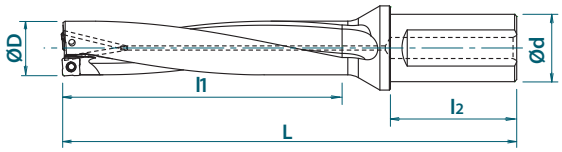
List 52502 NEW SIZES!

P2D (Inch)

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (inch) D	Drilling Depth (inch) l1	Overall Length (inch) L	Shank Dia. (inch) d	Shank Length (Inch) l2	Applicable Insert
52502008	Flat Shank	P2D0625FS075A04	0.6250	1.250	4.125	0.750	1.969	XCMT04...
52502009		P2D0656FS075A04	0.6563	1.313	4.187	0.750	1.969	
52502010		P2D0688FS075A05	0.6875	1.375	4.250	0.750	1.969	XCMT05...
52502011		P2D0750FS100A06	0.7500	1.500	4.611	1.000	2.205	XCMT06...
52502012		P2D0812FS100A06	0.8125	1.625	4.736	1.000	2.205	
52502000		P2D0875FS100A07	0.8750	1.750	4.861	1.000	2.205	XCMT07...
52502001		P2D0937FS125A07	0.9375	1.875	5.143	1.250	2.362	
52502002		P2D1000FS125A08	1.0000	2.000	5.268	1.250	2.362	XCMT08...
52502003		P2D1062FS125A08	1.0625	2.125	5.393	1.250	2.362	
52502004		P2D1125FS125A08	1.1250	2.250	5.518	1.250	2.362	
52502005		P2D1187FS125A09	1.1875	2.375	5.643	1.250	2.362	XCMT09...
52502006		P2D1250FS125A09	1.2500	2.500	5.768	1.250	2.362	
52502007		P2D1312FS150A09	1.3125	2.625	6.287	1.500	2.756	
52502013		P2D1375FS150A10	1.3750	2.750	6.412	1.500	2.756	XCMT10...
52502014		P2D1437FS150A10	1.4375	2.875	6.537	1.500	2.756	
52502015		P2D1500FS150A10	1.5000	3.000	6.662	1.500	2.756	
52502016		P2D1563FS150A12	1.5625	3.125	6.787	1.500	2.756	XCMT12...
52502017		P2D1625FS150A12	1.6250	3.250	6.912	1.500	2.756	
52502018		P2D1688FS150A12	1.6875	3.375	7.037	1.500	2.756	
52502019		P2D1750FS150A12	1.7500	3.500	7.162	1.500	2.756	
52502020		P2D1875FS150A13	1.8750	3.750	7.412	1.500	2.756	XCMT13
52502021		P2D2000FS150A14	2.0000	4.000	7.664	1.500	2.756	XCMT14...
52502022		P2D2125FS150A14	2.1250	4.250	7.912	1.500	2.756	
52502023		P2D2250FS150A16	2.2500	4.500	8.162	1.500	2.756	XCMT16...
52502024		P2D2375FS150A16	2.3750	4.750	8.412	1.500	2.756	
52502025		P2D2500FS150A16	2.5000	5.000	8.662	1.500	2.756	

Packed: 1 pc.

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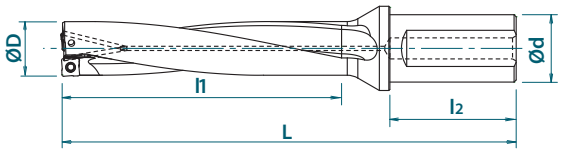
List 78031 NEW SIZES!

P2D (Metric)

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Drilling Depth (mm) l1	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
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	
7803123		P2D1800FS25M05	18.0	36	110	25	56	
7803124		P2D1850FS25M05	18.5	37	111	25	56	
7803125		P2D1900FS25M06	19.0	38	112	25	56	XCMT06…
7803126		P2D1950FS25M06	19.5	39	113	25	56	
7803127		P2D2000FS25M06	20.0	40	114	25	56	
7803128		P2D2050FS25M06	20.5	41	115	25	56	
7803129		P2D2100FS25M07	21.0	42	121	25	56	XCMT07…
7803130		P2D2150FS25M07	21.5	43	122	25	56	
7803131		P2D2200FS25M07	22.0	44	123	25	56	
7803132		P2D2250FS25M07	22.5	45	124	25	56	
7803133		P2D2300FS25M07	23.0	46	125	25	56	
7803134		P2D2350FS32M07	23.5	47	130	32	60	
7803135		P2D2400FS32M07	24.0	48	131	32	60	
7803136		P2D2450FS32M07	24.5	49	132	32	60	
7803137		P2D2500FS32M08	25.0	50	133	32	60	XCMT08…
7803138		P2D2550FS32M08	25.5	51	134	32	60	
7803139		P2D2600FS32M08	26.0	52	135	32	60	
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	
7803144		P2D2900FS32M09	29.0	58	141	32	60	XCMT09…
7803145		P2D3000FS32M09	30.0	60	143	32	60	
7803146		P2D3100FS32M09	31.0	62	145	32	60	
7803147		P2D3200FS32M09	32.0	64	147	32	60	
7803148		P2D3300FS40M09	33.0	66	159	40	70	
7803149		P2D3350FS40M09	33.5	67	160	40	70	
7803150		P2D3400FS40M10	34.0	68	161	40	70	XCMT10…
7803151		P2D3500FS40M10	35.0	70	163	40	70	
7803152		P2D3600FS40M10	36.0	72	165	40	70	
7803153		P2D3700FS40M10	37.0	74	167	40	70	
7803154		P2D3800FS40M10	38.0	76	169	40	70	
7803155		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	
7803161		P2D4500FS40M13	45.0	90	190	40	70	XCMT13…
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	

Packed: 1 pc.

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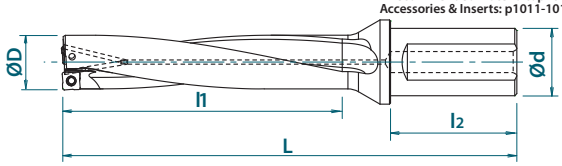
List 78031 (Continued) NEW SIZES!

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

P2D (Metric)

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





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	
7803166	Flat Shank	P2D5000FS40M14	50.0	100	200	40	70	XCMT14…
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	
7803171		P2D5500FS40M14	55.0	110	210	40	70	
7803172		P2D5600FS40M14	56.0	112	212	40	70	
7803173		P2D5700FS40M16	57.0	114	214	40	70	XCMT16…
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.

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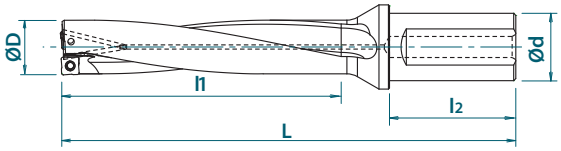
List 52503 NEW SIZES!

P3D (Inch)

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (inch) D	Drilling Depth (inch) l1	Overall Length (inch) L	Shank Dia. (inch) d	Shank Length (Inch) l2	Applicable Insert
52503008	Flat Shank	P3D0625FS075A04	0.6250	1.875	4.750	0.750	1.969	XCMT04…
52503009		P3D0656FS075A04	0.6563	1.969	4.843	0.750	1.969	
52503010		P3D0688FS075A05	0.6875	2.063	4.937	0.750	1.969	XCMT05…
52503011		P3D0750FS100A06	0.7500	2.250	5.361	1.000	2.205	XCMT06…
52503012		P3D0812FS100A06	0.8125	2.438	5.548	1.000	2.205	
52503000		P3D0875FS100A07	0.8750	2.625	5.736	1.000	2.205	XCMT07…
52503001		P3D0937FS125A07	0.9375	2.813	6.080	1.250	2.362	
52503002		P3D1000FS125A08	1.0000	3.000	6.268	1.250	2.362	XCMT08…
52503003		P3D1062FS125A08	1.0625	3.188	6.455	1.250	2.362	
52503004		P3D1125FS125A08	1.1250	3.375	6.643	1.250	2.362	
52503005		P3D1187FS125A09	1.1875	3.563	6.830	1.250	2.362	XCMT09…
52503006		P3D1250FS125A09	1.2500	3.750	7.018	1.250	2.362	
52503007		P3D1312FS150A09	1.3125	3.938	7.599	1.500	2.756	
52503013		P3D1375FS150A10	1.3750	4.125	7.787	1.500	2.756	XCMT10…
52503014		P3D1437FS150A10	1.4375	4.313	7.974	1.500	2.756	
52503015		P3D1500FS150A10	1.5000	4.500	8.162	1.500	2.756	
52503016		P3D1563FS150A12	1.5625	4.688	8.349	1.500	2.756	XCMT12…
52503017		P3D1625FS150A12	1.6250	4.875	8.537	1.500	2.756	
52503018		P3D1688FS150A12	1.6875	5.063	8.724	1.500	2.756	
52503019		P3D1750FS150A12	1.7500	5.250	8.912	1.500	2.756	
52503020		P3D1875FS150A13	1.8750	5.625	9.287	1.500	2.756	XCMT13…
52503021		P3D2000FS150A14	2.0000	6.000	9.662	1.500	2.756	XCMT14…
52503022		P3D2125FS150A14	2.1250	6.375	10.037	1.500	2.756	
52503023		P3D2250FS150A16	2.2500	6.750	10.412	1.500	2.756	XCMT16…
52503024		P3D2375FS150A16	2.3750	7.125	10.787	1.500	2.756	
52503025		P3D2500FS150A16	2.5000	7.500	11.162	1.500	2.756	

Packed: 1 pc.

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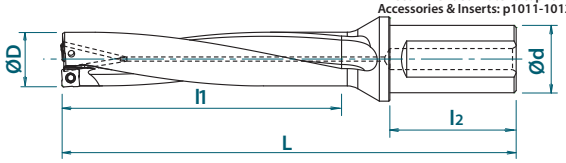
List 78032 NEW SIZES!

P3D (Metric)

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Drilling Depth (mm) l1	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
7803217	Flat Shank	P3D1500FS20M04	15.0	45.0	110.0	20	50	XCMT04…
7803218		P3D1550FS20M04	15.5	46.5	111.5	20	50	
7803219		P3D1600FS20M04	16.0	48.0	113.0	20	50	
7803220		P3D1650FS20M04	16.5	49.5	114.5	20	50	
7803221		P3D1700FS20M05	17.0	51.0	119.0	20	50	XCMT05…
7803222		P3D1750FS20M05	17.5	52.5	120.5	20	50	
7803223		P3D1800FS25M05	18.0	54.0	128.0	25	56	
7803224		P3D1850FS25M05	18.5	55.5	129.5	25	56	
7803225		P3D1900FS25M06	19.0	57.0	131.0	25	56	XCMT06…
7803226		P3D1950FS25M06	19.5	58.5	132.5	25	56	
7803227		P3D2000FS25M06	20.0	60.0	134.0	25	56	
7803228		P3D2050FS25M06	20.5	61.5	135.5	25	56	
7803229		P3D2100FS25M07	21.0	63.0	142.0	25	56	XCMT07…
7803230		P3D2150FS25M07	21.5	65.0	144.0	25	56	
7803231		P3D2200FS25M07	22.0	66.0	145.0	25	56	
7803232		P3D2250FS25M07	22.5	68.0	147.0	25	56	
7803233		P3D2300FS25M07	23.0	69.0	148.0	25	56	
7803234		P3D2350FS32M07	23.5	71.0	154.0	32	60	
7803235		P3D2400FS32M07	24.0	72.0	155.0	32	60	
7803236		P3D2450FS32M07	24.5	74.0	157.0	32	60	
7803237		P3D2500FS32M08	25.0	75.0	158.0	32	60	XCMT08…
7803238		P3D2550FS32M08	25.5	77.0	160.0	32	60	
7803239		P3D2600FS32M08	26.0	78.0	161.0	32	60	
7803240		P3D2650FS32M08	26.5	80.0	163.0	32	60	
7803241		P3D2700FS32M08	27.0	81.0	164.0	32	60	
7803242		P3D2800FS32M08	28.0	84.0	167.0	32	60	
7803243		P3D2850FS32M08	28.5	86.0	169.0	32	60	
7803244		P3D2900FS32M09	29.0	87.0	170.0	32	60	XCMT09…
7803245		P3D3000FS32M09	30.0	90.0	173.0	32	60	
7803246		P3D3100FS32M09	31.0	93.0	176.0	32	60	
7803247		P3D3200FS32M09	32.0	96.0	179.0	32	60	
7803248		P3D3300FS40M09	33.0	99.0	192.0	40	70	
7803249		P3D3350FS40M09	33.5	101.0	194.0	40	70	
7803250		P3D3400FS40M10	34.0	102.0	195.0	40	70	XCMT10…
7803251		P3D3500FS40M10	35.0	105.0	198.0	40	70	
7803252		P3D3600FS40M10	36.0	108.0	201.0	40	70	
7803253		P3D3700FS40M10	37.0	111.0	204.0	40	70	
7803254		P3D3800FS40M10	38.0	114.0	207.0	40	70	
7803255		P3D3900FS40M12	39.0	117.0	217.0	40	70	XCMT12…
7803256		P3D4000FS40M12	40.0	120.0	220.0	40	70	
7803257		P3D4100FS40M12	41.0	123.0	223.0	40	70	
7803258		P3D4200FS40M12	42.0	126.0	226.0	40	70	
7803259		P3D4300FS40M12	43.0	129.0	229.0	40	70	
7803260		P3D4400FS40M12	44.0	132.0	232.0	40	70	

Packed: 1 pc.

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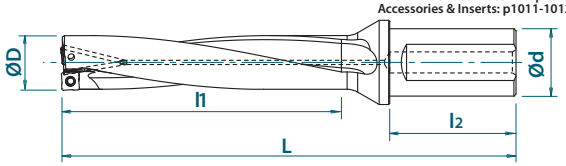
List 78032 (Continued) NEW SIZES!

P3D (Metric)

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Drilling Depth (mm) l1	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
7803261	Flat Shank	P3D4500FS40M13	45.0	135.0	235.0	40	70	XCMT13…
7803262		P3D4600FS40M13	46.0	138.0	238.0	40	70	
7803263		P3D4700FS40M13	47.0	141.0	241.0	40	70	
7803264		P3D4800FS40M13	48.0	144.0	244.0	40	70	
7803265		P3D4900FS40M13	49.0	147.0	247.0	40	70	
7803266		P3D5000FS40M14	50.0	150.0	250.0	40	70	XCMT14…
7803267		P3D5100FS40M14	51.0	153.0	253.0	40	70	
7803268		P3D5200FS40M14	52.0	156.0	256.0	40	70	
7803269		P3D5300FS40M14	53.0	159.0	259.0	40	70	
7803270		P3D5400FS40M14	54.0	162.0	262.0	40	70	
7803271		P3D5500FS40M14	55.0	165.0	265.0	40	70	
7803272		P3D5600FS40M14	56.0	168.0	268.0	40	70	
7803273		P3D5700FS40M16	57.0	171.0	271.0	40	70	XCMT16…
7803274		P3D5800FS40M16	58.0	174.0	274.0	40	70	
7803275		P3D5900FS40M16	59.0	177.0	277.0	40	70	
7803276		P3D6000FS40M16	60.0	180.0	280.0	40	70	
7803277		P3D6100FS40M16	61.0	183.0	283.0	40	70	
7803278		P3D6200FS40M16	62.0	186.0	286.0	40	70	
7803279		P3D6300FS40M16	63.0	189.0	289.0	40	70	

Packed: 1 pc.

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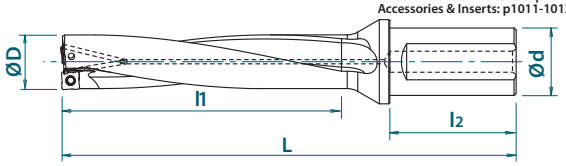
List 52504 NEW SIZES!

P4D (Inch)

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (inch) D	Drilling Depth (inch) l1	Overall Length (inch) L	Shank Dia. (inch) d	Shank Length (Inch) l2	Applicable Insert
52504008	Flat Shank	P4D0625FS075A04	0.6250	2.500	5.375	0.750	1.969	XCMT04...
52504009		P4D0656FS075A04	0.6563	2.625	5.500	0.750	1.969	
52504010		P4D0688FS075A05	0.6875	2.750	5.625	0.750	1.969	XCMT05...
52504011		P4D0750FS100A06	0.7500	3.000	6.111	1.000	2.205	XCMT06...
52504012		P4D0812FS100A06	0.8125	3.250	6.361	1.000	2.205	
52504000		P4D0875FS100A07	0.8750	3.500	6.611	1.000	2.205	XCMT07...
52504001		P4D0937FS125A07	0.9375	3.750	7.018	1.250	2.362	
52504002		P4D1000FS125A08	1.0000	4.000	7.268	1.250	2.362	XCMT08...
52504003		P4D1062FS125A08	1.0625	4.250	7.518	1.250	2.362	
52504004		P4D1125FS125A08	1.1250	4.500	7.768	1.250	2.362	
52504005		P4D1187FS125A09	1.1875	4.750	8.018	1.250	2.362	XCMT09...
52504006		P4D1250FS125A09	1.2500	5.000	8.268	1.250	2.362	
52504007		P4D1312FS150A09	1.3125	5.250	8.912	1.500	2.756	
52504013		P4D1375FS150A10	1.3750	5.500	9.162	1.500	2.756	XCMT10...
52504014		P4D1437FS150A10	1.4375	5.750	9.412	1.500	2.756	
52504015		P4D1500FS150A10	1.5000	6.000	9.662	1.500	2.756	
52504016		P4D1563FS150A12	1.5625	6.250	9.912	1.500	2.756	XCMT12...
52504017		P4D1625FS150A12	1.6250	6.500	10.162	1.500	2.756	
52504018		P4D1688FS150A12	1.6875	6.750	10.412	1.500	2.756	
52504019		P4D1750FS150A12	1.7500	7.000	10.662	1.500	2.756	
52504020		P4D1875FS150A13	1.8750	7.500	11.162	1.500	2.756	XCMT13...
52504021		P4D2000FS150A14	2.0000	8.000	11.662	1.500	2.756	XCMT14...
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.

PXT

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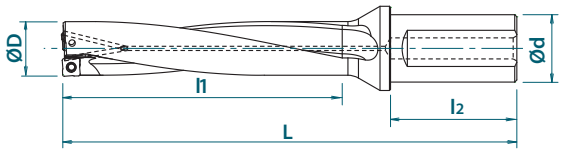
List 78033 NEW SIZES!

P4D (Metric)

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Drilling Depth (mm) l1	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
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	
7803323		P4D1800FS25M05	18.0	72	146	25	56	
7803324		P4D1850FS25M05	18.5	74	148	25	56	
7803325		P4D1900FS25M06	19.0	76	150	25	56	XCMT06...
7803326		P4D1950FS25M06	19.5	78	152	25	56	
7803327		P4D2000FS25M06	20.0	80	154	25	56	
7803328		P4D2050FS25M06	20.5	82	156	25	56	
7803329		P4D2100FS25M07	21.0	84	163	25	56	XCMT07...
7803330		P4D2150FS25M07	21.5	86	165	25	56	
7803331		P4D2200FS25M07	22.0	88	167	25	56	
7803332		P4D2250FS25M07	22.5	90	169	25	56	
7803333		P4D2300FS25M07	23.0	92	171	25	56	
7803334		P4D2350FS32M07	23.5	94	177	32	60	
7803335		P4D2400FS32M07	24.0	96	179	32	60	
7803336		P4D2450FS32M07	24.5	98	181	32	60	
7803337		P4D2500FS32M08	25.0	100	183	32	60	XCMT08...
7803338		P4D2550FS32M08	25.5	102	185	32	60	
7803339		P4D2600FS32M08	26.0	104	187	32	60	
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	
7803344		P4D2900FS32M09	29.0	116	199	32	60	XCMT09...
7803345		P4D3000FS32M09	30.0	120	203	32	60	
7803346		P4D3100FS32M09	31.0	124	207	32	60	
7803347		P4D3200FS32M09	32.0	128	211	32	60	
7803348		P4D3300FS40M09	33.0	132	225	40	70	
7803349		P4D3350FS40M09	33.5	134	227	40	70	
7803350		P4D3400FS40M10	34.0	136	229	40	70	XCMT10...
7803351		P4D3500FS40M10	35.0	140	233	40	70	
7803352		P4D3600FS40M10	36.0	144	237	40	70	
7803353		P4D3700FS40M10	37.0	148	241	40	70	
7803354		P4D3800FS40M10	38.0	152	245	40	70	
7803355		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	

Packed: 1 pc.

PXT

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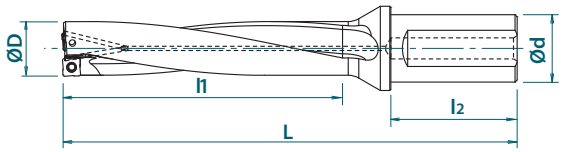
List 78033 (Continued) NEW SIZES!

SPEED FEED P1013 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012

P4D (Metric)





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Drilling Depth (mm) l1	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
7803361	Flat Shank	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	XCMT14...
7803367		P4D5100FS40M14	51.0	204	304	40	70	
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.

PXT

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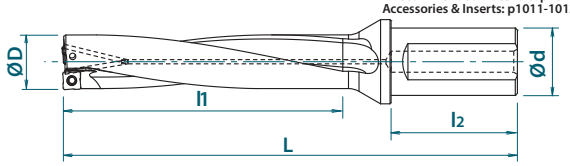
List 52505 NEW SIZES!

P5D (Inch)

SPEED FEED P1014 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





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	
52505008	Flat Shank	P5D0625FS075A04	0.6250	3.125	6.000	0.750	1.969	XCMT04...
52505009		P5D0656FS075A04	0.6563	3.281	6.156	0.750	1.969	
52505010		P5D0688FS075A05	0.6875	3.438	6.312	0.750	1.969	XCMT05...
52505011		P5D0750FS100A06	0.7500	3.750	6.861	1.000	2.205	XCMT06...
52505012		P5D0812FS100A06	0.8125	4.063	7.173	1.000	2.205	
52505000		P5D0875FS100A07	0.8750	4.375	7.485	1.000	2.205	XCMT07...
52505001		P5D0937FS125A07	0.9375	4.688	7.955	1.250	2.362	
52505002		P5D1000FS125A08	1.0000	5.000	8.268	1.250	2.362	XCMT08...
52505003		P5D1062FS125A08	1.0625	5.313	8.580	1.250	2.362	
52505004		P5D1125FS125A08	1.1250	5.625	8.893	1.250	2.362	
52505005		P5D1187FS125A09	1.1875	5.938	9.205	1.250	2.362	XCMT09...
52505006		P5D1250FS125A09	1.2500	6.250	9.518	1.250	2.362	
52505007		P5D1312FS150A09	1.3125	6.563	10.224	1.500	2.756	
52505013		P5D1375FS150A10	1.3750	6.875	10.537	1.500	2.756	XCMT10...
52505014		P5D1437FS150A10	1.4375	7.188	10.849	1.500	2.756	
52505015		P5D1500FS150A10	1.5000	7.500	11.162	1.500	2.756	
52505016		P5D1563FS150A12	1.5625	7.813	11.474	1.500	2.756	XCMT12...
52505017		P5D1625FS150A12	1.6250	8.125	11.787	1.500	2.756	
52505018		P5D1688FS150A12	1.6875	8.438	12.099	1.500	2.756	
52505019		P5D1750FS150A12	1.7500	8.750	12.412	1.500	2.756	
52505020		P5D1875FS150A13	1.8750	9.375	13.037	1.500	2.756	XCMT13...
52505021		P5D2000FS150A14	2.0000	10.000	13.662	1.500	2.756	XCMT14...
52505022		P5D2125FS150A14	2.1250	10.625	14.287	1.500	2.756	
52505023		P5D2250FS150A16	2.2500	11.250	14.912	1.500	2.756	XCMT16...
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.

PXT

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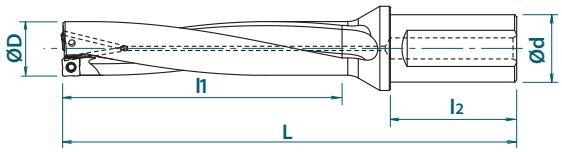
List 78027 NEW SIZES!

P5D (Metric)

SPEED FEED P1014 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Drilling Depth (mm) l1	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
7802717	Flat Shank	P5D1500FS20M04	15.0	75	140	20	50	XCMT04...
7802718		P5D1550FS20M04	15.5	77.5	142.5	20	50	
7802719		P5D1600FS20M04	16.0	80	145	20	50	
7802720		P5D1650FS20M04	16.5	82.5	147.5	20	50	
7802721		P5D1700FS20M05	17.0	85	153	20	50	XCMT05...
7802722		P5D1750FS20M05	17.5	87.5	155.5	20	50	
7802723		P5D1800FS25M05	18.0	90	164	25	56	
7802724		P5D1850FS25M05	18.5	92.5	166.5	25	56	
7802725		P5D1900FS25M06	19.0	95	169	25	56	XCMT06...
7802726		P5D1950FS25M06	19.5	97.5	171.5	25	56	
7802727		P5D2000FS25M06	20.0	100	174	25	56	
7802728		P5D2050FS25M06	20.5	102.5	176.5	25	56	
7802729		P5D2100FS25M07	21.0	105	184	25	56	XCMT07...
7802730		P5D2150FS25M07	21.5	108	187	25	56	
7802731		P5D2200FS25M07	22.0	110	189	25	56	
7802732		P5D2250FS25M07	22.5	113	192	25	56	
7802733		P5D2300FS25M07	23.0	115	194	25	56	
7802734		P5D2350FS32M07	23.5	118	201	32	60	
7802735		P5D2400FS32M07	24.0	120	203	32	60	
7802736		P5D2450FS32M07	24.5	123	206	32	60	
7802737		P5D2500FS32M08	25.0	125	208	32	60	XCMT08...
7802738		P5D2550FS32M08	25.5	128	211	32	60	
7802739		P5D2600FS32M08	26.0	130	213	32	60	
7802740		P5D2650FS32M08	26.5	133	216	32	60	
7802741		P5D2700FS32M08	27.0	135	218	32	60	
7802742		P5D2800FS32M08	28.0	140	223	32	60	
7802743		P5D2850FS32M08	28.5	143	226	32	60	
7802744		P5D2900FS32M09	29.0	145	228	32	60	XCMT09...
7802745		P5D3000FS32M09	30.0	150	233	32	60	
7802746		P5D3100FS32M09	31.0	155	238	32	60	
7802747		P5D3200FS32M09	32.0	160	243	32	60	
7802748		P5D3300FS40M09	33.0	165	258	40	70	
7802749		P5D3350FS40M09	33.5	168	261	40	70	
7802750		P5D3400FS40M10	34.0	170	263	40	70	XCMT10...
7802751		P5D3500FS40M10	35.0	175	268	40	70	
7802752		P5D3600FS40M10	36.0	180	273	40	70	
7802753		P5D3700FS40M10	37.0	185	278	40	70	
7802754		P5D3800FS40M10	38.0	190	283	40	70	
7802755		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	

Packed: 1 pc.

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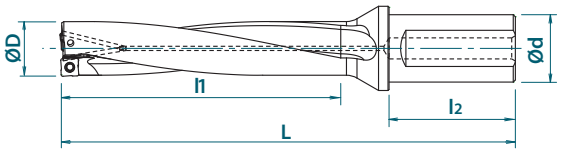
List 78027 (Continued) NEW SIZES!

P5D (Metric)

SPEED FEED P1014 | COOLANT THROUGH | INDEX.

Recommended Materials: p1014
Accessories & Inserts: p1011-1012





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Drilling Depth (mm) l1	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
7802761	Flat Shank	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	XCMT14...
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	
7802772		P5D5600FS40M14	56.0	280	380	40	70	
7802773		P5D5700FS40M16	57.0	285	385	40	70	XCMT16...
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.

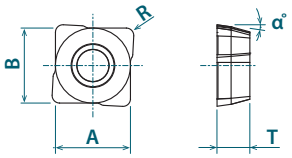
PXT

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List 78P5D NEW SIZES!

PD Inserts





Designation	No. of Cutting Edges	Insert Size				EDP Number		
		A x B (mm)	T (mm)	α	R (mm)	XP9020	XP1010	CK110
XCMT042204ER-DM	4	5 x 5	2.2	8°	0.4	7823064	-	-
XCMT042204ER-DR						-	7823164	-
XCMT042204ER-DN						-	-	7823264
XCMT052404ER-DM		5.83 x 5.83	2.4			7823065	-	-
XCMT052404ER-DR						-	7823165	-
XCMT052404ER-DN						-	-	7823265
XCMT062706ER-DM		6.46 x 6.46	2.7		0.6	7823066	-	-
XCMT062706ER-DR						-	7823166	-
XCMT062706ER-DN						-	-	7823266
XCMT073106ER-DM		7.42 x 7.42	3.1			7823067	-	-
XCMT073106ER-DR						-	7823167	-
XCMT073106ER-DN						-	-	7823267
XCMT083508ER-DM		8.71 x 8.71	3.5		0.8	7823068	-	-
XCMT083508ER-DR						-	7823168	-
XCMT083508ER-DN						-	-	7823268
XCMT094008ER-DM		10.04 x 10.04	4.0			7823069	-	-
XCMT094008ER-DR						-	7823169	-
XCMT094008ER-DN						-	-	7823269
XCMT104608ER-DM		10.89 x 10.89	4.6			7823097	-	-
XCMT104608ER-DR						-	7823197	-
XCMT104608ER-DN						-	-	7823297
XCMT125010ER-DM		12.57 x 12.57	5.0		1.0	7823071	-	-
XCMT125010ER-DR						-	7823171	-
XCMT125010ER-DN						-	-	7823271
XCMT135212ER-DM		14.05 x 14.05	5.2		1.2	7823072	-	-
XCMT135212ER-DR						-	7823172	-
XCMT135212ER-DN						-	-	7823272
XCMT145612ER-DM		15.58 x 15.58	5.6			7823073	-	-
XCMT145612ER-DR						-	7823173	-
XCMT145612ER-DN						-	-	7823273
XCMT165912ER-DM		17.28 x 17.28	5.8			7823075	-	-
XCMT165912ER-DR						-	7823175	-
XCMT165912ER-DN						-	-	7823275

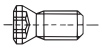
Packed: 10 pcs.

PXI

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List 7808H

PD Accessories

Appearance	EDP Number	Designation	Applicable Insert	Recommended Tightening Torque
 Clamping Screw	7808139	FS20543P (Torx 6IP)	XCMT04…	0.7 Nm
			XCMT05…	
	7808138	FS22550P (Torx 7IP)	XCMT06…	1.0 Nm
	7808136	FS25560P (Torx 8IP)	XCMT07…	1.6 Nm
	7808135	FS30570P (Torx 9IP)	XCMT08…	2.2 Nm
			XCMT09…	
	7808137	FS35586P (Torx 15IP)	XCMT10…	3.2 Nm
			XCMT12…	
	7808114	FS45510P (Torx 20IP)	XCMT13…	5.0 Nm
			XCMT14…	
			XCMT16…	
 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.

PXT

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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)	~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)
P	Carbon Steels, Alloy Steels (1050, 4140)	~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)
P	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 - 0.004)	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)	~350 N/mm²	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)
K	Ductile Cast Iron (60-40-18)	~800 N/mm²	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)	-	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)
S	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)	0.0032 (0.0015 - 0.006)	0.004 (0.0024 - 0.008)	0.0055 (0.003 - 0.008)	0.0055 (0.003 - 0.008)

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)
P	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)
P	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/mm²	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)
K	Ductile Cast Iron (60-40-18)	~800 N/mm²	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)
S	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)

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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)	~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)
	Carbon Steels, Alloy Steels (1050, 4140)	~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)
	Die Steels (H13, D2)	~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)	~350 N/mm²	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)
	Ductile Cast Iron (60-40-18)	~800 N/mm²	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)	-	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)
	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)	0.0024 (0.0015 - 0.004)	0.004 (0.0024 - 0.006)	0.004 (0.003 - 0.006)	0.004 (0.003 - 0.006)

Recommended Materials by Application

Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XP9020	DM	Yes	◎	◎	○	○	○	
XP1010	DR	Yes	○		◎			
CK110	DN	Yes				◎		

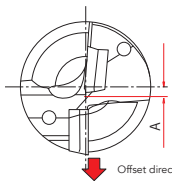
DM: Steel & Stainless Steel DR: Cast Iron DN: Non-Ferrous

○ good ◎ best

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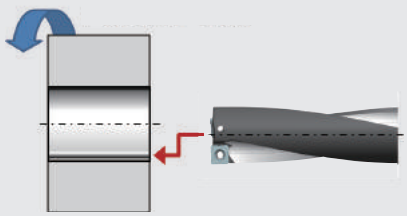
Maximum Offset for Drilling on Lathe

Drill Diameter (Inch)	Maximum Offset (Inch)	Max Diameter (Inch)
0.6250	0.0078	0.6406
0.6563	0.0078	0.6718
0.6875	0.0157	0.7189
0.7500	0.0196	0.7892
0.8125	0.0118	0.8361
0.8750	0.0275	0.9300
0.9375	0.0118	0.9611
1.0000	0.0354	1.0708
1.0625	0.0196	1.1017
1.1250	0.0039	1.1328
1.1875	0.0393	1.2661
1.2500	0.0236	1.2972
1.3125	0.0078	1.3281
1.3750	0.0315	1.4380
1.4375	0.0275	1.4925
1.5000	0.0118	1.5236
1.5625	0.0315	1.6255
1.6250	0.0275	1.6800
1.6875	0.0157	1.7189
1.7500	0.0078	1.7656
1.8750	0.0196	1.9142
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

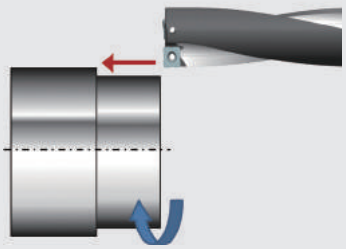


Maximum Offset Amount, A, for Drilling on a lathe.

■ **Turning Internal Diameter**
Normal rotation (Drill=Fixed)



■ **Turning External Diameter**
Normal rotation (Drill=Fixed)



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	1.0	23.0
21.5	0.9	23.3
22.0	0.8	23.6
22.5	0.7	23.9
23.0	0.5	24.0
23.5	0.4	24.3
24.0	0.3	24.6
24.5	0.2	24.9
25.0	1.1	27.2
25.5	0.9	27.3
26.0	0.8	27.6
26.5	0.7	27.9
27.0	0.6	28.2
28.0	0.3	28.6
28.5	0.2	28.9
29.0	1.3	31.6
30.0	1.1	32.2
31.0	0.8	32.6
32.0	0.6	33.2
33.0	0.3	33.6
33.5	0.2	33.9
34.0	1.1	36.2
35.0	0.8	36.6
36.0	0.8	37.6
37.0	0.6	38.2
38.0	0.3	38.6
39.0	1.0	41.0
40.0	0.9	41.8
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
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

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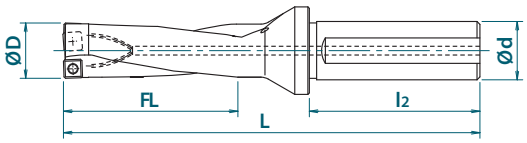
List 78001

PHP (Metric)

SPEED FEED P1018 | COOLANT THROUGH | INDEX.

Recommended Materials: p1018
Accessories & Inserts: p1017





EDP No.	Body Type	Designation	Drill Dia. (mm) D	Flute Length (mm) FL	Overall Length (mm) L	Shank Dia. (mm) d	Shank Length (mm) l2	Applicable Insert
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	
7800114		PHP210FS25M06-3D	21.0	63	143	25	56	SCMT07…
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	
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	SCMT08…
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	
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	SCMT10…
7800130		PHP300FS32M10-3D	30.0	90	179	32	60	
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.**

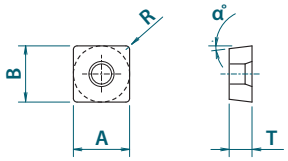
PXT

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List 78PHP

PHP Inserts





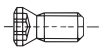
Designation	No. of Cutting Edges	Insert Size				EDP Number	
		A x B (mm)	T (mm)	α	R (mm)	XP9040	XC9025
SCMT042204-DM	4	4.8 x 4.8	2.2	7°	0.4	7818001	7817001
SCMT052404-DM		5.4 x 5.4	2.4			7818002	7817002
SCMT062806-DM		6.2 x 6.2	2.8		0.6	7818003	7817003
SCMT073206-DM		7.2 x 7.2	3.2			7818004	7817004
SCMT083608-DM		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.**

PXI

List 7808H

PHP Accessories

Appearance	EDP No.	Designation	Applicable Insert	Recommended Tightening Torque
 Clamping Screw	7808100	FS18538 (Torx 6)	SCMT04…	0.4 Nm
	7808102	FS20540 (Torx 6)	SCMT05…	0.7 Nm
	7808104	FS22550 (Torx 7)	SCMT06…	1.0 Nm
	7808108	FS25560 (Torx 8)	SCMT07…	1.2 Nm
	7808110	FS30573 (Torx 8)	SCMT08…	1.2 Nm
	7808111	FS35572 (Torx 15)	SCMT10…	3.2 Nm
	7808113	FS45510 (Torx 20)	SCMT12…	5.0 Nm
 Wrench	7808203	T6-D (Torx 6)	SCMT04…	
			SCMT05…	
	7808204	T7-D (Torx 7)	SCMT06…	
	7808205	T8-D (Torx 8)	SCMT07…	
			SCMT08…	
	7808208	T15-D (Torx 15)	SCMT10…	
	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.

PXT

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

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/mm²	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/mm²	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	◎	◎		◎	○	
XC9025	DM	Yes	○	○	◎	○		

DM: Center Cutting Drill

○ good ◎ best

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List 52700

SPEED FEED P1021 | COOLANT THROUGH | INDEX.

Recommended Materials: p1021
Accessories & Inserts: p1020

PAS Bore (Inch)



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	Effective Dia. (inch) D1	No. of Teeth	Tool Height (inch) H	Flange Dia. (inch) D2	Bore Dia. (inch) d3	Keyway Width (inch) a	Keyway Depth (inch) b	Applicable Insert
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.

PXT

List 78020

SPEED FEED P1021 | COOLANT THROUGH | INDEX.

Recommended Materials: p1021
Accessories & Inserts: p1020

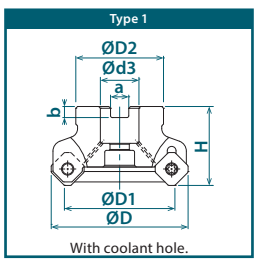
PAS Bore (Metric)

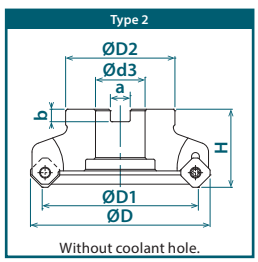


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	Effective Dia. (mm) D1	No. of Teeth	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
7802000	Bore	Normal	PAS15R050M22-4	1	65	50	4	45	45	22	10.4	6.3	SNKU15…
7802001			PAS15R063M22-5	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.**

PXT

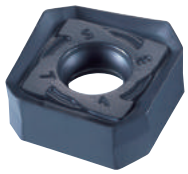


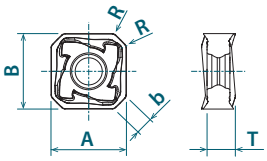


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List 78PAS

PAS Inserts





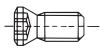
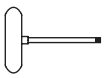
Designation	No. of Cutting Edges	Insert Size				EDP Number				
		AxB (mm)	T (mm)	R (mm)	b (mm)	XP3035	XC3025	XP2040	XC1015	XC5040
SNKU1505AZER-GM	8	15.88 x 15.88	7.18	1.0	3.65	7814061	7819061	7813061	-	-
SNKU1505AZER-GR						-	-	-	7812060	-
SNKU1505AZER-SM						-	-	-	-	52700006

Packed: 10 pcs.

PXI

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.

PXT

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

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/mm²	590 (330 - 1150)	0.008 (0.006 - 0.014)	0.160
	Ductile Cast Iron (60-40-18)	~600 N/mm²	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
XP3035	GM	–	◎	○	○			
XC3025	GM	–	◎		○			
XP2040	GM	–	○					○
		Yes		◎				
XC1015	GR	–			◎			
XC5040	SM	Yes		○			◎	

GM: Medium Cutting GR: Rough Cutting

○ good ◎ best

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List 52800

PAO Bore (Inch)

SPEED FEED P1026 | COOLANT THROUGH | INDEX.

Recommended Materials: p1026
Accessories & Inserts: p1024-1025



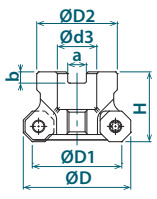


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	Effective Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert
					D	D1		H	D2	d3	a	b	
52800000	Bore	Normal	PAO06R200A075-5	1	2.401	2.000	5	1.575	1.772	0.750	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		Close	PAO06R400A125W-14	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.

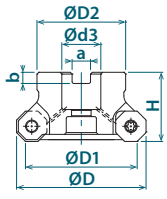
PXT

Type 1



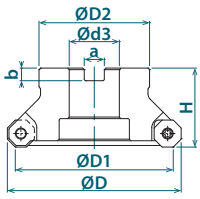
With coolant hole.

Type 2



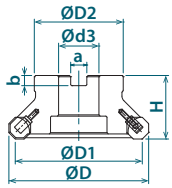
With coolant hole.

Type 3



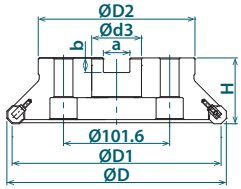
Without coolant hole.

Type 4



Without coolant hole.

Type 5



Without coolant hole.

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List 78120

PAO Bore (Metric)

SPEED FEED P1026 | COOLANT THROUGH | INDEX.

Recommended Materials: p1026
Accessories & Inserts: p1024-1025



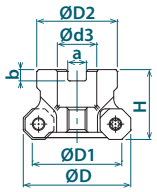


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	Effective Dia. (mm) D1	No. of Teeth	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
7802020	Bore	Normal	PAO06R050M22-5	1	60.2	50	5	40	45	22.000	10.4	6.3	OZKU06... / XAHT06…
7802021			PAO06R063M22-7	2	73.2	63	7	40	50	22.000	10.4	6.3	
7802022			PAO06R080M25.4-8	2	90.2	80	8	50	60	25.400	9.5	6.0	
7802023			PAO06R100M31.7-10	3	110.2	100	10	50	70	31.750	12.7	8.0	
7802024			PAO06R125M38.1-12	3	135.2	125	12	63	90	38.100	15.9	10.0	
7802089			PAO06R100M31.7W-14	4	110.2	100	14	50	70	31.750	12.7	8.0	
7802091		Close	PAO06R125M38.1W-17	4	135.2	125	17	63	90	38.100	15.9	10.0	
7802093			PAO06R160M50.8W-20	4	170.2	160	20	63	100	50.800	19.0	11.0	
7802095			PAO06R200M47.6W-25	5	210.2	200	25	63	150	47.625	25.4	14.0	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

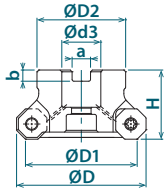
PXT

Type 1



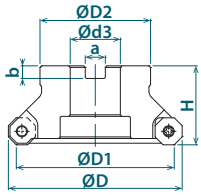
With coolant hole.

Type 2



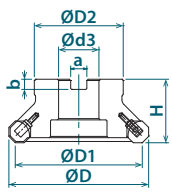
With coolant hole.

Type 3



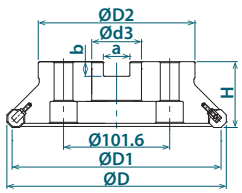
Without coolant hole.

Type 4



Without coolant hole.

Type 5



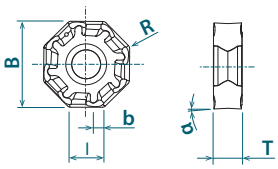
Without coolant hole.

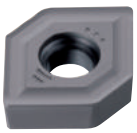
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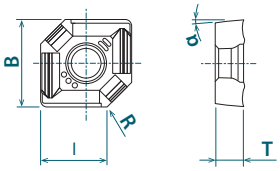
List 78PAO

PAO Inserts





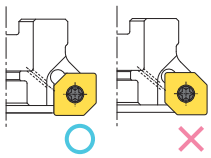




Designation	No. of Cutting Edges	Insert Size						EDP Number						
		B (mm)	T (mm)	l (mm)	α	R (mm)	b (mm)	XP3035	XC3030	XP2040	XP2025	XC1015	XP1020	XC5040
OZKU060508SR-GM	16	17.1	5.66	6	3°	0.8	2	7814062	7825062	7813062	7826062	7812062	7821062	-
OZKU060508SR-GR								-	-	-	-	7812086	-	-
OZKU060508ER-SM								-	-	-	-	-	-	7816085
XAHT060525SR-GM	2			10		2.5	-	7814064	-	-	-	7812064	-	-

Packed: 10 pcs.
Correct orientation of wiper insert:

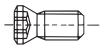
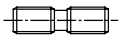
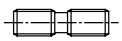
PXI



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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.

PXT

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Cutting Conditions

Work Material		Tensile Strength – Hardness	Insert Size OZKU06… / XAHT06… 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)	0.010 (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/mm²	655 (330 - 1150)	0.012 (0.008 - 0.020)	0.080
	Ductile Cast Iron (60-40-18)	~600 N/mm²	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
XP3035	GM	–	◎	○	○			
XC3030	GM	–	◎		○			
XP2040	GM	–	○					○
		Yes		◎				
XP2025	GM	Yes	○	◎			○	
XC1015	GM/GR	–			◎			
XP1020	GM	–			◎			
XC5040	SM	Yes		○			◎	

GM: Medium Cutting GR: Rough Cutting SM: Heat Resistant Alloy

○ good ◎ best

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List 78013

PSE SA/FA (Inch)



Recommended Materials: p1036
Accessories & Inserts: p1034-1035
Maximum Ramping Angle: p1037

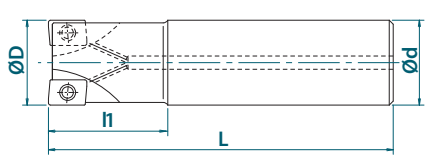
EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	No. of Teeth	Shank Dia. (inch) d	Overall Length (inch) L	Neck Length (inch) L1	Applicable Insert
7801300	Cylindrical Shank Short	Normal	PSE11R063SA063-2S	1	0.625	2	0.625	3.543	0.984	ZD_T11...
7801301			PSE11R075SA075-3S	1	0.750	3	0.750	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		Close	PSE11R100SA100-4S	1	1.000	4	1.000	4.724	1.378	
7801305			PSE11R125SA125-5S	1	1.250	5	1.250	5.118	1.772	
7801306		Normal	PSE15R100SA100-2S	1	1.000	2	1.000	4.724	1.378	ZDKT15...
7801307			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		Close	PSE15R125SA125-3S	1	1.250	3	1.250	5.118	1.772	
7801310			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		Close	PSE11R100SA100-4L	1	1.000	4	1.000	6.693	2.756	
7801341			PSE11R125SA125-5L	1	1.250	5	1.250	7.480	3.543	
7801342		Normal	PSE15R100SA100-2L	1	1.000	2	1.000	6.693	2.756	ZDKT15...
7801343			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		Close	PSE15R125SA125-3L	1	1.250	3	1.250	7.480	3.543	
7801346			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	ZDKT15...
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		Normal	PSE15R150FA125-3S	2	1.500	3	1.250	4.380	2.100	
7801335		Close	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	ZDKT15...
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		Normal	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).

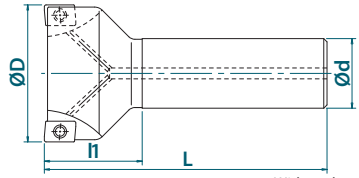
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

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List 78011 NEW SIZES!

PSE SS (Metric)



SPEED FEED P1036 | COOLANT THROUGH | INDEX.

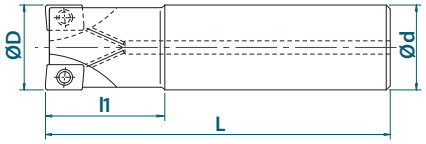
Recommended Materials: p1036
Accessories & Inserts: p1034-1035
Maximum Ramping Angle: p1037

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	No. of Teeth	Shank Dia. (mm) d	Overall Length (mm) L	Neck Length (mm) L1	Applicable Insert
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		Close	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		Normal	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	ZDKT15...
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		Close	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).
This item is stocked overseas. Please contact OSG for availability and delivery.

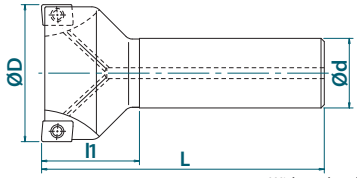
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

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List 78011 NEW SIZES!

PSE SS (Metric)



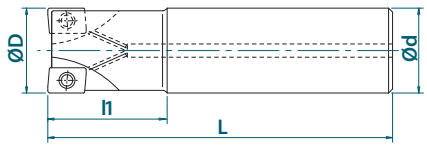
Recommended Materials: p1036
Accessories & Inserts: p1034-1035
Maximum Ramping Angle: p1037

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	No. of Teeth	Shank Dia. (mm) d	Overall Length (mm) L	Neck Length (mm) L1	Applicable Insert
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	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).
This item is stocked overseas. Please contact OSG for availability and delivery.

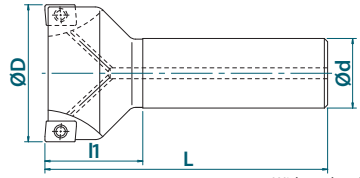
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

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List 78012

PSE Bore (Inch)

Recommended Materials: p1036
Accessories & Inserts: p1034-1035
Maximum Ramping Angle: p1037

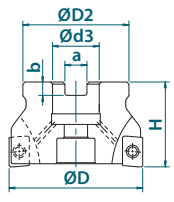


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Tool Height (inch)	Flange Dia. (inch)	Bore Hole Dia. (inch)	Keyway Width (inch)	Keyway Depth (inch)	Applicable Insert
					D		H	D2	d3	a	b	
7801200	Bore	Normal	PSE11R200A075-5	2	2.000	5	1.575	1.772	0.750	0.315	0.197	ZD_T11...
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		Close	PSE11R200A075-7	2	2.000	7	1.575	1.772	0.750	0.315	0.197	
7801204			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	
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).

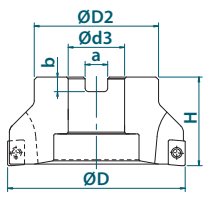
PXT

Type 2



With coolant hole.

Type 3



Without coolant hole.

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List 78010

PSE Bore (Metric)



SPEED FEED P1036 | COOLANT THROUGH | INDEX.

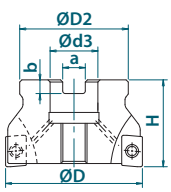
Recommended Materials: p1036
Accessories & Inserts: p1034-1035
Maximum Ramping Angle: p1037

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	No. of Teeth	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Hole Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
7801000	Bore	Normal	PSE11R040M16-4	1	40	4	40	38	16.00	8.4	5.6	ZD_T11...
7801001			PSE11R050M22-5	1	50	5	40	45	22.00	10.4	6.3	
7801002			PSE11R063M22-6	2	63	6	40	50	22.00	10.4	6.3	
7801003			PSE11R080M27-7	2	80	7	50	60	27.00	12.4	7.0	
7801020			PSE11R080M25.4-7	2	80	7	50	60	25.40	9.5	6.0	
7801004		Close	PSE11R040M16-6	1	40	6	40	38	16.00	8.4	5.6	
7801005			PSE11R050M22-7	1	50	7	40	45	22.00	10.4	6.3	
7801006			PSE11R063M22-8	2	63	8	40	50	22.00	10.4	6.3	
7801007			PSE11R080M27-10	2	80	10	50	60	27.00	12.4	7.0	
7801021			PSE11R080M25.4-10	2	80	10	50	60	25.40	9.5	6.0	
7801008		Normal	PSE15R040M16-3	1	40	3	40	38	16.00	8.4	5.6	ZDKT15...
7801009			PSE15R050M22-3	1	50	3	40	45	22.00	10.4	6.3	
7801010			PSE15R063M22-4	2	63	4	40	50	22.00	10.4	6.3	
7801011			PSE15R080M27-5	2	80	5	50	60	27.00	12.4	7.0	
7801022			PSE15R080M25.4-5	2	80	5	50	60	25.40	9.5	6.0	
7801012			PSE15R100M32-7	2	100	7	50	70	32.00	14.4	8.0	
7801023			PSE15R100M31.7-7	3	100	7	50	70	31.75	12.7	8.0	
7801024			PSE15R125M38.1-8	3	125	8	63	90	38.10	15.9	10.0	
7801014		Close	PSE15R040M16-4	1	40	4	40	38	16.00	8.4	5.6	
7801015			PSE15R050M22-5	1	50	5	40	45	22.00	10.4	6.3	
7801016			PSE15R063M22-6	2	63	6	40	50	22.00	10.4	6.3	
7801017			PSE15R080M27-8	2	80	8	50	60	27.00	12.4	7.0	
7801025			PSE15R080M25.4-8	2	80	8	50	60	25.40	9.5	6.0	
7801018			PSE15R100M32-10	2	100	10	50	70	32.00	14.4	8.0	
7801026			PSE15R100M31.7-10	3	100	10	50	70	31.75	12.7	8.0	
7801027			PSE15R125M38.1-11	3	125	11	63	90	38.10	15.9	10.0	

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.

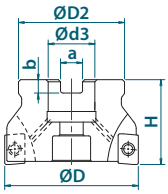
PXT

Type 1



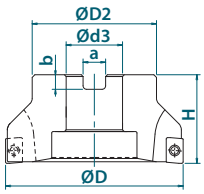
With coolant hole.

Type 2



With coolant hole.

Type 3



Without coolant hole.

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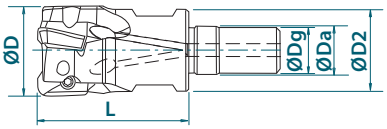
List 52601 NEW!

PSE ASF (Inch)



Recommended Materials: p1036
Accessories & Inserts: p1034-1035
Maximum Ramping Angle: p1037
SF Arbors: p1091





EDP No.	Body Type	Designation	Tool Dia. (inch) D	No. of Teeth	Pilot Dia. (inch) Da	Thread Dia. (mm) Dg	Overall Length (inch) L	Flange Dia. (inch) D2	Wrench Size	Applicable Insert
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	
52601004		PSE15R100ASF12-2	1.000	2	0.492	M12	1.378	0.905	17	ZDKT15…
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).

PXT

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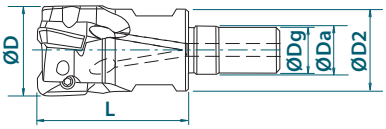
List 78016 NEW SIZES!

PSE SF (Metric)

SPEED FEED P1036 | COOLANT THROUGH | INDEX.

Recommended Materials: p1036
Accessories & Inserts: p1034-1035
Maximum Ramping Angle: p1037
SF Arbors: p1091





EDP No.	Body Type	Designation	Tool Dia. (mm) D	No. of Teeth	Pilot Dia. (mm) Da	Thread Dia. (mm) Dg	Tool Height (mm) L	Flange Dia. (mm) D2	Wrench Size	Applicable Insert
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	18.0	14	
7801614		PSE11R021SF10-3	21	3	10.5	M10	33	18.0	14	
7801615		PSE11R022SF10-3	22	3	10.5	M10	33	18.0	14	
7801602		PSE11R025SF12-4	25	4	12.5	M12	35	23.0	17	
7801616		PSE11R026SF12-3	26	3	12.5	M12	35	23.0	17	
7801603		PSE11R028SF12-4	28	4	12.5	M12	35	23.0	17	
7801604		PSE11R032SF16-5	32	5	17.0	M16	40	28.0	22	
7801617		PSE11R033SF16-3	33	3	17.0	M16	40	28.0	22	
7801605		PSE11R035SF16-5	35	5	17.0	M16	40	28.0	22	
7801606		PSE11R040SF16-6	40	6	17.0	M16	40	28.0	22	
7801607		PSE15R025SF12-2	25	2	12.5	M12	35	23.0	17	ZDKT15…
7801618		PSE15R026SF12-2	26	2	12.5	M12	35	23.0	17	
7801608		PSE15R028SF12-2	28	2	12.5	M12	35	23.0	17	
7801609		PSE15R032SF16-3	32	3	17.0	M16	40	28.0	22	
7801619		PSE15R033SF16-3	33	3	17.0	M16	40	28.0	22	
7801610		PSE15R035SF16-3	35	3	17.0	M16	40	28.0	22	
7801611		PSE15R040SF16-4	40	4	17.0	M16	40	28.0	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).
This item is stocked overseas. Please contact OSG for availability and delivery.

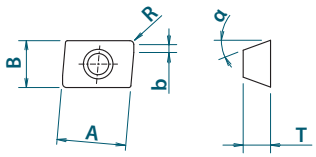
PXT

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List 78PSE

PSE/PSEL Inserts





Designation	No. of Cutting Edges	Insert Size					EDP Number								
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	CK010	XP3035	XC3030	XP2040	XP2025	XC1015	XC5035	XC5040	XP6015
ZDKT11T308SR-GL	2	10×6.8	3.8	15°	0.8	1.4	-	7814026	7825026	7813026	7826026	-	-	-	-
ZDKT11T304SR-GM					0.4	1.8	-	7814025	7825025	7813025	7826025	7812025	-	-	-
ZDKT11T308SR-GM					0.8	1.4	-	7814032	7825032	7813032	7826032	-	-	-	-
ZDKT11T312SR-GM					1.2	1.0	-	7814053	-	-	-	-	-	-	-
ZDKT11T320SR-GM					2.0	2.1	-	7814038	-	-	-	-	-	-	-
ZDKT11T330SR-GM					3.0	1.5	-	7814054	-	-	-	-	-	-	-
ZDKT11T340SR-GM					4.0	-	-	7814055	-	-	-	-	-	-	-
ZDKT11T308SR-GR					0.8	1.4	-	7814033	7825033	7813033	-	7812033	-	-	-
ZDKT11T304ER-SM					0.4	1.8	-	-	-	-	-	-	-	7816034	-
ZDKT11T308ER-SM					0.8	1.4	-	-	-	-	-	-	7815031	7816031	-
ZDKT11T316ER-SM					1.6	0.8	-	-	-	-	-	-	7815027	7816027	-
ZDKT11T308SR-HR					0.8	1.4	-	-	-	-	-	-	-	-	7824035
ZDKT11T302FR-NM					0.2	2.0	7811048	-	-	-	-	-	-	-	-
ZDKT11T304FR-NM					0.4	1.8	7811049	-	-	-	-	-	-	-	-
ZDHT11T304FR-NM			3.5		0.4	1.8	7811024	-	-	-	-	-	-	-	-
ZDKT150508SR-GL	2	14×9.3	5.56	15°	0.8	1.6	-	7814057	7825057	7813057	7826057	-	-	-	-
ZDKT150508SR-GM					0.8	1.6	-	7814029	7825029	7813028	7826029	7812029	-	-	-
ZDKT150512SR-GM					1.2	1.2	-	7814077	-	-	-	-	-	-	-
ZDKT150516SR-GM					1.6	0.8	-	7814078	-	-	-	-	-	-	-
ZDKT150520SR-GM					2.0	2.1	-	7814079	-	-	-	-	-	-	-
ZDKT150530SR-GM					3.0	1.9	-	7814080	-	-	-	-	-	-	-
ZDKT150540SR-GM					4.0	1.1	-	7814081	-	-	-	-	-	-	-
ZDKT150550SR-GM					5.0	0.7	-	7814082	-	-	-	-	-	-	-
ZDKT150508SR-GR					0.8	1.6	-	7814058	7825058	7813058	-	7812058	-	-	-
ZDKT150508ER-SM					0.8	1.6	-	-	-	-	-	-	7815056	7816056	-
ZDKT150508SR-HR					0.8	1.6	-	-	-	-	-	-	-	-	7824036
ZDKT150508FR-NM					0.8	1.6	7811046	-	-	-	-	-	-	-	-

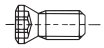
Packed: 10 pcs.

PXI

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List 7808H

PSE Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter (mm)	Applicable Cutter (inch)	Recommended Tightening Torque
 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 (M8×30)	ZD_T11... ZDKT15...	PSE BORE Ø40	n/a	15.0 Nm
	7808151	PS1031 (M10×31)	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.

PXT

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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/mm²	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/mm²	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)

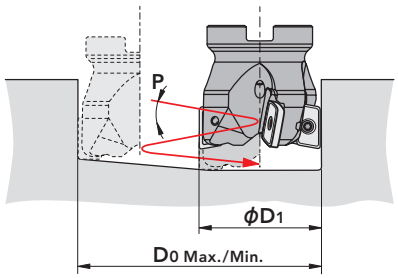
Recommended Materials by Application

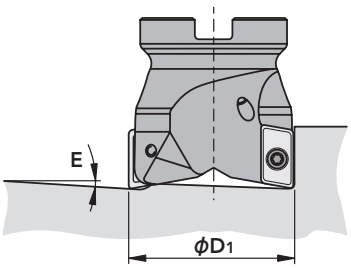
Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
CK010	NM	Yes				◎		
XP3035	GL/GM/GR	–	◎	○	○			
XC3030	GL/GM/GR	–	◎		○			
XP2040	GL/GM/GR	–	○					◎
		Yes		◎			○	
XP2025	GL/GM	Yes	○	◎			○	
XC1015	GM/GR	–			◎			
XC5035	SM	–		◎				○
		Yes		○			○	
XC5040	SM	Yes		○			◎	○
XP6015	HR	–	○		○			◎

GL:Light Cutting GM:Medium Cutting GR: Rough Cutting NM:Aluminum SM:Heat Resistant Alloy HR: Hardened Steel ○ good ◎ best

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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°

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List 53000

PSEL SA/FA (Inch)

SPEED FEED P1042 | COOLANT THROUGH | INDEX.

Recommended Materials: p1042
Accessories & Inserts: p1041

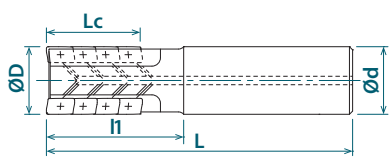


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (inch) Lc	Shank Dia. (inch) d	Overall Length (inch) L	Neck Length (inch) L1	Applicable Insert
53000000	Cylindrical Shank Short	Normal	PSEL11R100SA100-2-27	1	1.000	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	ZDKT15…
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	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).

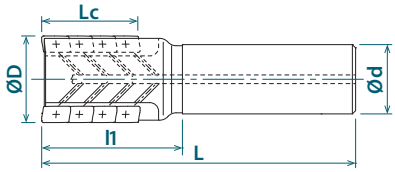
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

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List 78029

PSEL SS (Metric)



Recommended Materials: p1042
Accessories & Inserts: p1041

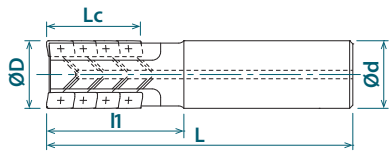


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (mm) Lc	Shank Dia. (mm) d	Overall Length (mm) L	Neck Length (mm) L1	Applicable Insert
7802900	Cylindrical Shank	Normal	PSEL11R025SS25-2-27	1	25	2	3	6	27.0	25	125	50	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	
7802905			PSEL15R040SS42-2-38	1	40	2	3	6	38.0	42	140	60	ZDKT15…
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.

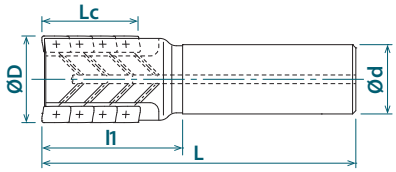
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

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List 53001

PSEL Bore (Inch)



SPEED FEED P1042 | COOLANT THROUGH | INDEX.

Recommended Materials: p1042
Accessories & Inserts: p1041

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (inch) Lc	Tool Height (inch) H	Flange Dia. (inch) D2	Bore Hole Dia. (inch) d3	Keyway Width (inch) a	Keyway Depth (inch) b	Applicable Insert
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).

PXT

List 78028

PSEL Bore (Metric)



SPEED FEED P1041 | COOLANT THROUGH | INDEX.

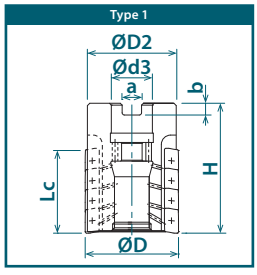
Recommended Materials: p1042
Accessories & Inserts: p1041

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	No. of Teeth	No. of Inserts per Tooth	Total No. of Inserts	Length of Cut (mm) Lc	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Hole Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
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	7.0	
7802852			PSEL15R080M32-4-63	1	80	4	5	20	63.0	88	76	32	14.4	8.0	

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.

PXT

Type 1

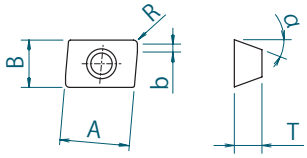


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List 78PSE

PSE/PSEL Inserts





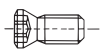
Designation	No. of Cutting Edges	Insert Size					EDP Number								
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	CK010	XP3035	XC3030	XP2040	XP2025	XC1015	XC5035	XC5040	XP6015
ZDKT11T308SR-GL	2	10×6.8	3.8	15°	0.8	1.4	-	7814026	7825026	7813026	7826026	-	-	-	-
ZDKT11T304SR-GM					0.4	1.8	-	7814025	7825025	7813025	7826025	7812025	-	-	-
ZDKT11T308SR-GM					0.8	1.4	-	7814032	7825032	7813032	7826032	-	-	-	-
ZDKT11T312SR-GM					1.2	1.0	-	7814053	-	-	-	-	-	-	-
ZDKT11T320SR-GM					2.0	2.1	-	7814038	-	-	-	-	-	-	-
ZDKT11T330SR-GM					3.0	1.5	-	7814054	-	-	-	-	-	-	-
ZDKT11T340SR-GM					4.0	-	-	7814055	-	-	-	-	-	-	-
ZDKT11T308SR-GR					0.8	1.4	-	7814033	7825033	7813033	-	7812033	-	-	-
ZDKT11T304ER-SM					0.4	1.8	-	-	-	-	-	-	-	7816034	-
ZDKT11T308ER-SM					0.8	1.4	-	-	-	-	-	-	7815031	7816031	-
ZDKT11T316ER-SM					1.6	0.8	-	-	-	-	-	-	7815027	7816027	-
ZDKT11T308SR-HR					0.8	1.4	-	-	-	-	-	-	-	-	7824035
ZDKT11T302FR-NM					0.2	2.0	7811048	-	-	-	-	-	-	-	-
ZDKT11T304FR-NM					0.4	1.8	7811049	-	-	-	-	-	-	-	-
ZDHT11T304FR-NM			3.5		0.4	1.8	7811024	-	-	-	-	-	-	-	-
ZDKT150508SR-GL		14×9.3	5.56		0.8	1.6	-	7814057	7825057	7813057	7826057	-	-	-	-
ZDKT150508SR-GM					0.8	1.6	-	7814029	7825029	7813028	7826029	7812029	-	-	-
ZDKT150512SR-GM					1.2	1.2	-	7814077	-	-	-	-	-	-	-
ZDKT150516SR-GM					1.6	0.8	-	7814078	-	-	-	-	-	-	-
ZDKT150520SR-GM					2.0	2.1	-	7814079	-	-	-	-	-	-	-
ZDKT150530SR-GM					3.0	1.9	-	7814080	-	-	-	-	-	-	-
ZDKT150540SR-GM					4.0	1.1	-	7814081	-	-	-	-	-	-	-
ZDKT150550SR-GM					5.0	0.7	-	7814082	-	-	-	-	-	-	-
ZDKT150508SR-GR					0.8	1.6	-	7814058	7825058	7813058	-	7812058	-	-	-
ZDKT150508ER-SM					0.8	1.6	-	-	-	-	-	-	7815056	7816056	-
ZDKT150508SR-HR					0.8	1.6	-	-	-	-	-	-	-	-	7824036
ZDKT150508FR-NM					0.8	1.6	7811046	-	-	-	-	-	-	-	-

Packed: 10 pcs.
Note: For the 2nd and subsequent steps, use an insert with R0.8 or smaller.

PXI

List 7808H

PSEL Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter (mm)	Applicable Cutter (inch)	Recommended Tightening Torque
 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.

PXT

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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 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	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/mm²	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/mm²	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				◎		
XP3035	GL/GM/GR	-	◎	○	○			
XC3030	GL/GM/GR	-	◎		○			
XP2040	GL/GM/GR	-	○					◎
		Yes		◎			○	
XP2025	GL / GM	Yes	○	◎			○	
XC1015	GM/GR	-			◎			
XC5035	SM	-		◎				○
		Yes		○			○	
XC5040	SM	Yes		○			◎	○
XP6015	HR	-	○		○			◎

GL:Light Cutting GM:Medium Cutting
GR: Rough Cutting NM:Aluminum
SM: Heat Resistant Alloy HR: Hardened Steel

○ good ◎ best

Cutting Conditions Adjustment Ratio

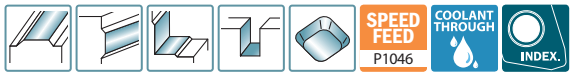
Depth of Cut Aa	Width of Cut Ar Max	Milling Speed Ratio	Feed Rate Ratio
< 0.2D	1D	0.8	0.5
0.25-0.3D	0.7D	0.8	0.6
0.4-0.5D	0.5D	0.9	0.7
0.6-0.7D	0.3D	0.9	0.8
0.8-1.0D	0.2D	1.0	0.9
1.1-1.5D	0.1D	1.0	1.0

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

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List 52900

PSF SA/FA (Inch)



Recommended Materials: p1046
Accessories & Inserts: p1045



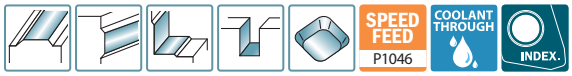
EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch)	No. of Teeth	Shank Dia. (inch)	Overall Length (inch)	Neck Length (inch)	Applicable Insert
					D		d	L	L1	
52900000	Cylindrical Shank Short	Normal	PSF09R100SA100-3S	1	1.000	3	1.000	4.724	1.378	SD_T09…
52900001			PSF09R125SA125-4S	1	1.250	4	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.

PXT

List 78030

PSF SS (Metric)



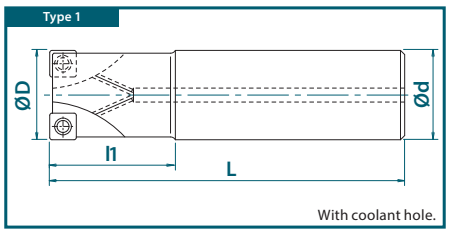
Recommended Materials: p1046
Accessories & Inserts: p1045

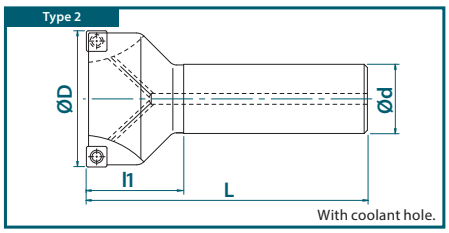


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm)	No. of Teeth	Shank Dia. (mm)	Overall Length (mm)	Neck Length (mm)	Applicable Insert
					D		d	L	L1	
7803001	Cylindrical Shank Short	Normal	PSF09R025SS25-3S	1	25	3	25	120	35	SD_T09…
7803002			PSF09R032SS32-4S	1	32	4	32	130	45	
7803003			PSF09R040SS32-5S	2	40	5	32	140	50	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

PXT





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List 52901

PSF Bore (Inch)

SPEED FEED P1046 | COOLANT THROUGH | INDEX.

Recommended Materials: p1046
Accessories & Inserts: p1045



EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	No. of Teeth	Tool Height (inch) H	Flange Dia. (inch) D2	Bore Hole Dia. (inch) d3	Keyway Width (inch) a	Keyway Depth (inch) b	Applicable Insert
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.

PXT

List 78130

PSF Bore (Metric)

SPEED FEED P1046 | COOLANT THROUGH | INDEX.

Recommended Materials: p1046
Accessories & Inserts: p1045

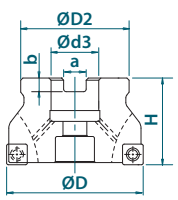


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	No. of Teeth	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Hole Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
7803011	Bore	Normal	PSF09R050M22-6	1	50	6	40	45	22.0	10.4	6.3	SD_T09…
7803012			PSF09R063M22-7	1	63	7	40	50	22.0	10.4	6.3	
7803013			PSF09R080M25.4-9	1	80	9	50	60	25.4	9.5	6.0	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

PXT

Type 1



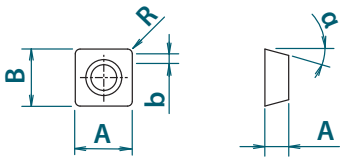
With coolant hole.

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List 78PSF

PSF Inserts





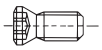
Designation	No. of Cutting Edges	Insert Size					EDP Number				
		AxB (mm)	T (mm)	α	R (mm)	b (mm)	CK010	XP3035	XP2040	XC1015	XC5040
SDKT09T308SR-GL	4	9.07 x 9.07	3.97	15°	0.8	2.5	-	7814073	7813073	-	7816073
SDKT09T308SR-GM							-	7814074	7813074	-	-
SDKT09T308SR-GR							-	-	-	7812075	-
SDHT09T308FR-NM							7811076	-	-	-	-

Packed: 10 pcs.

PXI

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″	1.2 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.

PXT

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

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/mm²	590 (330 - 1150)	0.005 (0.002 - 0.008)	0.120
	Ductile Cast Iron (60-40-18)	~800 N/mm²	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				◎		
XP3035	GL/GM	–	◎	○	○			
XP2040	GL/GM	–	○					◎
		Yes		◎			○	
XC1015	GR	–			◎			
XC5040	GL	Yes		○			◎	

GL:Light Cutting GM:Medium Cutting GR: Rough Cutting NM:Aluminum

○ good ◎ best

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List 53100 NEW!

PSTW Bore (Inch)



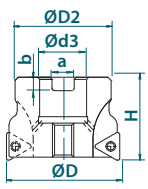
Recommended Materials: p1050
Accessories & Inserts: p1049

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	
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	

Packed: 1 pc.

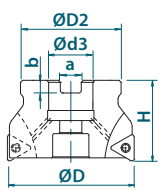
PXT

Type 1



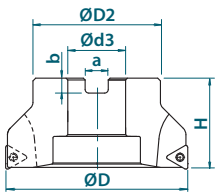
Power Screw Type
With coolant hole.

Type 2



With coolant hole.

Type 3



Without coolant hole.

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List 78131 NEW!

PSTW Bore (Metric)

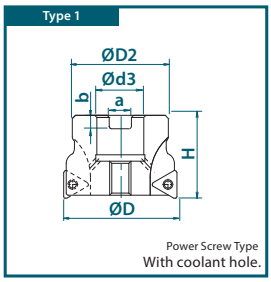


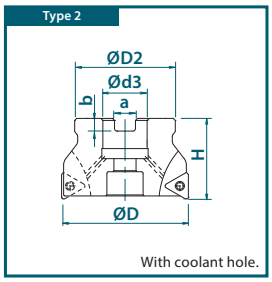
Recommended Materials: p1050
Accessories & Inserts: p1049

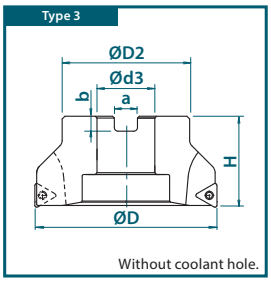
EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	No. of Teeth	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
7803100	Bore	Normal	PSTW12R050M22-3	1	50	3	40	45	22	10.4	6.3	TNKU12…
7803102			PSTW12R063M22-3	2	63	3	40	50	22	10.4	6.3	
7803110			PSTW12R080M27-5	2	80	5	50	60	27.0	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	32.0	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		Close	PSTW12R050M22-4	1	50	4	40	45	22.0	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	32.0	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.

PXT



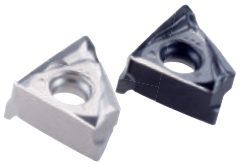


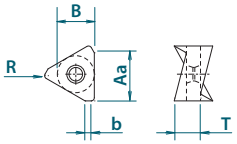


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List 78PSTW NEW!

PSTW Inserts





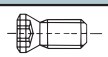
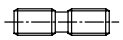
Designation	No. of Cutting Edges	Insert Size					EDP Number					
		B (mm)	T (mm)	R (mm)	b (mm)	Aa	XP3035	XC3030	XP2040	XC1015	XP1020	XC5040
TNKU120608ER-GL	6	10.8	6.55	0.8	1.5	12	-	-	7813089	-	-	-
TNKU120608ER-GM							7814088	7825088	-	-	-	-
TNKU120608ER-GR							-	-	-	7812090	7821090	-
TNKU120608ER-SM							-	-	-	-	-	7816091

Packed: 10 pcs.

PXI

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.

PXT

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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/mm²	650 (330 - 1150)	0.008 (.004 - .012)	0.120
	Ductile Cast Iron (60-40-18)	~800 N/mm²	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
XP3035	GM	-	◎	○	○			
XC3030	GM	-	◎		○			
XP2040	GL	-	○	○				○
		Yes	○	◎			○	
XC1015	GR	-			◎*			
XP1020	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

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List 78005

PRC SA (Inch)



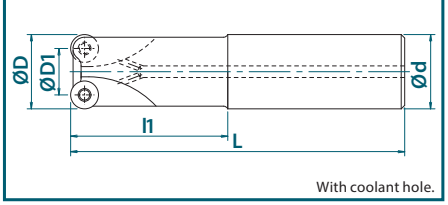
Recommended Materials: p1057
Accessories & Inserts: p1056
Maximum Ramping Angle: p1058

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	Effective Dia. (inch) D1	No. of Teeth	Shank Dia. (inch) d	Overall Length (inch) L	Neck Length (inch) L1	Applicable Insert
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	
7800502			PRC12R125SA125-2S	1	1.250	0.778	2	1.250	5.905	2.756	RPH_12...
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	
7800507			PRC12R125SA125-2L	1	1.250	0.778	2	1.250	7.874	4.724	RPH_12...
7800508			PRC12R150SA125-3L	2	1.500	1.028	3	1.250	9.842	1.968	
7800509			PRC16R150SA125-2L	2	1.500	0.087	2	1.250	9.842	1.968	RPH_16...

Packed: 1 pc.

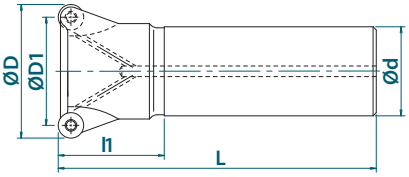
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

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List 78003 NEW SIZES!

PRC SS (Metric)

SPEED FEED P1057 | COOLANT THROUGH | INDEX.

Recommended Materials: p1057
Accessories & Inserts: p1056
Maximum Ramping Angle: p1058

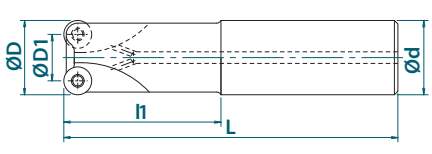


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	Effective Dia. (mm) D1	No. of Teeth	Shank Dia. (mm) d	Overall Length (mm) L	Neck Length (mm) L1	Applicable Insert
7800300	Cylindrical Shank Short	Normal	PRC10R020SS20-2S	1	20	10	2	20	130	50	RPH_10…
7800301			PRC10R025SS25-3S	1	25	15	3	25	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	
7800319			PRC12R030SS32-2L	1	30	18	2	32	200	120	
7800309			PRC12R032SS32-2L	1	32	20	2	32	200	120	
7800321			PRC12R032SS32-3L	1	32	20	3	32	200	120	
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			PRC16R063SS042-4S	2	63	47	4	42	150	50	
7800325	Cylindrical Shank Long		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.**

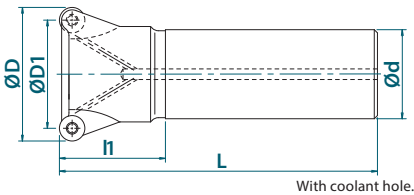
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

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List 78004

PRC Bore (Inch)



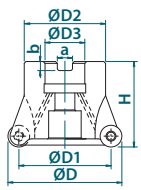
Recommended Materials: p1057
Accessories & Inserts: p1056
Maximum Ramping Angle: p1058

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	Effective Dia. (inch) D1	No. of Teeth	Tool Height (inch) H	Flange Dia. (inch) D2	Bore Dia. (inch) d3	Keyway Width (inch) a	Keyway Depth (inch) b	Applicable Insert
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	RPH_12...
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	
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	0.197	RPH_16...
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.

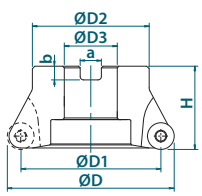
PXT

Type 2



With coolant hole.

Type 3



Without coolant hole.

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List 78002

PRC Bore (Metric)



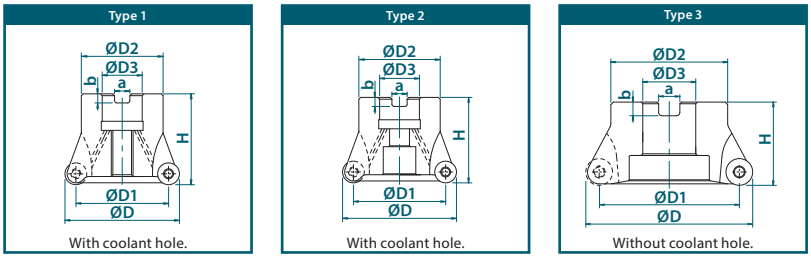
SPEED FEED P1057 | COOLANT THROUGH | INDEX.

Recommended Materials: p1057
Accessories & Inserts: p1056
Maximum Ramping Angle: p1058

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	Effective Dia. (mm) D1	No. of Teeth	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
7800200	Bore	Normal	PRC12R050M22-4	2	50	38	4	40	45	22.00	10.4	6.3	RPH_12...
7800201			PRC12R063M22-4	2	63	51	4	40	50	22.00	10.4	6.3	
7800202			PRC12R080M27-5	2	80	68	5	50	60	27.00	12.4	7.0	
7800209			PRC12R080M25.4-5	2	80	68	5	50	60	25.40	9.5	6.0	
7800203			PRC12R100M32-6	2	100	88	6	50	70	32.00	14.4	8.0	
7800210			PRC12R100M31.7-6	3	100	88	6	50	70	31.75	12.7	8.0	
7800204		Close	PRC12R050M22-5	2	50	38	5	40	45	22.00	10.4	6.3	
7800206			PRC12R063M22-6	2	63	51	6	40	50	22.00	10.4	6.3	
7800207			PRC12R080M27-8	2	80	38	8	50	60	27.00	12.4	7.0	
7800211			PRC12R080M25.4-8	2	80	38	8	50	60	25.40	9.5	6.0	
7800208			PRC12R100M32-10	2	100	88	10	50	70	32.00	14.4	8.0	
7800212			PRC12R100M31.7-10	3	100	88	10	50	70	31.75	12.7	8.0	
7800213		Normal	PRC16R050M22-3	1	50	34	3	40	45	22.00	10.4	6.3	RPH_16...
7800214			PRC16R063M22-5	2	63	47	5	40	50	22.00	10.4	6.3	
7800216			PRC16R080M27-6	2	80	64	6	50	60	27.00	12.4	7.0	
7800218			PRC16R080M25.4-6	2	80	64	6	50	60	25.40	9.5	6.0	
7800217			PRC16R100M32-7	2	100	84	7	50	70	32.00	14.4	8.0	
7800219			PRC16R0100M31.7-7	3	100	84	7	50	70	31.75	12.7	8.0	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

PXT



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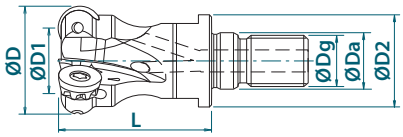
List 52602 NEW!

PRC ASF (Inch)



Recommended Materials: p1057
Accessories & Inserts: p1056
Maximum Ramping Angle: p1058
SF Arbors: p1091





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	
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	
52602004		PRC16R150ASF16-2	1.500	0.870	2	0.669	M16	1.575	1.102	22	RPH_16…

Packed: 1 pc.

PXT

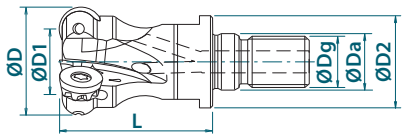
List 78017

PRC SF (Metric)



Recommended Materials: p1057
Accessories & Inserts: p1056
Maximum Ramping Angle: p1058
SF Arbors: p1091





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	l2	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	17.0	M16	40	28	22	
7801703		PRC10R032SF16-4	32	22	4	17.0	M16	40	28	22	
7801704		PRC10R040SF16-4	40	30	4	17.0	M16	40	28	22	
7801705		PRC12R030SF16-2	30	18	2	17.0	M16	40	28	22	RPH_12…
7801706		PRC12R032SF16-3	32	20	3	17.0	M16	40	28	22	
7801707		PRC12R040SF16-3	40	28	3	17.0	M16	40	28	22	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

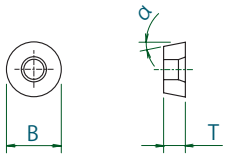
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List 78PRC

PRC Inserts





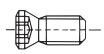
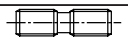
Designation	No. of Cutting Edges	Insert Size			EDP Number								
		B (mm)	T (mm)	α	CK010	XP3035	XC3030	XP2040	XP2025	XC1015	XC5035	XC5040	XP6015
RPHW10T3MOSN	8	10	3.97	11°	-	7814030	7825017	-	-	-	-	-	-
RPHW10T3MOEN	8				-	-	-	-	-	7812017	-	-	-
RPHT10T3MOEN-GL	8				-	-	-	7813008	7826008	-	-	-	-
RPHT10T3MOEN-SM	4				-	-	-	-	-	-	7815010	-	-
RPHT10T3M8EN-SM	8				-	-	-	-	-	-	7815050	7816050	-
RPHT10T3MOFN-NM	8				7811009	-	-	-	-	-	-	-	-
RPMT10T3M8EN-HR	8				-	-	-	-	-	-	-	-	7824083
RPHW1204MOSN	8	12	4.76		-	-	-	-	-	7812018	-	-	-
RPHW1204MOSN	8				-	7814018	7825018	-	-	-	-	-	-
RPHT1204MOEN-GL	8				-	-	-	7813011	7826011	-	-	-	-
RPHT1204MOEN-SM	4				-	-	-	-	-	-	7815012	-	-
RPHT1204M8EN-SM	8				-	-	-	-	-	-	7815051	7816051	-
RPHT1204MOFN-NM	8				7811013	-	-	-	-	-	-	-	-
RPMT1204M8EN-HR	8				-	-	-	-	-	-	-	-	7824084
RPHW1605MOSN	8	16	5.56		-	-	-	-	-	7812019	-	-	-
RPHW1605MOSN	8				-	7814019	7825019	-	-	-	-	-	-
RPHT1605MOEN-GL	8				-	-	-	7813014	7826014	-	-	-	-
RPHT1605MOEN-SM	4				-	-	-	-	-	-	7815015	-	-
RPHT1605M8EN-SM	8				-	-	-	-	-	-	7815052	7816052	-
RPHT1605MOFN-NM	8				7811016	-	-	-	-	-	-	-	-

Packed: 10 pcs.

PXI

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"	1.0 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 (M10×31)	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.

PXT

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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 (304SS, 420SS)	~250HB	655 (330-920)	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/mm²	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/mm²	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				◎		
XP3035	-	-	◎	○	○			
XC3030	-	-	◎		○			
XP2040	GL	-	○					◎
		Yes		◎			○	
XP2025	GL	Yes	○	◎			○	
XC1015	-	-			◎			
XC5035	SM	-		◎				○
		Yes		○			○	
XC5040	SM	Yes		○			◎	○
XP6015	HR	-	○		○			◎

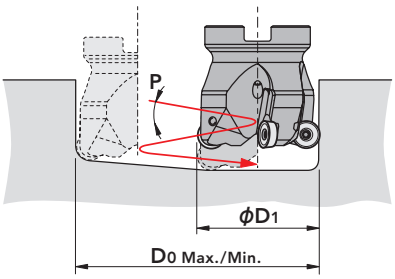
GL:Light Cutting NM:Aluminum SM: Heat Resistant Alloy HR: Hardened Steel

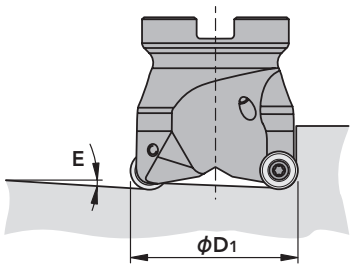
○ good ◎ best

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Maximum Ramping Angle (E) & Helical Angle (P)

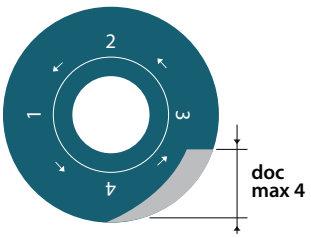
Insert Size	RPH_10...				RPH_12...				RPH_16...			
Diameter (inch)	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle
D1	E	D0 Min	D0 Max	P	E	D0 Min	D0 Max	P	E	D0 Min	D0 Max	P
1.000	2.0°	1.488	1.606	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°

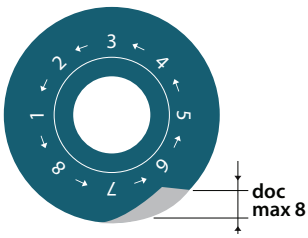




Maximum Depth of Cut (Aa)

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

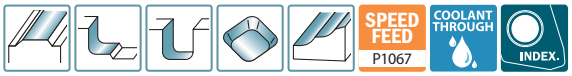




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List 78009

PHC SA/FA (Inch)



Recommended Materials: p1067
Accessories & Inserts: p1066
Maximum Ramping Angle: p1068

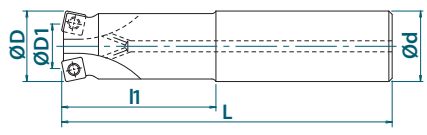


EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (inch) D	Effective Dia. (inch) D1	No. of Teeth	Shank Dia. (inch) d	Overall Length (inch) L	Neck Length (inch) L1	Applicable Insert
7800900	Cylindrical Shank Short	Normal	PHC09R100SA100-2S	1	1.000	0.535	2	1.000	5.512	2.362	SDMT09...
7800901		Close	PHC09R100SA100-3S	1	1.000	0.535	3	1.000	5.512	2.362	
7800902		Normal	PHC09R125SA125-3S	1	1.250	0.785	3	1.250	5.906	2.756	
7800903			PHC12R125SA125-2S	1	1.250	0.785	2	1.250	5.906	2.756	SXMT12...
7800904			PHC12R150SA125-3S	2	1.500	0.846	3	1.250	5.906	1.969	
7800922	Cylindrical Shank Long	Normal	PHC09R100SA100-2L	1	1.000	0.535	2	1.000	7.874	4.724	SDMT09...
7800923		Close	PHC09R100SA100-3L	1	1.000	0.535	3	1.000	7.874	4.724	
7800924		Normal	PHC09R125SA125-3L	1	1.250	0.785	3	1.250	7.874	4.724	
7800925			PHC12R125SA125-2L	1	1.250	0.785	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	SDMT09...
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	0.785	2	1.250	11.811	7.087	SXMT12...
7800931			PHC12R150SA125-3LL	2	1.500	0.846	3	1.250	11.811	2.756	
7800910	Weldon Shank Short	Normal	PHC09R100FA100-2S	1	1.000	0.535	2	1.000	3.831	1.551	SDMT09...
7800911		Close	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	
7800920			PHC12R125FA125-2S	1	1.250	0.785	2	1.250	4.378	2.098	SXMT12...
7800921			PHC12R150FA125-3S	2	1.500	0.846	3	1.250	4.378	2.098	
7800932	Weldon Shank Long	Normal	PHC09R100FA100-2L	1	1.000	0.535	2	1.000	7.004	4.724	SDMT09...
7800933		Close	PHC09R100FA100-3L	1	1.000	0.535	3	1.000	7.004	4.724	
7800934		Normal	PHC09R125FA125-3L	1	1.250	0.785	3	1.250	7.004	4.724	
7800935			PHC12R125FA125-2L	1	1.250	0.785	2	1.250	7.004	4.724	SXMT12...
7800936			PHC12R150FA125-3L	2	1.500	0.846	3	1.250	7.004	4.724	
7800937	Weldon Shank Extra-Long	Normal	PHC09R100FA100-2LL	1	1.000	0.535	2	1.000	9.366	7.087	SDMT09...
7800938		Close	PHC09R100FA100-3LL	1	1.000	0.535	3	1.000	9.366	7.087	
7800939		Normal	PHC09R125FA125-3LL	1	1.250	0.785	3	1.250	9.366	7.087	
7800940			PHC12R125FA125-2LL	1	1.250	0.785	2	1.250	9.366	7.087	SXMT12...
7800941			PHC12R150FA125-3LL	2	1.500	0.846	3	1.250	9.366	7.087	

Packed: 1 pc.

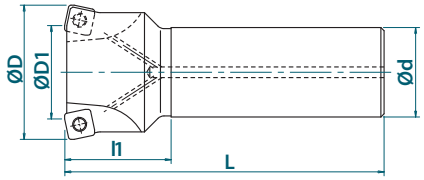
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 78007 NEW SIZES!

PHC SS (Metric)



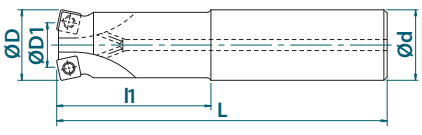
Recommended Materials: p1067
Accessories & Inserts: p1066
Maximum Ramping Angle: p1068

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	Effective Dia. (mm) D1	No. of Teeth	Shank Dia. (mm) d	Overall Length (mm) L	Neck Length (mm) L1	Applicable Insert
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			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			PHC09R026SS25-3L	2	26	14.2	3	25	200	40	
7800720		Normal	PHC09R028SS25-3L	2	28	16.2	3	25	200	40	
7800721			PHC09R030SS32-3L	1	30	18.2	3	32	200	120	
7800706			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	
7800724	Cylindrical Shank Extra-Long	Normal	PHC09R025SS25-2LL	1	25	13.2	2	25	300	180	
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	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

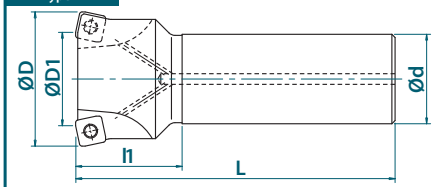
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

List 78007 (Continued) NEW SIZES!

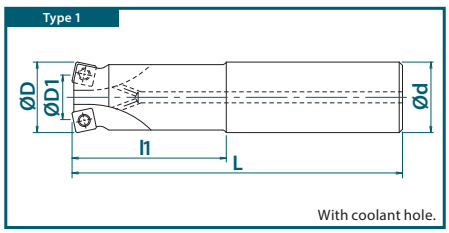
PHC SS (Metric)

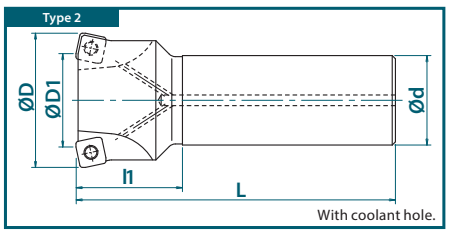
Recommended Materials: p1067
Accessories & Inserts: p1066
Maximum Ramping Angle: p1068

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	Effective Dia. (mm) D1	No. of Teeth	Shank Dia. (mm) d	Overall Length (mm) L	Neck Length (mm) L1	Applicable Insert
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	
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	
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.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

PXT





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List 78008

PHC Bore (Inch)



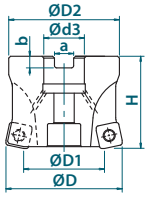
Recommended Materials: p1067
Accessories & Inserts: p1066
Maximum Ramping Angle: p1068

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	
7800800	Bore	Close	PHC09R200A075-5	2	2.000	1.535	5	1.968	1.850	0.750	0.315	0.197	
7800801			PHC09R250A075-6	2	2.500	2.035	6	1.968	2.362	0.750	0.315	0.197	SDMT09…
7800806		Normal	PHC09R300A100-8	2	3.000	2.535	8	2.480	2.835	1.000	0.375	0.236	
7800807		Normal	PHC12R250A075-4	2	2.500	1.846	4	1.968	2.632	0.750	0.315	0.197	
7800808			PHC12R300A100-5	2	3.000	2.346	5	2.480	2.835	1.000	0.375	0.236	
7800809			PHC12R400A150-6	3	4.000	3.346	6	2.480	3.779	1.500	0.625	0.394	
7800802		Close	PHC12R200A075-4	2	2.000	1.346	4	1.968	1.850	0.750	0.315	0.197	
7800803			PHC12R250A075-5	2	2.500	1.846	5	1.968	2.362	0.750	0.315	0.197	SXMT12…
7800804			PHC12R300A100-7	2	3.000	2.346	7	2.480	2.835	1.000	0.375	0.236	
7800805			PHC12R400A150-8	3	4.000	3.346	8	2.480	3.779	1.500	0.625	0.394	
7800810			PHC12R500A150-10	3	5.000	4.346	10	2.480	3.779	1.500	0.625	0.394	
7800811			PHC12R600A150-12	3	6.000	5.346	12	2.480	3.779	1.500	0.625	0.394	

Packed: 1 pc.

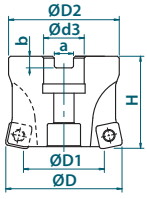
PXT

Type 2



With coolant hole.

Type 3



Without coolant hole.

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List 78006

PHC Bore (Metric)



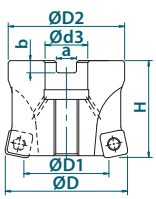
Recommended Materials: p1067
Accessories & Inserts: p1066
Maximum Ramping Angle: p1068

EDP No.	Body Type	Teeth Type	Designation	Type	Tool Dia. (mm) D	Effective Dia. (mm) D1	No. of Teeth	Tool Height (mm) H	Flange Dia. (mm) D2	Bore Dia. (mm) d3	Keyway Width (mm) a	Keyway Depth (mm) b	Applicable Insert
7800600	Bore	Close	PHC09R040M16-4	1	40	28.2	4	40	38	16.000	8.4	5.6	SDMT09…
7800601			PHC09R050M22-5	2	50	38.2	5	50	47	22.000	10.4	6.3	
7800605			PHC09R050M22.2-5	2	50	38.2	5	50	47	22.225	8.4	5.0	
7800603			PHC09R063M22-6	2	63	51.2	6	50	60	22.000	10.4	6.3	
7800606			PHC09R063M22.2-6	2	63	51.2	6	50	60	22.225	8.4	5.0	
7800607			PHC12R040M16-3	1	40	23.4	3	40	38	16.000	8.4	5.6	SXMT12…
7800608			PHC12R050M22-4	2	50	33.4	4	50	47	22.000	10.4	6.3	
7800614			PHC12R050M22.2-4	2	50	33.4	4	50	47	22.225	8.4	5.0	
7800610			PHC12R063M22-5	2	63	46.4	5	50	60	22.000	10.4	6.3	
7800615			PHC12R063M22.2-5	2	63	46.4	5	50	60	22.225	8.4	5.0	
7800612			PHC12R080M27-7	2	80	63.4	7	50	76	27.000	12.4	7.0	
7800618			PHC12R080M31.7-5	2	80	63.4	5	63	76	31.750	12.7	8.0	
7800616			PHC12R080M31.7-7	2	80	63.4	7	63	76	31.750	12.7	8.0	
7800613			PHC12R100M32-8	2	100	83.4	8	63	96	32.000	14.4	8.0	
7800617			PHC12R100M31.7-8	2	100	83.4	8	63	96	37.750	12.7	8.0	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

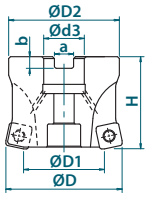
PXT

Type 1



With coolant hole.

Type 2



With coolant hole.

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

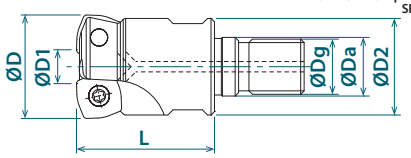
List 52603 NEW!

PHC ASF (Inch)



Recommended Materials: p1067
Accessories & Inserts: p1066
Maximum Ramping Angle: p1068
SF Arbors: p1091





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		
52603000	Screw Fit Head	PHC09R100ASF12-2	1.000	0.535	2	0.492	M12	1.378	0.905	17	SDMT09…
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.

PXT

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

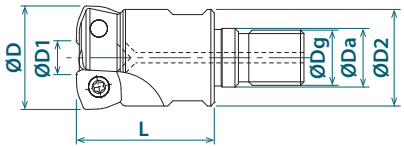
List 78015 NEW SIZES!

PHC SF (Metric)



Recommended Materials: p1067
Accessories & Inserts: p1066
Maximum Ramping Angle: p1068
SF Arbors: p1091





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		
7801500	Screw Fit Head	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	17.0	M16	40	28	22	
7801503		PHC09R032SF16-3	32	20.2	3	17.0	M16	40	28	22	
7801511		PHC09R033SF16-3	33	21.2	3	17.0	M16	40	28	22	
7801504		PHC09R035SF16-3	35	23.2	3	17.0	M16	40	28	22	
7801505		PHC09R040SF16-4	40	28.2	4	17.0	M16	40	28	22	
7801506		PHC12R030SF16-2	30	13.4	2	17.0	M16	40	28	22	SDXMT12…
7801507		PHC12R032SF16-2	32	15.4	2	17.0	M16	40	28	22	
7801512		PCH12R033SF16-2	33	16.4	2	17.0	M16	40	28	22	
7801508		PHC12R035SF16-3	35	18.4	3	17.0	M16	40	28	22	
7801509		PHC12R040SF16-3	40	23.4	3	17.0	M16	40	28	22	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

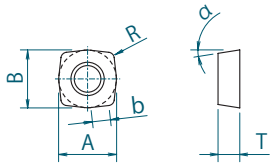
PXT

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List 78PHC

PHC Inserts





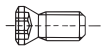
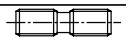
Designation	No. of Cutting Edges	Insert Size					EDP Number						
		A x B (mm)	T (mm)	α	R (mm)	b (mm)	XP3035	XC3030	XP2040	XP2025	XC1015	XC5035	XC5040
SDMT09T308SR-GM	4	9.52 x 9.52	3.97	15°	0.8	1.9	7814020	7825020	7813020	7826020	7812020	-	-
SDMT09T308ER-SM							-	-	-	-	-	7815021	7816021
SXMT120410SR-GM		12.7 x 12.7	4.76	9°	1.0	1.3	7814022	7825022	7813022	7826022	7812022	-	-
SXMT120410ER-SM							-	-	-	-	-	7815023	7816023

Packed: 10 pcs.

PXI

List 7808H

PHC Accessories

Appearance	EDP No.	Designation	Applicable Insert	Applicable Cutter		Recommended Tightening Torque
				(mm)	(inch)	
 Clamping Screw	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… SXMT12…	PHC BORE Ø40	n/a	20.0 Nm
 Wrench	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.

PXT

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Cutting Conditions

Work Material		Tensile Strength – Hardness	Milling Speed Vc (SFM)	Insert Size							
				SDMT09...				SXMT12...			
				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)		
					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)	~180 HB	590 (195 - 820)	0.032 (0.012 - 0.071)	0.040	0.032	0.020	0.050 (0.020 - 0.126)	0.047	0.047	0.040
	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (195 - 820)	0.032 (0.012 - 0.060)	0.040	0.032	0.020	0.050 (0.020 - 0.118)	0.047	0.047	0.040
	Die Steels (H13, D2)	~280 HB	590 (195 - 820)	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 (304SS, 420SS)	~250 HB	395 (295 - 590)	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)	~350 N/mm²	655 (330 - 985)	0.040 (0.020 - 0.071)	0.040	0.032	0.020	0.060 (0.020 - 0.138)	0.060	0.060	0.040
	Ductile Cast Iron (60-40-18)	~800 N/mm²	590 (330 - 820)	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)	-	100 (85 - 195)	0.016 (0.008 - 0.032)	0.020	0.020	0.016	0.020 (0.008 - 0.040)	0.040	0.040	0.032
	Titanium Alloy (Ti-6Al-4V)	-	260 (165 - 395)	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)	40 - 43 HRC	395 (130 - 495)	0.020 (0.008 - 0.040)	0.020	0.020	0.012	0.032 (0.012 - 0.060)	0.040	0.040	0.020
	Die Cast Steels (A2, S7)	43 - 48 HRC	295 (130 - 395)	0.016 (0.008 - 0.032)	0.020	0.020	0.016	0.028 (0.012 - 0.047)	0.028	0.028	0.024
	Hardened Steels (D2)	50 - 55 HRC	195 (130 - 295)	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
XP3035	GM	-	◎	○	○			
XC3030	GM	-	◎		○			
XP2040	GM	-	○					◎
		Yes		◎			○	
XP2025	GM	-	○	◎			○	
XC1015	GM	-			◎			
XC5035	SM	-		◎				○
		Yes		○			○	
XC5040	SM	Yes		○			◎	○

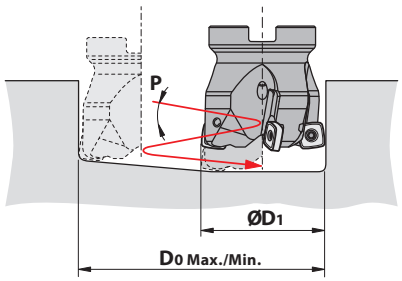
GM: Medium Cutting SM: Heat Resistant Alloy

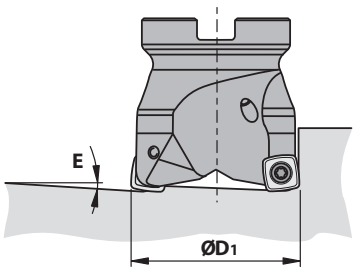
○ good ◎ best

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Maximum Ramping Angle (E) & Helical Angle (P)

Insert Size	SDMT09...				SDMT12...			
Diameter (inch)	Ramping Angle	Helical Milling (inch)		Helical Angle	Ramping Angle	Helical Milling (inch)		Helical Angle
D1	E	D0 Min	D0 Max	P	E	D0 Min	D0 Max	P
1.000	3.5°	1.409	1.921	3.0°	-	-	-	-
1.250	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°

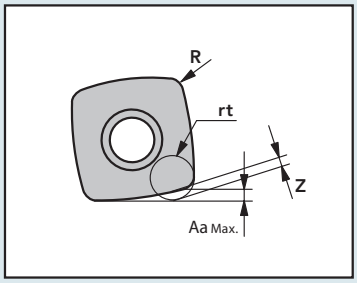




Flute shape definitions for the purpose of creating a program

Insert Size	R (mm)	Aa Max (mm)	rt (mm)	z (mm)
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.



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List 6420

PDR SS (Metric)





Recommended Materials: p1071
Accessories & Inserts: p1070
Maximum Ramping Angle: p1071

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	

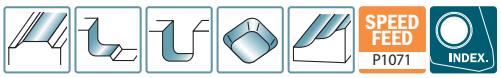
Packed: 1 pc.

PXT

List 6450

PDR Bore (Metric)





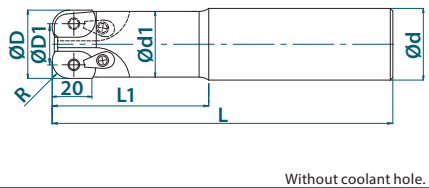
Recommended Materials: p1071
Accessories & Inserts: p1070
Maximum Ramping Angle: p1071

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	25.40	8.0	5.0	ADMT20…
6450002			PDR20R063M25.4-4	2	63	43	4	70	60	25.40	8.0	5.0	
7800052			PDR20R080M31.7-4	2	80	60	4	63	76	31.75	12.7	8.0	
7800053			PDR20R080M31.7-5	2	80	60	5	63	76	31.75	12.7	8.0	
7800054			PDR20R100M31.7-5	2	100	80	5	63	90	31.75	12.7	8.0	
7800055			PDR20R100M31.7-6	2	100	80	6	63	90	31.75	12.7	8.0	
7800056			PDR20R125M31.7-6	2	125	105	6	63	100	31.75	12.7	8.0	
7800057			PDR20R063M22-3	2	63	43	3	63	60	22.00	10.4	6.3	
7800058			PDR20R063M22-4	2	63	43	4	63	60	22.00	10.4	6.3	
7800059			PDR20R080M27-4	2	80	60	4	63	76	27.00	12.4	7.0	
7800060			PDR20R080M27-5	2	80	60	5	63	76	27.00	12.4	7.0	
7800061			PDR20R100M32-5	2	100	80	5	63	96	32.00	14.4	8.0	
7800062			PDR20R100M32-6	2	100	80	6	63	96	32.00	14.4	8.0	
7800063			PDR20R125M40-6	2	125	105	6	63	100	40.00	16.4	9.0	

Packed: 1 pc.

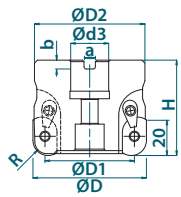
PXT

Type 1



Without coolant hole.

Type 2



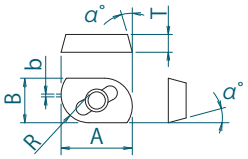
Without coolant hole.

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List 78PDR

PDR Inserts





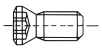
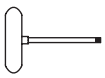
Designation	No. of Cutting Edges	Insert Size					EDP Number
		A x B (mm)	T (mm)	α	R (mm)	b (mm)	XP3930
ADMT2006100PDR-GM	2	24.18 x 16	6.35	15°	10	1	7810000

Packed: 10 pcs.

PXI

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.

PXT

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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
P	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
P	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/mm²	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
K	Ductile Cast Iron (60-40-18)	~800 N/mm²	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

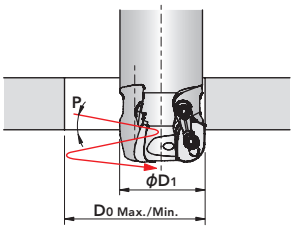
Recommended Materials by Application

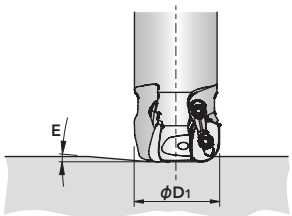
Insert Grade	Chip Breaker	Coolant	P	M	K	N	S	H
XP3930	GM	-	▣		▣			

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





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List 52100 NEW SIZES!

PFB SA (Inch)

SPEED FEED P1079 INDEX.

Recommended Materials: p1079
Accessories & Inserts: p1075-1077
Effective Cutting Diameter & Recommended Width of Cut: p1078



Steel Shank

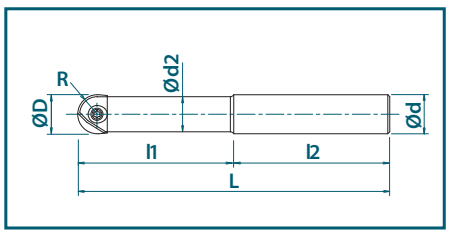


Carbide Shank

EDP No.	Body Type	Designation	Tool Dia. (inch) D	Tool Radius (inch) R	Overall Length (inch) L	Neck Length (inch) l1	L/D Ratio	No. of Teeth	Shank Dia. (inch) d	Shank Length (inch) l2	Neck Dia. (inch) d2
52100001	Cylindrical Shank Steel	PFB-R0375SA0375-S550	0.375	0.1875	5.500	1.687	4.5	2	0.375	3.813	0.335
52100002		PFB-R0500SA0500-S550	0.500	0.2500	5.500	2.250	4.5	2	0.500	3.250	0.460
52100003		PFB-R0625SA0625-S550	0.625	0.3125	5.500	2.500	4.0	2	0.625	3.000	0.585
52100004		PFB-R0750SA0750-S600	0.750	0.3750	6.000	3.000	4.0	2	0.750	3.000	0.710
52100005		PFB-R1000SA1000-S650	1.000	0.5000	6.500	3.000	3.0	2	1.000	3.500	0.960
52100016		PFB-R1250SA1250-S700	1.250	0.6250	7.000	3.750	3.0	2	1.250	3.250	1.132
52100021	Cylindrical Shank Short Carbide	PFB-R0375SA0375-S400CS	0.375	0.1875	4.000	0.937	2.5	2	0.375	3.063	0.335
52100022		PFB-R0500SA0500-S450CS	0.500	0.2500	4.500	1.250	2.5	2	0.500	3.250	0.460
52100023		PFB-R0625SA0625-S550CS	0.625	0.3125	5.500	1.562	2.5	2	0.625	3.938	0.585
52100024		PFB-R0750SA0750-S600CS	0.750	0.3750	6.000	1.875	2.5	2	0.750	4.125	0.710
52100025		PFB-R1000SA1000-S650CS	1.000	0.5000	6.500	2.500	2.5	2	1.000	4.000	0.960
52100017		PFB-R1250SA1250-S700CS	1.250	0.6250	7.000	3.125	2.5	2	1.250	3.875	1.132
52100006	Cylindrical Shank Long Carbide	PFB-R0375SA0375-L550CS	0.375	0.1875	5.500	1.875	5.0	2	0.375	3.625	0.335
52100007		PFB-R0500SA0500-L550CS	0.500	0.2500	5.500	2.500	5.0	2	0.500	3.000	0.460
52100008		PFB-R0625SA0625-L650CS	0.625	0.3125	6.500	3.125	5.0	2	0.625	3.375	0.585
52100009		PFB-R0750SA0750-L700CS	0.750	0.3750	7.000	3.750	5.0	2	0.750	3.250	0.710
52100010		PFB-R1000SA1000-L800CS	1.000	0.5000	8.000	4.500	4.5	2	1.000	3.500	0.960
52100018		PFB-R1250SA1250-L900CS	1.250	0.6250	9.000	5.625	4.5	2	1.250	3.375	1.132
52100011	Cylindrical Shank Extra-Long Carbide	PFB-R0375SA0375-LL650CS	0.375	0.1875	6.500	2.625	7.0	2	0.375	3.875	0.335
52100012		PFB-R0500SA0500-LL700CS	0.500	0.2500	7.000	3.500	7.0	2	0.500	3.500	0.460
52100013		PFB-R0625SA0625-LL750CS	0.625	0.3125	7.500	3.750	6.0	2	0.625	3.750	0.585
52100014		PFB-R0750SA0750-LL900CS	0.750	0.3750	9.000	4.500	6.0	2	0.750	4.500	0.710
52100015		PFB-R1000SA1000-LL1050CS	1.000	0.5000	10.500	5.500	5.5	2	1.000	5.000	0.960
52100019		PFB-R1250SA1250-LL1200CS	1.250	0.6250	12.000	6.875	5.5	2	1.250	5.125	1.132

Packed: 1 pc.

PXT



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List 78014 NEW SIZES!

PFB SS (Metric)

SPEED FEED P1079 INDEX.

Recommended Materials: p1079
Accessories & Inserts: p1075-1077
Effective Cutting Diameter & Recommended Width of Cut: p1078



Steel Shank

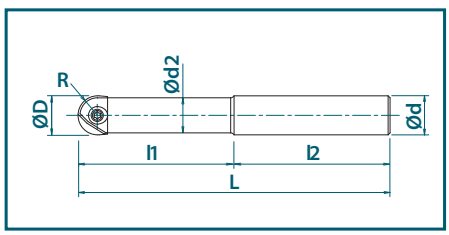


Carbide Shank

EDP No.	Body Type	Designation	Tool Dia. (mm)	Tool Radius (mm)	Overall Length (mm)	Neck Length (mm)	L/D Ratio	No. of Teeth	Shank Dia. (mm)	Shank Length (mm)	Neck Dia. (mm)
			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	4.0	2	16	76	14
7801404		PFB-R200SS20-S160	20	10	160	80	4.0	2	20	80	18
7801405		PFB-R250SS25-S160	25	12.5	160	75	3.0	2	25	85	22
7801406		PFB-R300SS32-S170	30	15	170	90	3.0	2	32	80	27
7801407		PFB-R320SS32-S180	32	16	180	96	3.0	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	4.0	2	25	100	22
7801446		PFB-R300SS32-L220CS	30	15	220	120	4.0	2	32	100	27
7801447		PFB-R320SS32-L230CS	32	16	230	128	4.0	2	32	102	29
7801419	Cylindrical Shank Extra-Long Carbide	PFB-R060SS06-LL120CS	6	3	120	42	7.0	2	6	78	5.4
7801420		PFB-R080SS08-LL140CS	8	4	140	56	7.0	2	8	84	7
7801421		PFB-R100SS10-LL150CS	10	5	150	70	7.0	2	10	80	9
7801422		PFB-R120SS12-LL160CS	12	6	160	84	7.0	2	12	76	11
7801423		PFB-R160SS16-LL200CS	16	8	200	96	6.0	2	16	104	14
7801424		PFB-R200SS20-LL240CS	20	10	240	120	6.0	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.

PXT



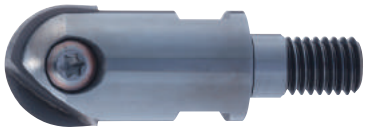
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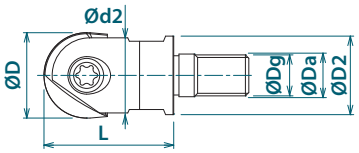
List 52604 NEW!

PFB ASF (Inch)

SPEED FEED P1079 INDEX.

Recommended Materials: p1079
Accessories & Inserts: p1075-1077
Effective Cutting Diameter & Recommended Width of Cut: p1078
SF Arbors: p1091





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.

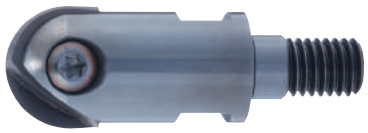
PXT

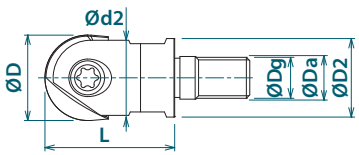
List 78114

PFB SF (Metric)

SPEED FEED P1079 INDEX.

Recommended Materials: p1079
Accessories & Inserts: p1075-1077
Effective Cutting Diameter & Recommended Width of Cut: p1078
SF Arbors: p1091





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	l2	d2	D2		
7801490	Screw Fit Head	PFB-R100SF6	10	2	6.5	M6	26	9	9.0	7	PFB
7801491		PFB-R120SF6	12	2	6.5	M6	26	11	11.0	7	
7801492		PFB-R160SF8	16	2	8.5	M8	32	14	14.5	10	
7801493		PFB-R200SF10	20	2	10.5	M10	38	18	18.0	14	
7801494		PFB-R250SF12	25	2	12.5	M12	38	22	23.0	17	
7801495		PFB-R300SF16	30	2	17.0	M16	43	27	28.0	22	

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

PXT

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List 78PFB NEW SIZES!

PFB Inserts (Inch)



Spiral



Spiral (Full Radius)



Spiral (Strengthened Edge)

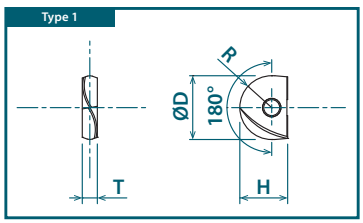


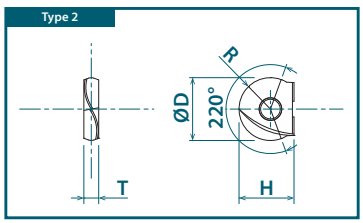
Spiral (Diamond Coated)

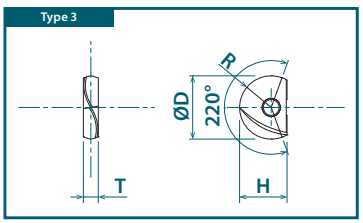
Designation	Type	Specification	No. of Cutting Edges	Range	Insert Size				EDP Number			
					D (inch)	R (inch)	T (mm)	H (mm)	XP3225	XP3310	XP3320	XC4505
PFB0375A-SP	1	Spiral	2	180°	0.375	0.1875	2.6	8.5	52101021	-	52101011	-
PFB0500A-SP					0.500	0.2500	3.0	10.0	52101022	-	52101012	-
PFB0625A-SP					0.625	0.3125	4.0	12.0	52101023	-	52101013	-
PFB0750A-SP					0.750	0.3750	5.0	15.0	52101024	-	52101014	-
PFB1000A-SP					1.000	0.5000	6.0	18.5	52101025	-	52101015	-
PFB1250A-SP					1.250	0.6250	7.0	23.5	52101026	-	52101016	-
PFB0375A-Q	2	Spiral (Full Radius)	2	220°	0.375	0.1875	2.6	8.5	52101041	-	-	-
PFB0500A-Q					0.500	0.2500	3.0	10.0	52101042	-	-	-
PFB0625A-Q	3				0.625	0.3125	4.0	12.0	52101043	-	-	-
PFB0750A-Q					0.750	0.3750	5.0	15.0	52101044	-	-	-
PFB1000A-Q					1.000	0.5000	6.0	18.5	52101045	-	-	-
PFB1250A-Q					1.250	0.6250	7.0	23.5	52101046	-	-	-
PFB0375A-SH	1	Spiral (Strengthened Edge)	2	180°	0.375	0.1875	2.6	8.5	-	52101031	-	-
PFB0500A-SH					0.500	0.2500	3.0	10.0	-	52101032	-	-
PFB0625A-SH					0.625	0.3125	4.0	12.0	-	52101033	-	-
PFB0750A-SH					0.750	0.3750	5.0	15.0	-	52101034	-	-
PFB1000A-SH					1.000	0.5000	6.0	18.5	-	52101035	-	-
PFB1250A-SH					1.250	0.6250	7.0	23.5	-	52101036	-	-
PFB0375A-D	1	Spiral (Diamond Coated)	2	180°	0.375	0.1875	2.6	8.5	-	-	-	52101001
PFB0500A-D					0.500	0.2500	3.0	10.0	-	-	-	52101002
PFB0625A-D					0.625	0.3125	4.0	12.0	-	-	-	52101003
PFB0750A-D					0.750	0.3750	5.0	15.0	-	-	-	52101004
PFB1000A-D					1.000	0.5000	6.0	18.5	-	-	-	52101005
PFB1250A-D					1.250	0.6250	7.0	23.5	-	-	-	52101006

Packed: 1 pc.

PXI







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List 78PFB NEW SIZES!

PFB Inserts (Metric)



Spiral



Spiral (Full Radius)



Spiral (Strengthened Edge)

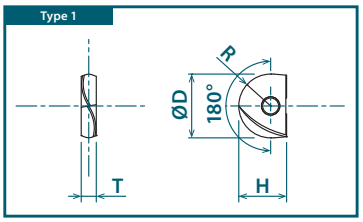


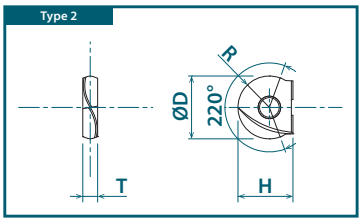
Spiral (Diamond Coated)

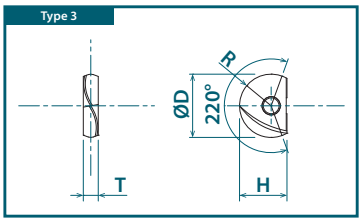
Designation	Type	Specification	No. of Cutting Edges	Range	Insert Size				EDP Number			
					D (mm)	R (mm)	T (mm)	H (mm)	XP3225	XP3310	XP3320	XC4505
PFB080-SP	1	Spiral	2	180°	8	4.0	2.4	7.0	7820030	-	7820010	-
PFB100-SP					10	5.0	2.6	8.5	7820031	-	7820011	-
PFB120-SP					12	6.0	3.0	10.0	7820032	-	7820012	-
PFB160-SP					16	8.0	4.0	12.0	7820033	-	7820013	-
PFB200-SP					20	10.0	5.0	15.0	7820034	-	7820014	-
PFB250-SP					25	12.5	6.0	18.5	7820035	-	7820015	-
PFB300-SP					30	15.0	7.0	22.5	7820036	-	7820016	-
PFB060-Q	2	Spiral (Full Radius)	2	220°	6	3.0	2.0	5.0	7820048	-	-	-
PFB070-Q					7	3.5	2.0	5.5	7820049	-	-	-
PFB080-Q					8	4.0	2.4	7.0	7820050	-	-	-
PFB100-Q					10	5.0	2.6	8.5	7820051	-	-	-
PFB120-Q					12	6.0	3.0	10.0	7820052	-	-	-
PFB160-Q	3				16	8.0	4.0	12.0	7820053	-	-	-
PFB200-Q					20	10.0	5.0	15.0	7820054	-	-	-
PFB250-Q					25	12.5	6.0	18.5	7820055	-	-	-
PFB300-Q					30	15.0	7.0	22.5	7820056	-	-	-
PFB060-SH	2	Spiral (Strengthened Edge)	2	220°	6	3.0	2.0	5.0	-	7820039	-	-
PFB080-SH	1			180°	8	4.0	2.4	7.0	-	7820040	-	-
PFB100-SH					10	5.0	2.6	8.5	-	7820041	-	-
PFB120-SH					12	6.0	3.0	10.0	-	7820042	-	-
PFB160-SH					16	8.0	4.0	12.0	-	7820043	-	-
PFB200-SH					20	10.0	5.0	15.0	-	7820044	-	-
PFB250-SH					25	12.5	6.0	18.5	-	7820045	-	-
PFB300-SH					30	15.0	7.0	22.5	-	7820046	-	-
PFB320-SH					32	16.0	7.0	23.5	-	7820047	-	-
PFB060-D	2	Spiral (Diamond Coated)	2	220°	6	3.0	2.0	5.0	-	-	-	7820018
PFB070-D					7	3.5	2.0	5.5	-	-	-	7820019
PFB080-D	1			180°	8	4.0	2.4	7.0	-	-	-	7820020
PFB100-D					10	5.0	2.6	8.5	-	-	-	7820021
PFB120-D					12	6.0	3.0	10.0	-	-	-	7820022
PFB160-D					16	8.0	4.0	12.0	-	-	-	7820023
PFB200-D					20	10.0	5.0	15.0	-	-	-	7820024
PFB250-D					25	12.5	6.0	18.5	-	-	-	7820025
PFB300-D					30	15.0	7.0	22.5	-	-	-	7820026

Packed: 1 pc.

PXI







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List 7808H

PFB Accessories

Appearance	EDP No.	Designation	Applicable Insert		Recommended Tightening Torque
			(inch)	(mm)	
 Clamping Screw	7808124	FS20652RB (Torx 6)	-	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)	-	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.

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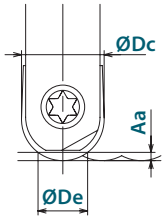
Effective Cutting Diameter

Depth of Cut Aa		Effective Cutting Diameter (ØDe)																	
		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc		ØDc	
(inch)	(mm)	0.236"	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	0.059	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	0.087	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	0.102	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	0.118	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	0.130	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	0.161	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:

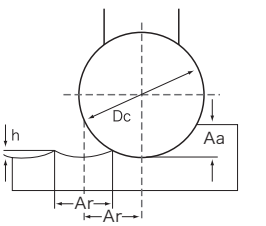
Ex: Dc = 0.500"
Aa = 0.020"
De = 2√0.020(0.500-0.020)
De = 0.196"



$$De=2\sqrt{a_a(D_c-a_a)}$$

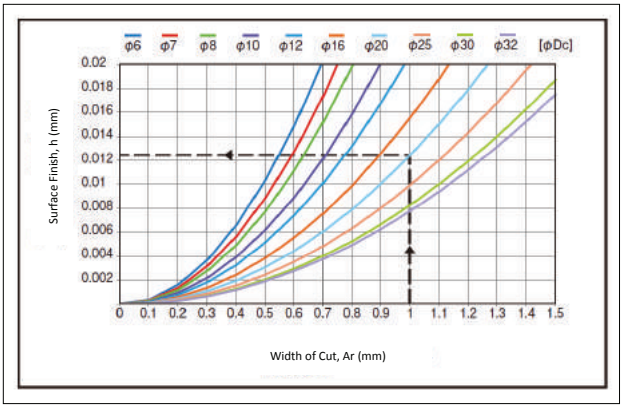
Recommended Width of Cut & Surface Roughness

Tool Dia ØDc		Width of Cut Ar		Surface Finish h	
(inch)	(mm)	(inch)	(mm)	(inch)	(mm)
0.236	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



$$h=0.5\ (Dc-\sqrt{Dc^2-Ar^2})$$

Dc=20mm
Ar=1mm
->h=0.0125mm



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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)	~180 HB	985 (655-1310)	0.02Dc	0.0040	0.0047	0.0055	0.0071
P	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	985 (655-1310)	0.02Dc	0.0028	0.0040	0.0047	0.0055
P	Die Steels (H13, D2)	~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)	~350 N/mm²	1310 (985-1640)	0.02Dc	0.0047	0.0055	0.0071	0.0086
K	Ductile Cast Iron (60-40-18)	~600 N/mm²	985 (655-1310)	0.02Dc	0.0040	0.0047	0.0055	0.0071
N	Aluminum Alloys (6061, 7075)	~13% Si	1640 (1310-1970)	0.03Dc	0.0047	0.0055	0.0071	0.0086
N	Copper Alloys (C1100)	-	985 (655-1310)	0.03Dc	0.0043	0.0051	0.0067	0.0079
N	Graphite	-	1640 (1310-1970)	0.03Dc	0.0055	0.0067	0.0083	0.0098
N	CFRP	-	1310 (985-1640)	0.03Dc	0.0043	0.0051	0.0067	0.0079
S	Heat Resistant Alloys (Inconel 718)	-	165 (65-260)	0.015Dc	0.0016	0.0020	0.0024	0.0024
S	Titanium Alloy (Ti-6Al-4V)	-	295 (130-395)	0.02Dc	0.0024	0.0031	0.0043	0.0051
H	Pre-hardened Steel (P20, Stavax)	40 - 43 HRC	655 (330-985)	0.015Dc	0.0024	0.0028	0.0031	0.0040
H	Die Cast Steels (A2, S7)	43 - 48 HRC	590 (295-655)	0.015Dc	0.0020	0.0024	0.0028	0.0028
H	Hardened Steels (D2)	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	◎	◎		◎*	○	
XP3310			◎			◎
XP3320	○	○	○		◎	○
XC4505				◎**		

*: Best recommended for aluminum & copper alloy applications.
**: Best recommended for graphite & CFRP applications.

○ good ◎ best

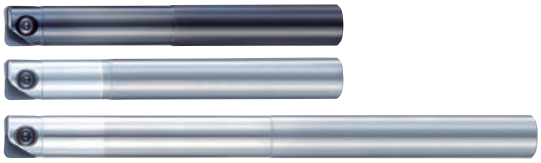
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List 52200 NEW SIZES!

SPEED FEED P1089-1090 INDEX.

Recommended Materials: p1089-1090
Accessories & Inserts: p1083-1088

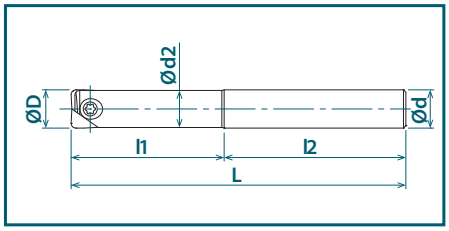
PFR SA (Inch)



EDP No.	Body Type	Designation	Tool Dia. (inch) D	Overall Length (inch) L	Neck Length (inch) l1	L/D Ratio	No. of Teeth	Shank Dia. (inch) d	Shank Length (inch) l2	Neck Dia. (inch) d2
52200000	Cylindrical Shank Steel	PFR-R0375SA0375-S550	0.375	5.500	1.687	4.5	2	0.375	3.813	0.355
52200001		PFR-R0500SA0500-S550	0.500	5.500	2.250	4.5	2	0.500	3.250	0.480
52200002		PFR-R0625SA0625-S550	0.625	5.500	2.500	4.0	2	0.625	3.000	0.605
52200003		PFR-R0750SA0750-S600	0.750	6.000	3.000	4.0	2	0.750	3.000	0.730
52200004		PFR-R1000SA1000-S650	1.000	6.500	3.000	3.0	2	1.000	3.500	0.980
52200015		PFR-R1250SA1250-S700	1.250	7.000	3.750	3.0	2	1.250	3.250	1.230
52200005	Cylindrical Shank Short Carbide	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		PFR-R1250SA1250-S700CS	1.250	7.000	3.125	2.5	2	1.250	3.875	1.230
52200018	Cylindrical Shank Long Carbide	PFR-R0375SA0375-L550CS	0.375	5.500	1.875	5.0	2	0.375	3.625	0.355
52200019		PFR-R0500SA0500-L550CS	0.500	5.500	2.500	5.0	2	0.500	3.000	0.480
52200020		PFR-R0625SA0625-L650CS	0.625	6.500	3.125	5.0	2	0.625	3.375	0.605
52200021		PFR-R0750SA0750-L700CS	0.750	7.000	3.750	5.0	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
52200010	Cylindrical Shank Extra-Long Carbide	PFR-R0375SA0375-LL650CS	0.375	6.500	2.625	7.0	2	0.375	3.875	0.355
52200011		PFR-R0500SA0500-LL700CS	0.500	7.000	3.500	7.0	2	0.500	3.500	0.480
52200012		PFR-R0625SA0625-LL750CS	0.625	7.500	3.750	6.0	2	0.625	3.750	0.605
52200013		PFR-R0750SA0750-LL900CS	0.750	9.000	4.500	6.0	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.

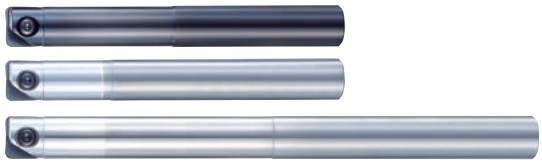
PXT



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List 78320 NEW SIZES!

PFR SS (Metric)

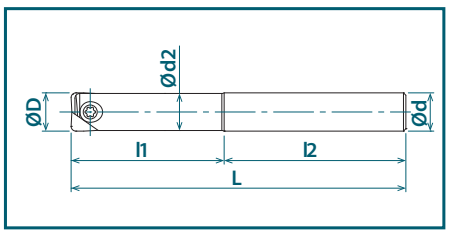


Recommended Materials: p1089-1090
Accessories & Inserts: p1083-1088

EDP No.	Body Type	Designation	Tool Dia. (mm) D	Overall Length (mm) L	Neck Length (mm) l1	L/D Ratio	No. of Teeth	Shank Dia. (mm) d	Shank Length (mm) l2	Neck Dia. (mm) 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	4.0	2	16	76	15.5
7832004		PFR-R200SS20-S160	20	160	80	4.0	2	20	80	19.5
7832005		PFR-R250SS25-S160	25	160	75	3.0	2	25	85	24.5
7832006		PFR-R300SS32-S170	30	170	90	3.0	2	32	80	29.5
7832007		PFR-R320SS32-S180	32	180	96	3.0	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	5.0	2	6	70	5.5
7832040		PFR-R080SS08-L120CS	8	120	40	5.0	2	8	80	7.5
7832041		PFR-R100SS10-L130CS	10	130	50	5.0	2	10	80	9.5
7832042		PFR-R120SS12-L140CS	12	140	60	5.0	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	4.0	2	25	100	24.5
7832046		PFR-R300SS32-L220CS	30	220	120	4.0	2	32	100	29.5
7832047		PFR-R320SS32-L230CS	32	230	128	4.0	2	32	102	31.5
7832019	Cylindrical Shank Extra-Long Carbide	PFR-R060SS06-LL120CS	6	120	42	7.0	2	6	78	5.5
7832020		PFR-R080SS08-LL140CS	8	140	56	7.0	2	8	84	7.5
7832021		PFR-R100SS10-LL150CS	10	150	70	7.0	2	10	80	9.5
7832022		PFR-R120SS12-LL160CS	12	160	84	7.0	2	12	76	11.5
7832023		PFR-R160SS16-LL200CS	16	200	96	6.0	2	16	104	15.5
7832024		PFR-R200SS20-LL240CS	20	240	120	6.0	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.

PXT



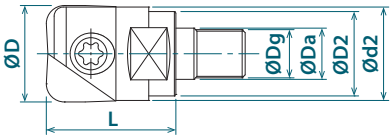
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List 52605 NEW!

PFR ASF (Inch)

SPEED FEED P1089-1090 INDEX.
Recommended Materials: p1089-1090
Accessories & Inserts: p1083-1088
SF Arbors: p1091





EDP No.	Body Type	Designation	Tool Dia. (inch) D	No. of Teeth	Pilot Dia. (inch) Da	Thread Dia. (mm) Dg	Overall Length (inch) L	Head Dia. (inch) d2	Flange Dia. (inch) D2	Wrench Size	Applicable Insert
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.

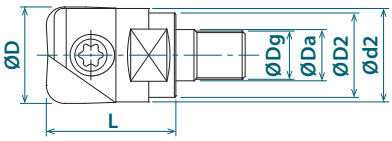
PXT

List 78220

PFR SF (Metric)

SPEED FEED P1089-1090 INDEX.
Recommended Materials: p1089-1090
Accessories & Inserts: p1083-1088
SF Arbors: p1091





EDP No.	Body Type	Designation	Tool Dia. (mm) D	No. of Teeth	Pilot Dia. (mm) Da	Thread Dia. (mm) Dg	Overall Dia. (mm) L	Head Dia. (mm) d2	Flange Dia. (mm) D2	Wrench Size	Applicable Insert
7832090	Screw Fit Head	PFR-R100SF6	10	2	6.5	M6	26	9.5	9.0	7	PFR...
7832091		PFR-R120SF6	12	2	6.5	M6	26	11.5	11.0	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	18.0	14	
7832094		PFR-R250SF12	25	2	12.5	M12	38	24.5	23.0	17	
7832095		PFR-R300SF16	30	2	17.0	M16	43	29.5	28.0	22	
7832096		PFR-R320SF16	32	2	17.0	M16	43	31.5	28.0	22	

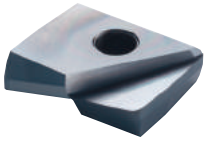
Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

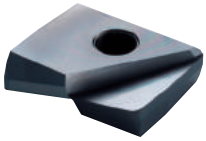
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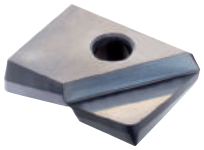
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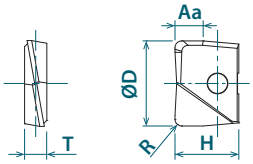
List 78PFR NEW SIZES!

PFR Inserts (Inch)


Multi-Purpose


Strengthened Edge


Diamond Coated



Designation	Specification	No. of Cutting Edges	Insert Size					EDP Number		
			D (inch)	R (inch)	Aa (inch)	T (mm)	H (mm)	XP3225	XP3310	XP4505
PFR0375R015A-ST	Multi-Purpose	2	0.375	0.015	0.130	2.6	8.5	52201000	-	-
PFR0375R030A-ST				0.030				52201001	-	-
PFR0375R060A-ST				0.060				52201002	-	-
PFR0375R090A-ST				0.090				52201003	-	-
PFR0500R015A-ST			0.500	0.015	0.157	3.0	10.0	52201004	-	-
PFR0500R030A-ST				0.030				52201005	-	-
PFR0500R060A-ST				0.060				52201006	-	-
PFR0500R090A-ST				0.090				52201007	-	-
PFR0500R120A-ST				0.120				52201008	-	-
PFR0625R015A-ST			0.625	0.015	0.208	4.0	12.0	52201009	-	-
PFR0625R030A-ST				0.030				52201010	-	-
PFR0625R060A-ST				0.060				52201011	-	-
PFR0625R090A-ST				0.090				52201012	-	-
PFR0625R120A-ST				0.120				52201013	-	-
PFR0750R015A-ST			0.750	0.015	0.264	5.0	15.0	52201014	-	-
PFR0750R030A-ST				0.030				52201015	-	-
PFR0750R060A-ST				0.060				52201016	-	-
PFR0750R090A-ST				0.090				52201017	-	-
PFR0750R120A-ST				0.120				52201018	-	-
PFR1000R015A-ST			1.000	0.015	0.327	6.0	18.5	52201019	-	-
PFR1000R030A-ST				0.030				52201020	-	-
PFR1000R060A-ST				0.060				52201021	-	-
PFR1000R090A-ST				0.090				52201022	-	-
PFR1000R120A-ST				0.120				52201023	-	-
PFR1250R015A-ST			1.250	0.015	0.405	7.0	23.5	52201024	-	-
PFR1250R030A-ST				0.030				52201025	-	-
PFR1250R060A-ST				0.060				52201026	-	-
PFR1250R090A-ST				0.090				52201027	-	-
PFR1250R120A-ST				0.120				52201028	-	-
PFR0375R015A-SH	Strengthened Edge	2	0.375	0.015	0.130	2.6	8.5	-	52201050	-
PFR0375R030A-SH				0.030				-	52201051	-
PFR0375R060A-SH				0.060				-	52201052	-
PFR0375R090A-SH				0.090				-	52201053	-
PFR0500R015A-SH			0.500	0.015	0.157	3.0	10.0	-	52201054	-
PFR0500R030A-SH				0.030				-	52201055	-
PFR0500R060A-SH				0.060				-	52201056	-
PFR0500R090A-SH				0.090				-	52201057	-
PFR0500R120A-SH				0.120				-	52201058	-
PFR0625R015A-SH			0.625	0.015	0.208	4.0	12.0	-	52201059	-
PFR0625R030A-SH				0.030				-	52201060	-
PFR0625R060A-SH				0.060				-	52201061	-
PFR0625R090A-SH				0.090				-	52201062	-
PFR0625R120A-SH				0.120				-	52201063	-

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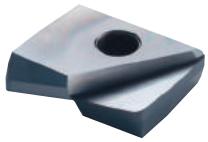
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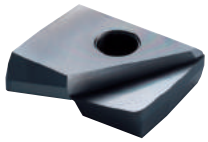
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List 78PFR (Continued) NEW SIZES!

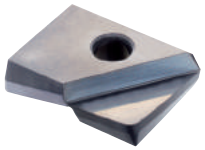
PFR Inserts (Inch)



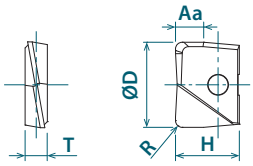
Multi-Purpose



Strengthened Edge



Diamond Coated



Designation	Specification	No. of Cutting Edges	Insert Size					EDP Number		
			D (inch)	R (inch)	Aa (inch)	T (mm)	H (mm)	XP3225	XP3310	XP4505
PFR0750R015A-SH	Strengthened Edge	2	0.750	0.015	0.264	5.0	15.0	-	52201064	-
PFR0750R030A-SH				0.030				-	52201065	-
PFR0750R060A-SH				0.060				-	52201066	-
PFR0750R090A-SH				0.090				-	52201067	-
PFR0750R120A-SH				0.120				-	52201068	-
PFR1000R015A-SH			1.000	0.015	0.327	6.0	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	7.0	23.5	-	52201074	-
PFR1250R030A-SH				0.030				-	52201075	-
PFR1250R060A-SH				0.060				-	52201076	-
PFR1250R090A-SH				0.090				-	52201077	-
PFR1250R120A-SH				0.120				-	52201078	-
PFR0375R015A-D	Diamond Coated	2	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	3.0	10.0	-	-	52201103
PFR0500R030A-D				0.030				-	-	52201104
PFR0500R060A-D				0.060				-	-	52201105
PFR0625R015A-D			0.625	0.015	0.208	4.0	12.0	-	-	52201106
PFR0625R030A-D				0.030				-	-	52201107
PFR0625R060A-D				0.060				-	-	52201108
PFR0750R015A-D			0.750	0.015	0.264	5.0	15.0	-	-	52201109
PFR0750R030A-D				0.030				-	-	52201110
PFR0750R060A-D				0.060				-	-	52201111
PFR1000R060A-D			1.000	0.060	0.327	6.0	18.5	-	-	52201112
PFR1250R060A-D			1.250	0.060	0.405	7.0	23.5	-	-	52201113

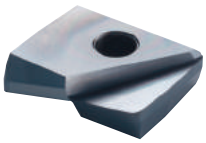
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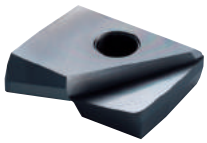
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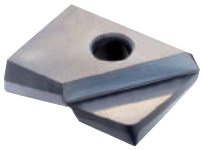
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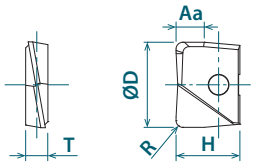
List 78PFR NEW SIZES!

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	XP4505
PFR060R03-ST	Multi-Purpose	2	6	0.3	2.0	2.0	5.0	7820350	-	-
PFR060R05-ST				0.5				7820351	-	-
PFR060R10-ST				1				7820352	-	-
PFR070R03-ST			7	0.3			5.5	7820353	-	-
PFR070R05-ST				0.5				7820354	-	-
PFR070R10-ST				1				7820355	-	-
PFR080R03-ST			8	0.3	2.7	2.4	7.0	7820200	-	-
PFR080R05-ST				0.5				7820201	-	-
PFR080R10-ST				1				7820202	-	-
PFR080R20-ST				2				7820203	-	-
PFR100R03-ST			10	0.3	3.3	2.6	8.5	7820204	-	-
PFR100R05-ST				0.5				7820205	-	-
PFR100R10-ST				1				7820206	-	-
PFR100R20-ST				2				7820207	-	-
PFR110R03-ST			11	0.3				7820356	-	-
PFR110R05-ST				0.5				7820357	-	-
PFR110R10-ST				1				7820358	-	-
PFR110R20-ST				2				7820359	-	-
PFR120R03-ST			12	0.3	4.0	3.0	10.0	7820208	-	-
PFR120R05-ST				0.5				7820209	-	-
PFR120R10-ST				1				7820210	-	-
PFR120R20-ST				2				7820211	-	-
PFR120R30-ST				3				7820212	-	-
PFR130R03-ST			13	0.3				7820360	-	-
PFR130R05-ST				0.5				7820361	-	-
PFR130R10-ST				1				7820362	-	-
PFR130R20-ST				2				7820363	-	-
PFR160R03-ST			16	0.3	5.3	4.0	12.0	7820213	-	-
PFR160R05-ST				0.5				7820214	-	-
PFR160R10-ST				1				7820215	-	-
PFR160R20-ST				2				7820216	-	-
PFR160R30-ST				3				7820217	-	-
PFR170R03-ST			17	0.3				7820364	-	-
PFR170R05-ST				0.5				7820365	-	-
PFR170R10-ST				1				7820366	-	-
PFR170R20-ST				2				7820367	-	-
PFR200R03-ST			20	0.3	6.7	5.0	15.0	7820218	-	-
PFR200R05-ST				0.5				7820219	-	-
PFR200R10-ST				1				7820220	-	-
PFR200R20-ST				2				7820221	-	-
PFR200R30-ST				3				7820222	-	-
PFR210R03-ST			21	0.3				7820368	-	-
PFR210R05-ST				0.5				7820369	-	-
PFR210R10-ST				1				7820370	-	-
PFR210R20-ST				2				7820371	-	-

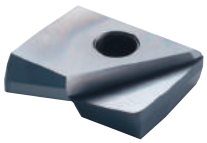
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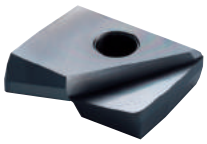
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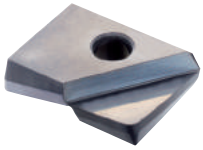
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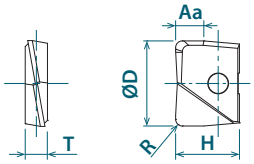
List 78PFR (Continued) NEW SIZES!

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	XP4505
PFR250R03-ST	Multi-Purpose	2	25	0.3	8.3	6.0	18.5	7820223	-	-
PFR250R05-ST				0.5				7820224	-	-
PFR250R10-ST				1				7820225	-	-
PFR250R20-ST				2				7820226	-	-
PFR250R30-ST				3				7820227	-	-
PFR260R03-ST			26	0.3	8.3	6.0	18.5	7820372	-	-
PFR260R05-ST				0.5				7820373	-	-
PFR260R10-ST				1.0				7820374	-	-
PFR260R20-ST				2.0				7820375	-	-
PFR300R03-ST			30	0.3	10.0	7.0	22.5	7820228	-	-
PFR300R05-ST				0.5				7820229	-	-
PFR300R10-ST				1.0				7820230	-	-
PFR300R20-ST				2.0				7820231	-	-
PFR300R30-ST				3.0				7820232	-	-
PFR320R03-ST			32	0.3	10.3	7.0	23.5	7820233	-	-
PFR320R05-ST				0.5				7820234	-	-
PFR320R10-ST				1.0				7820235	-	-
PFR320R20-ST				2.0				7820236	-	-
PFR320R30-ST				3.0				7820237	-	-
PFR060R03-SH	Strengthened Edge	2	6	0.3	2.0	2.0	5.0	-	7820400	-
PFR060R05-SH				0.5				-	7820401	-
PFR060R10-SH				1.0				-	7820402	-
PFR070R03-SH			7	0.3			5.5	-	7820403	-
PFR070R05-SH				0.5				-	7820404	-
PFR070R10-SH				1.0				-	7820405	-
PFR080R03-SH			8	0.3	2.7	2.4	7.0	-	7820250	-
PFR080R05-SH				0.5				-	7820251	-
PFR080R10-SH				1.0				-	7820252	-
PFR080R20-SH				2.0				-	7820253	-
PFR100R03-SH			10	0.3	3.3	2.6	8.5	-	7820254	-
PFR100R05-SH				0.5				-	7820255	-
PFR100R10-SH				1.0				-	7820256	-
PFR100R20-SH				2.0				-	7820257	-
PFR110R03-SH			11	0.3				-	7820406	-
PFR110R05-SH				0.5				-	7820407	-
PFR110R10-SH				1.0				-	7820408	-
PFR110R20-SH				2.0				-	7820409	-
PFR120R03-SH			12	0.3	4.0	3.0	10.0	-	7820258	-
PFR120R05-SH				0.5				-	7820259	-
PFR120R10-SH				1.0				-	7820260	-
PFR120R20-SH				2.0				-	7820261	-
PFR120R30-SH				3.0				-	7820262	-
PFR130R03-SH			13	0.3				-	7820410	-
PFR130R05-SH				0.5				-	7820411	-
PFR130R10-SH				1.0				-	7820412	-
PFR130R20-SH				2.0				-	7820413	-

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List 78PFR (Continued) NEW SIZES!

PFR Inserts (Metric)

Designation	Specification	No. of Cutting Edges	Insert Size D (mm)	Insert Size R (mm)	Insert Size Aa (mm)	Insert Size T (mm)	Insert Size H (mm)	EDP Number XP3225	EDP Number XP3310	EDP Number XP4505
PFR160R03-SH	Strengthened Edge	2	16	0.3	5.3	4.0	12.0	-	7820263	-
PFR160R05-SH				0.5				-	7820264	-
PFR160R10-SH				1.0				-	7820265	-
PFR160R20-SH				2.0				-	7820266	-
PFR160R30-SH				3.0				-	7820267	-
PFR170R03-SH			17	0.3				-	7820414	-
PFR170R05-SH				0.5				-	7820415	-
PFR170R10-SH				1.0				-	7820416	-
PFR170R20-SH				2.0				-	7820417	-
PFR200R03-SH			20	0.3	6.7	5.0	15.0	-	7820268	-
PFR200R05-SH				0.5				-	7820269	-
PFR200R10-SH				1.0				-	7820270	-
PFR200R20-SH				2.0				-	7820271	-
PFR200R30-SH				3.0				-	7820272	-
PFR210R03-SH			21	0.3				-	7820418	-
PFR210R05-SH				0.5				-	7820419	-
PFR210R10-SH				1.0				-	7820420	-
PFR210R20-SH				2.0				-	7820421	-
PFR250R03-SH			25	0.3	8.3	6.0	18.5	-	7820273	-
PFR250R05-SH				0.5				-	7820274	-
PFR250R10-SH				1.0				-	7820275	-
PFR250R20-SH				2.0				-	7820276	-
PFR250R30-SH				3.0				-	7820277	-
PFR260R03-SH			26	0.3				-	7820422	-
PFR260R05-SH				0.5				-	7820423	-
PFR260R10-SH				1.0				-	7820424	-
PFR260R20-SH				2.0				-	7820425	-
PFR300R03-SH			30	0.3	10.0	7.0	22.5	-	7820278	-
PFR300R05-SH				0.5				-	7820279	-
PFR300R10-SH				1.0				-	7820280	-
PFR300R20-SH				2.0				-	7820281	-
PFR300R30-SH				3.0				-	7820282	-
PFR320R03-SH			32	0.3	10.3	7.0	23.5	-	7820283	-
PFR320R05-SH				0.5				-	7820284	-
PFR320R10-SH				1.0				-	7820285	-
PFR320R20-SH				2.0				-	7820286	-
PFR320R30-SH				3.0				-	7820287	-
PFR060R03-D	Diamond Coated	2	6	0.3	2.0	2.0	5.0	-	-	7820450
PFR060R05-D				0.5				-	-	7820451
PFR060R10-D				1.0				-	-	7820452
PFR080R03-D			8	0.3	2.7	2.4	7.0	-	-	7820300
PFR080R05-D				0.5				-	-	7820301
PFR080R10-D				1.0				-	-	7820302
PFR100R03-D			10	0.3	3.3	2.6	8.5	-	-	7820303
PFR100R05-D				0.5				-	-	7820304
PFR100R10-D				1.0				-	-	7820305
PFR120R03-D			12	0.3	4.0	3.0	10.0	-	-	7820306
PFR120R05-D				0.5				-	-	7820307
PFR120R10-D				1.0				-	-	7820308
PFR160R03-D			16	0.3	5.3	4.0	12.0	-	-	7820309
PFR160R05-D				0.5				-	-	7820310
PFR160R10-D				1.0				-	-	7820311
PFR200R03-D			20	0.3	6.7	5.0	15.0	-	-	7820312
PFR200R05-D				0.5				-	-	7820313
PFR200R10-D				1.0				-	-	7820314

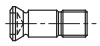
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List 7808H

PFR Accessories

Appearance	EDP No.	Designation	Applicable Insert		Recommended Tightening Torque
			(inch)	(mm)	
 Clamping Screw	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	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.

PXT

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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
P	Carbon Steels, Alloy Steels (1050, 4140)	~280 HB	590 (495-820)			0.05Dc	0.0059	0.0071	0.0087	0.0098
P	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/mm²	655 (495-820)			0.05Dc	0.0059	0.0079	0.0098	0.0118
K	Ductile Cast Iron (60-40-18)	~600 N/mm²	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
N	Graphite	-	825 (500-1150)			0.10Dc	0.0098	0.0157	0.0197	0.0197
N	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
S	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
H	Die Cast Steels (A2, S7)	43 - 48 HRC	260 (165-330)			0.025Dc	0.0020	0.0031	0.0040	0.0059
H	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	◎	◎	○	◎*	◎	○
XP3310	○	○	◎			◎
XP4505				◎**		

○ good ◎ best

XP3225: recommended when L/D ≥ 5.
XP3310: recommended for interrupted cutting.
*: Best recommended for aluminum applications.
**: Best recommended for graphite & CFRP applications.

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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/mm²	1970	2100	1575	0.02Dc	0.0047	0.0055	0.0071	0.0087
	Ductile Cast Iron (60-40-18)	~600 N/mm²	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	◉	◉	○	◉*	◉	○
XP3310	○	○	◉			◉
XP4505				◉**		

XP3225: recommended when L/D ≥ 5.
XP3310: recommended for interrupted cutting.
*: Best recommended for aluminum applications.
**: Best recommended for graphite & CFRP applications.

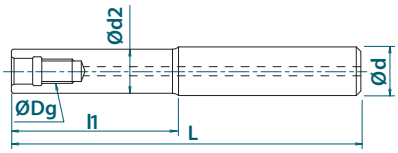
○ good ◉ best

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List 52600 NEW!

SF Arbor SA (Inch)





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.

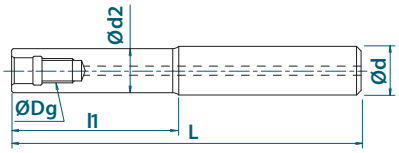
PXT

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List 78019

SF Arbor SS (Metric)





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	9.0	M6	6.5	104	4
7801905		SF-M06SS12-10	12	11.0	M6	6.5	104	10
7801900		SF-M08SS16-15	16	14.5	M8	8.5	95	15
7801901		SF-M10SS20-20	20	18.0	M10	10.5	120	20
7801902		SF-M12SS25-35	25	23.0	M12	12.5	135	35
7801903		SF-M16SS32-35	32	28.0	M16	17.0	155	35
7801918	Cylindrical Shank Carbide	SF-M06SS10-24CS	10	9.0	M6	6.5	124	24
7801919		SF-M06SS12-34CS	12	11.0	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	18.0	M10	10.5	140	70
7801913		SF-M10SS20-110CS	20	18.0	M10	10.5	180	110
7801914		SF-M12SS25-90CS	25	23.0	M12	12.5	170	90
7801915		SF-M12SS25-140CS	25	23.0	M12	12.5	220	140
7801916		SF-M16SS32-120CS	32	28.0	M16	17.0	220	120
7801917		SF-M16SSS32-190CS	32	28.0	M16	17.0	290	190

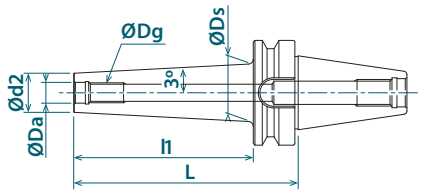
Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

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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	29.0	M16	17.0	45	23	32.0
7802507		BT30-SFA16-85	29.0	M16	17.0	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	29.0	M16	17.0	45	18	32.0
7802516		BT40-SFA16-85	29.0	M16	17.0	85	58	35.0
7802517		BT40-SFA16-135	29.0	M16	17.0	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	29.0	M16	17.0	85	47	32.0
7802528		BT50-SFA16-135	29.0	M16	17.0	135	97	39.1
7802529		BT50-SFA16-185	29.0	M16	17.0	185	147	44.4
7802530		BT50-SFA16-250	29.0	M16	17.0	250	212	51.2
7802531		BT50-SFA16-300	29.0	M16	17.0	300	262	56.4

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

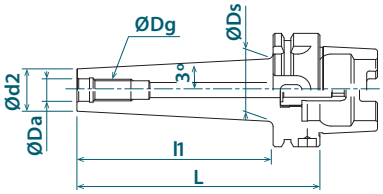
PXT

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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	29.0	M16	17.0	60	34	32.0
7802558		A63-SFA16-85	29.0	M16	17.0	85	59	32.0
7802559		A63-SFA16-135	29.0	M16	17.0	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	29.0	M16	17.0	85	50	34.2
7802570		A100-SFA16-135	29.0	M16	17.0	135	106	40.1
7802571		A100-SFA16-185	29.0	M16	17.0	185	156	45.3
7802572		A100-SFA16-250	29.0	M16	17.0	250	221	52.1
7802573		A100-SFA16-300	29.0	M16	17.0	300	271	57.4

Packed: 1 pc.
Note: **This item is stocked overseas. Please contact OSG for availability and delivery.**

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List 78PXSE

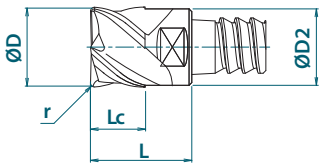
SPEED FEED P1105 INDEX.

PXSE Exchangeable Heads (Inch & Metric) - 4 Flute, Square & Corner Radius

Accessories: p1104
PXM Arbors: p1102-1103







EDP No.	Type	Designation	Head Dia. D		Corner Radius r		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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	-	1.0	-	8.4	-	14.4	-	11.7	-	38°	XP3225
7830007		PXSE120C12-04R020	12	-	2.0	-	8.4	-	14.4	-	11.7	-	38°	XP3225
7830008		PXSE120C12-04R030	12	-	3.0	-	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	-	1.0	-	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	-	2.0	-	11.2	-	18.7	-	15.7	-	38°	XP3225
7830014		PXSE160C16-04R030	16	-	3.0	-	11.2	-	18.7	-	15.7	-	38°	XP3225
7830015		PXSE200C20-04R000	20	-	0	-	14.0	-	21.5	-	19.6	-	38°	XP3225
7830016		PXSE200C20-04R005	20	-	0.5	-	14.0	-	21.5	-	19.6	-	38°	XP3225
7830017		PXSE200C20-04R010	20	-	1.0	-	14.0	-	21.5	-	19.6	-	38°	XP3225
7830018		PXSE200C20-04R020	20	-	2.0	-	14.0	-	21.5	-	19.6	-	38°	XP3225
7830019		PXSE200C20-04R030	20	-	3.0	-	14.0	-	21.5	-	19.6	-	38°	XP3225
7830020		PXSE250C25-04R000	25	-	0	-	17.5	-	27.5	-	24.0	-	38°	XP3225
7830021		PXSE250C25-04R010	25	-	1.0	-	17.5	-	27.5	-	24.0	-	38°	XP3225
7830022		PXSE250C25-04R020	25	-	2.0	-	17.5	-	27.5	-	24.0	-	38°	XP3225
7830023		PXSE250C25-04R030	25	-	3.0	-	17.5	-	27.5	-	24.0	-	38°	XP3225

Packed: 1 pc.

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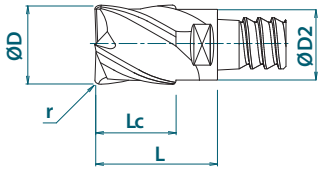
List 78PXVC NEW!

PXVC Exchangeable Heads (Inch & Metric) - 4 Flute, Square & Corner Radius

SPEED FEED P1106 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103





EDP No.	Type	Designation	Head Dia. D		Corner Radius r		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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	-	12	-	45° / 48°	XP3225
7835005		PXVC120C12-04R005	12	-	0.5	-	12	-	18	-	12	-	45° / 48°	XP3225
7835006		PXVC120C12-04R010	12	-	1.0	-	12	-	18	-	12	-	45° / 48°	XP3225
7835007		PXVC120C12-04R020	12	-	2.0	-	12	-	18	-	12	-	45° / 48°	XP3225
7835008		PXVC120C12-04R030	12	-	3.0	-	12	-	18	-	12	-	45° / 48°	XP3225
7835009		PXVC140C12-04R000	14	-	0	-	14	-	20	-	12	-	45° / 48°	XP3225
7835010		PXVC140C12-04R005	14	-	0.5	-	14	-	20	-	12	-	45° / 48°	XP3225
7835011	PXVC	PXVC140C12-04R010	14	-	1.0	-	14	-	20	-	12	-	45° / 48°	XP3225
7835012		PXVC140C12-04R020	14	-	2.0	-	14	-	20	-	12	-	45° / 48°	XP3225
7835013		PXVC140C12-04R030	14	-	3.0	-	14	-	20	-	12	-	45° / 48°	XP3225
7835014		PXVC160C16-04R000	16	-	0	-	16	-	24	-	16	-	45° / 48°	XP3225
7835015		PXVC160C16-04R005	16	-	0.5	-	16	-	24	-	16	-	45° / 48°	XP3225
7835016		PXVC160C16-04R010	16	-	1.0	-	16	-	24	-	16	-	45° / 48°	XP3225
7835017		PXVC160C16-04R015	16	-	2.0	-	16	-	24	-	16	-	45° / 48°	XP3225
7835018		PXVC160C16-04R020	16	-	2.0	-	16	-	24	-	16	-	45° / 48°	XP3225
7835019		PXVC160C16-04R030	16	-	3.0	-	16	-	24	-	16	-	45° / 48°	XP3225
7835020		PXVC180C16-04R000	18	-	0	-	18	-	26	-	16	-	45° / 48°	XP3225
7835021		PXVC180C16-04R005	18	-	0.5	-	18	-	26	-	16	-	45° / 48°	XP3225
7835022		PXVC180C16-04R010	18	-	1.0	-	18	-	26	-	16	-	45° / 48°	XP3225
7835023		PXVC180C16-04R020	18	-	2.0	-	18	-	26	-	16	-	45° / 48°	XP3225
7835024		PXVC180C16-04R030	18	-	3.0	-	18	-	26	-	16	-	45° / 48°	XP3225
7835025		PXVC200C20-04R000	20	-	0	-	20	-	28	-	20	-	45° / 48°	XP3225
7835026		PXVC200C20-04R005	20	-	0.5	-	20	-	28	-	20	-	45° / 48°	XP3225
7835027		PXVC200C20-04R010	20	-	1.0	-	20	-	28	-	20	-	45° / 48°	XP3225
7835028		PXVC200C20-04R020	20	-	2.0	-	20	-	28	-	20	-	45° / 48°	XP3225
7835029		PXVC200C20-04R030	20	-	3.0	-	20	-	28	-	20	-	45° / 48°	XP3225
7835030		PXVC220C20-04R000	22	-	0	-	22	-	30	-	20	-	45° / 48°	XP3225
7835038		PXVC220C20-04R005	22	-	0.5	-	22	-	30	-	20	-	45° / 48°	XP3225
7835031		PXVC220C20-04R010	22	-	1.0	-	22	-	30	-	20	-	45° / 48°	XP3225
7835032		PXVC220C20-04R020	22	-	2.0	-	22	-	30	-	20	-	45° / 48°	XP3225
7835033		PXVC220C20-04R030	22	-	3.0	-	22	-	30	-	20	-	45° / 48°	XP3225
7835034		PXVC250C25-04R000	25	-	0	-	25	-	35	-	24	-	45° / 48°	XP3225
7835035		PXVC250C25-04R010	25	-	1.0	-	25	-	35	-	24	-	45° / 48°	XP3225
7835036		PXVC250C25-04R020	25	-	2.0	-	25	-	35	-	24	-	45° / 48°	XP3225
7835037		PXVC250C25-04R030	25	-	3.0	-	25	-	35	-	24	-	45° / 48°	XP3225

Packed: 1 pc.

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List 78PXSM

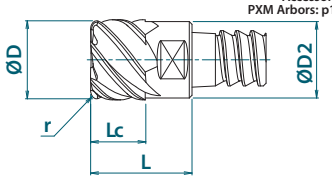
SPEED FEED P1107 INDEX.

PXSM Exchangeable Heads (Inch & Metric) - Multiple Flute, Square & Corner Radius

Accessories: p1104
PXM Arbors: p1102-1103







EDP No.	Type	Designation	Head Dia. D		Corner Radius r		No. of Flutes	Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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	-	1.0	-	6	8.4	-	14.4	-	11.7	-	38°	XP3225
7830107		PXSM120C12-06R020	12	-	2.0	-	6	8.4	-	14.4	-	11.7	-	38°	XP3225
7830108		PXSM120C12-06R030	12	-	3.0	-	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	-	1.0	-	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	-	2.0	-	6	11.2	-	18.7	-	15.7	-	38°	XP3225
7830114		PXSM160C16-06R030	16	-	3.0	-	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	-	1.0	-	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	-	2.0	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830120		PXSM160C16-08R030	16	-	3.0	-	8	11.2	-	18.7	-	15.7	-	42°	XP3225
7830121		PXSM200C20-10R000	20	-	0	-	10	14.0	-	21.5	-	19.6	-	42°	XP3225
7830122		PXSM200C20-10R005	20	-	0.5	-	10	14.0	-	21.5	-	19.6	-	42°	XP3225
7830123		PXSM200C20-10R010	20	-	1.0	-	10	14.0	-	21.5	-	19.6	-	42°	XP3225
7830124		PXSM200C20-10R020	20	-	2.0	-	10	14.0	-	21.5	-	19.6	-	42°	XP3225
7830125		PXSM200C20-10R030	20	-	3.0	-	10	14.0	-	21.5	-	19.6	-	42°	XP3225
7830126		PXSM250C25-10R000	25	-	0	-	10	17.5	-	27.5	-	24.0	-	42°	XP3225
7830127		PXSM250C25-10R010	25	-	1.0	-	10	17.5	-	27.5	-	24.0	-	42°	XP3225
7830128		PXSM250C25-10R020	25	-	2.0	-	10	17.5	-	27.5	-	24.0	-	42°	XP3225
7830129		PXSM250C25-10R030	25	-	3.0	-	10	17.5	-	27.5	-	24.0	-	42°	XP3225

Packed: 1 pc.

PXI

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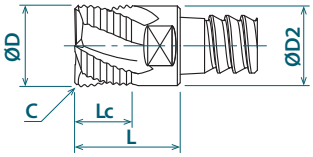
List 78PXNL

PXNL Exchangeable Heads (inch & metric) - 4 Flute, Roughing, Low Helix

SPEED FEED P1107 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103





EDP No.	Type	Designation	Head Dia. D		Corner Chamfer C		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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	-	14.0	-	21.5	-	19.6	-	19° / 21°	XP3225
7830404		PXNL250C25-04C006	25	-	0.6	-	17.5	-	27.5	-	24.0	-	19° / 21°	XP3225

Packed: 1 pc.

PXI

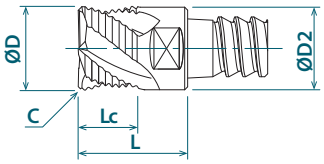
List 78PXNH

PXNH Exchangeable Heads (inch & metric) - 4 Flute, Roughing, High Helix

SPEED FEED P1107 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103





EDP No.	Type	Designation	Head Dia. D		Corner Chamfer C		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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	-	14.0	-	21.5	-	19.6	-	40° / 42°	XP3225
7830454		PXNH250C25-04C006	25	-	0.6	-	17.5	-	27.5	-	24.0	-	40° / 42°	XP3225

Packed: 1 pc.

PXI

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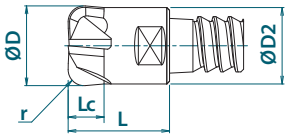
List 78PXRE

PXRE Exchangeable Heads (inch & metric) - Multiple Flute, Straight Flute, Corner Radius

SPEED FEED P1108 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103





EDP No.	Type	Designation	Head Dia. D		Corner Radius r		No. of Flutes	Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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
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.

PXI

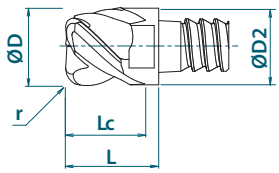
List 78PXDR NEW!

PXDR-P Exchangeable Heads (inch & metric) - 3 Flute, Helical Flute, Corner Radius

SPEED FEED P1108 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103





EDP No.	Type	Designation	Head Dia. D		Corner Radius r		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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
7830351		PXDR120C12-03R015-P	12	-	1.5	-	8.4	-	14.4	-	11.7	-	45°	XP3225
7830352		PXDR120C12-03R020-P	12	-	2.0	-	8.4	-	14.4	-	11.7	-	45°	XP3225
7830353		PXDR160C16-03R020-P	16	-	2.0	-	11.2	-	18.7	-	15.7	-	45°	XP3225
7830354		PXDR160C16-03R030-P	16	-	3.0	-	11.2	-	18.7	-	15.7	-	45°	XP3225
7830355		PXDR200C20-03R020-P	20	-	2.0	-	14.0	-	21.5	-	19.6	-	45°	XP3225
7830356		PXDR200C20-03R030-P	20	-	3.0	-	14.0	-	21.5	-	19.6	-	45°	XP3225

Packed: 1 pc.

PXI

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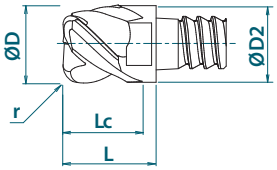
List 78PXDR NEW!

PXDR-N Exchangeable Heads (inch & metric) - 3 Flute, Helical Flute, Corner Radius

SPEED FEED P1108 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103





EDP No.	Type	Designation	Head Dia. D		Corner Radius r		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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
7830371		PXDR120C12-03R015-N	12	-	1.5	-	8.4	-	14.4	-	11.7	-	45°	XP6305
7830372		PXDR120C12-03R020-N	12	-	2.0	-	8.4	-	14.4	-	11.7	-	45°	XP6305
7830373		PXDR160C16-03R020-N	16	-	2.0	-	11.2	-	18.7	-	15.7	-	45°	XP6305
7830374		PXDR160C16-03R030-N	16	-	3.0	-	11.2	-	18.7	-	15.7	-	45°	XP6305
7830375		PXDR200C20-03R020-N	20	-	2.0	-	14.0	-	21.5	-	19.6	-	45°	XP6305
7830376		PXDR200C20-03R030-N	20	-	30	-	14.0	-	21.5	-	19.6	-	45°	XP6305

Packed: 1 pc.

PXI

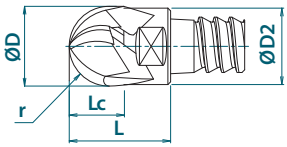
List 78PXBE NEW!

PXBE-P Exchangeable Heads (inch & metric) - 3 Flute, Ball End

SPEED FEED P1109 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103





EDP No.	Type	Designation	Head Dia. D		Head Radius r		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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
7830271		PXBE120C12-03R060-P	12	-	6	-	8.4	-	14.4	-	11.7	-	45°	XP3320
7830272		PXBE160C16-03R080-P	16	-	8	-	11.2	-	18.7	-	15.7	-	45°	XP3320
7830273		PXBE200C20-03R100-P	20	-	10	-	14.0	-	21.5	-	19.6	-	45°	XP3320

Packed: 1 pc.

PXI

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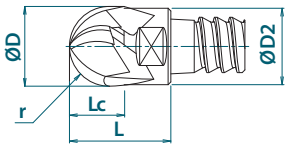
List 78PXBE

SPEED FEED P1109 INDEX.

Accessories: p1104
PXM Arbors: p1102-1103

PXBE-N Exchangeable Heads (inch & metric) - 3 Flute, Ball End





EDP No.	Type	Designation	Head Dia. D		Head Radius R		Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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
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	-	14.0	-	21.5	-	19.6	-	45°	XP3320

Packed: 1 pc.

PXI

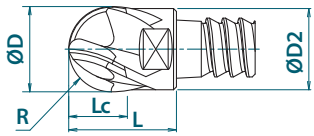
List 78PXBM

SPEED FEED P1109 INDEX.

Accessories: p1104
PXM Arbors: 1102-1103

PXBM Exchangeable Heads (inch & metric) - Multiple Flute, Ball End





EDP No.	Type	Designation	Head Dia. D		Head Radius R		No. of Flutes	Length of Cut Lc		Overall Length L		Flange Dia. D2		Helix Angle	Grade
			(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
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	14.0	-	21.5	-	19.6	-	45°	XP3320

Packed: 1 pc.

PXI

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List 52300 NEW!

INDEX.

PXM SA/TPA (inch)



Straight Shank

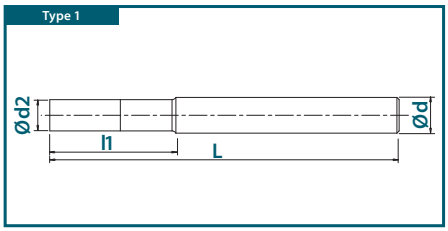


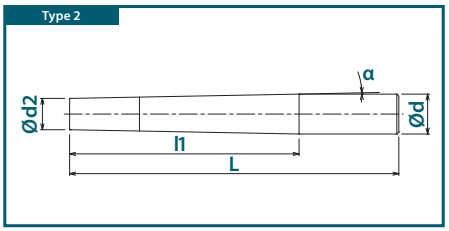
Tapered Shank

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	
52300015		PXMZ-C20SA0750-S350CS	1	0.736	0.750	-	3.500	1.500	0.750
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.

PXT





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List 78018

INDEX.

PXM SS/TP (Metric)



Straight Shank

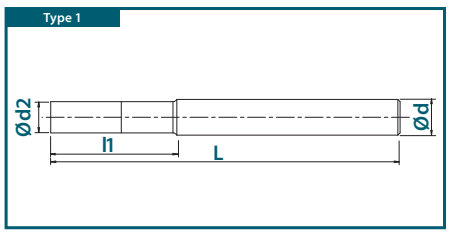


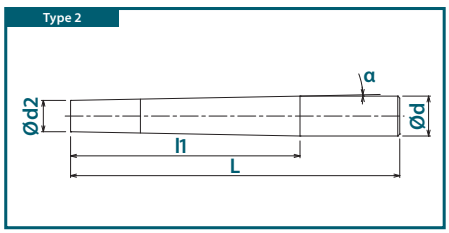
Tapered Shank

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	24.0	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	24.0	25	-	200	98.0	25

Packed: 1 pc.
Note: Wrench included with body.

PXT





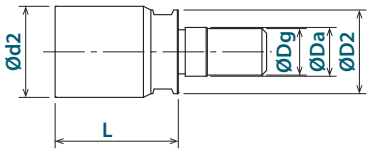
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List 52300 NEW!

INDEX.

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.

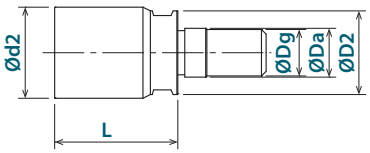
PXT

List 78018

INDEX.

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	D	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.

PXT

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.

PXT

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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. (in)	Mill Dia. (mm)	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)
-	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

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. (in)	Mill Dia. (mm)	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)
-	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

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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. (in)	Mill Dia. (mm)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
-	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

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. (in)	Mill Dia. (mm)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
-	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

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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. (in)	Mill Dia. (mm)	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)
-	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

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. (in)	Mill Dia. (mm)	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)
-	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

Slotting

Work Material		Cast Iron		Carbon Steels		Alloy Steels		Hardened Steels Pre-hardened Steels		Stainless Steels	
Depth of Cut		Aa=0.5Dc									
Mill Dia. (in)	Mill Dia. (mm)	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)
-	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

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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. (in)	Mill Dia. (mm)	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)
-	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

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. (in)	Mill Dia. (mm)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
-	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

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. (in)	Mill Dia. (mm)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
-	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

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Cutting Conditions (PXBE-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 Titanium Alloys	
Depth of Cut		Ø0.500: Aa=0.07Dc • Ar=0.15Dc ≥Ø0.625: Aa=0.10Dc • Ar=0.15Dc						Ø0.500: Aa=0.05Dc • Ar=0.1Dc ≥Ø0.625: Aa=0.03Dc • Ar=0.1Dc	
Mill Dia. (in)	Mill Dia. (mm)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
-	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

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. (in)	Mill Dia. (mm)	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)
-	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

Cutting Conditions (PXBM)

Contouring

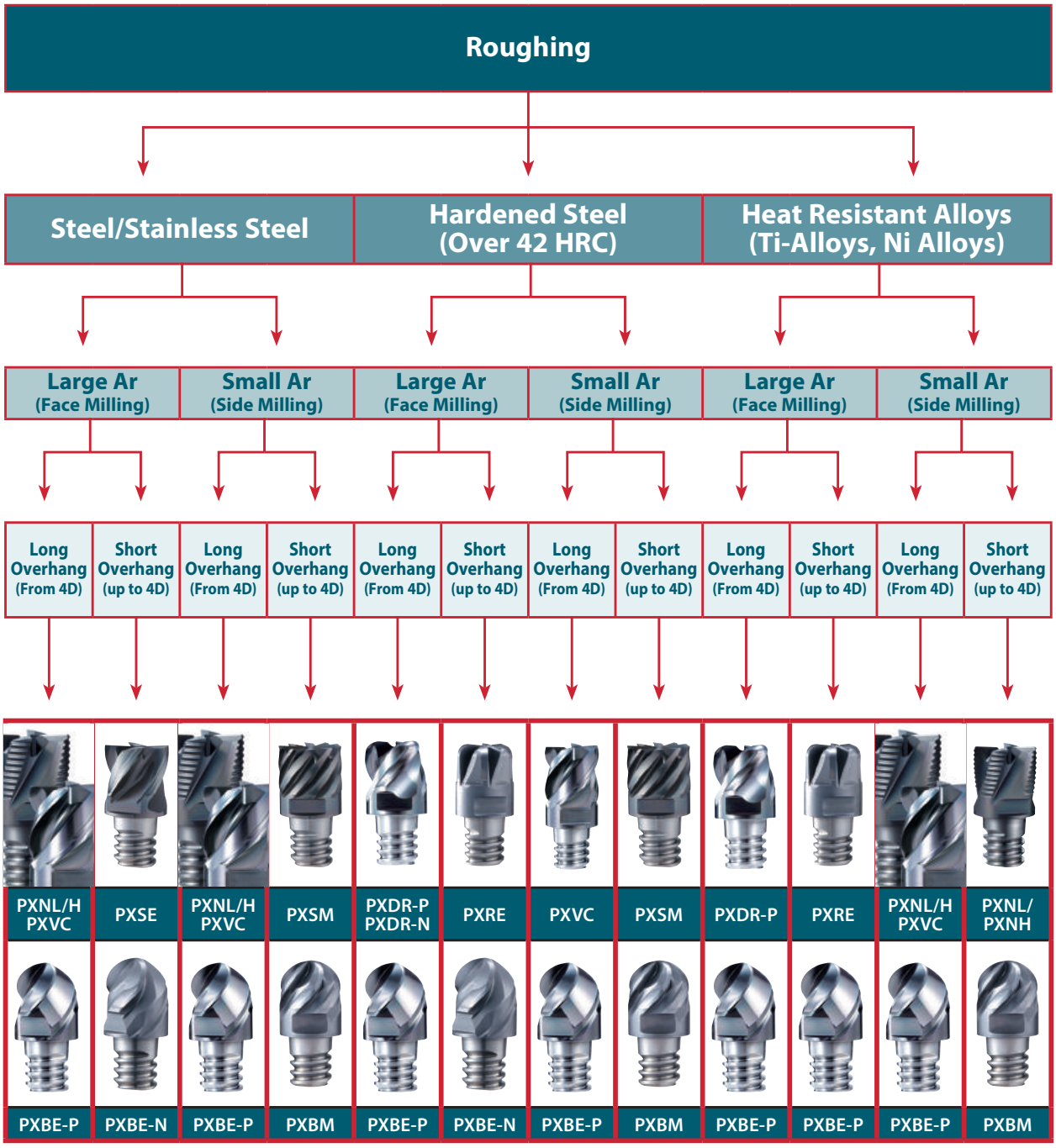
Hardness				Up to 30 HRC		30-45 HRC		45-55 HRC		55-60 HRC	
Work Material		Mild Steels Carbon Steels Cast Iron		Alloy Steels Tool Steels		Hardened Steels Pre-hardened Steels		Hardened Steels		Hardened Steels	
Depth of Cut		Aa=0.02Dc • Ar=0.05Dc									
Mill Dia. (in)	Mill Dia. (mm)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)	Speed (RPM)	Feed (in/min)
-	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

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PXM Head Selector

» Roughing Operations

A guide for selecting head type based on application.

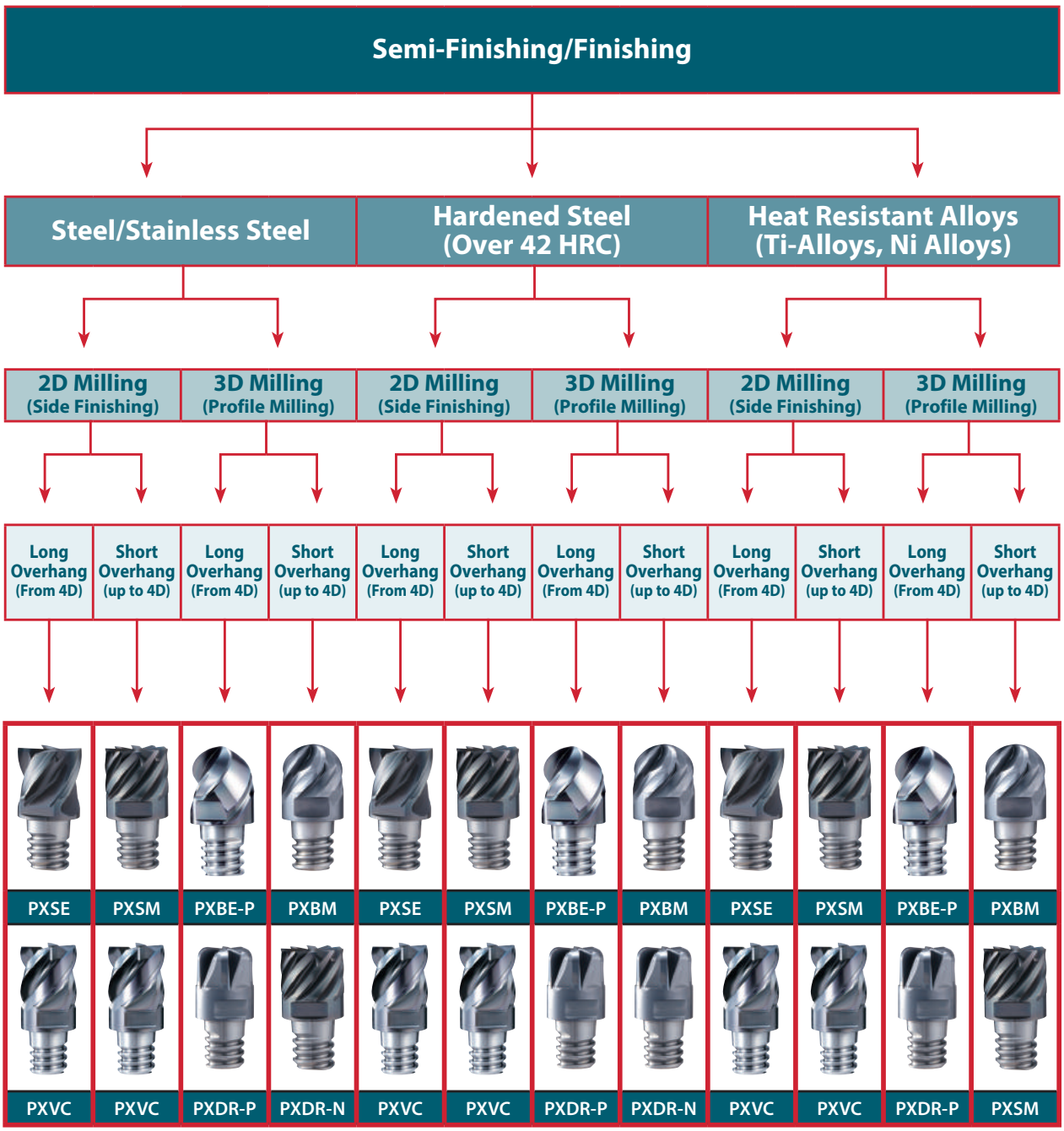


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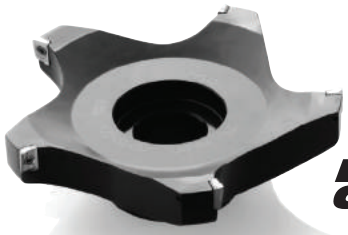
PXM Head Selector

Semi-Finishing/Finishing Operations

A guide for selecting head type based on application.



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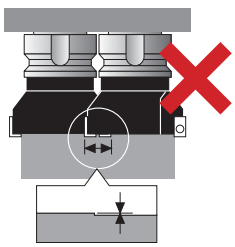




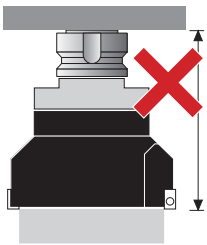
Revolutionary Face Milling Cutter for Small Machines

Roughing	DISC CUTTER® S
Finishing	DISC CUTTER® Pro

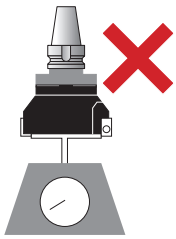
Why do we need the DISC CUTTER®?



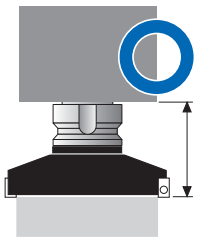
Multiple passes on large, wide work pieces are required for small diameter cutter bodies which result in blend lines on the finished part.



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.



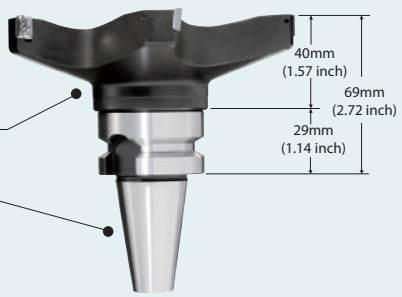
OSG's Solution

EXOCARB® DISC CUTTER® solves these issues by designing a lighter, large diameter cutter without sacrificing rigidity.

Thin, Light and Steel Body

DISC CUTTER® S, ϕ125mm = 1.0kg (2.2lbs)
DISC CUTTER® PRO, ϕ125mm = 1.3kg (2.86lbs)

Arbor = 0.6kg (1.32lbs)

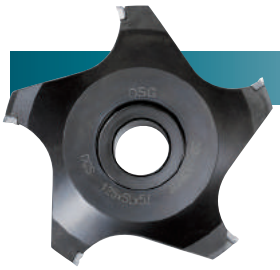


Less than 1/2 of the weight compared to competitors.

Short reach results in high rigidity.

High rigidity allows High - Speed & Feed milling.

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DISC CUTTER®S

- Roughing
- Carbide Insert
- No Height Adjustment





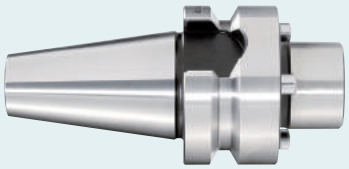
DISC CUTTER®PRO

- Finishing
- PCD Brazed Insert
- Height Adjustment



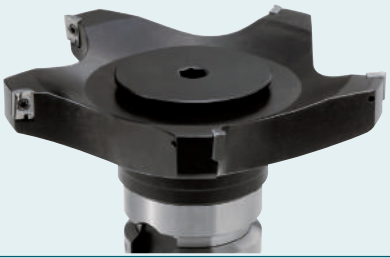
Arbors





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

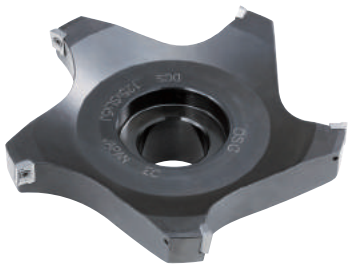
DISC CUTTER®PRO	
Tool	DC-P 125 x SL x 5J (125mm)
Insert	PCD
Work Material	A7075
Speed	5,000 RPM
Feed	100 IPM (0.004 inch/t)
Depth of Cut	0.5mm (0.02 in)
Width of Cut	100mm (4.000 in)
Machine	Vertical Machining Center BT30 5.5kw

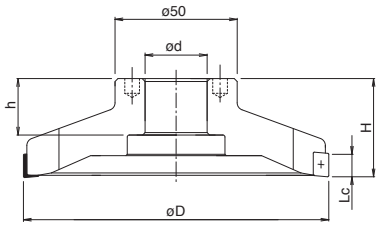
Surface Roughness : Ra 0.171um

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List 6440

DISC CUTTER® S for Roughing





EDP No.	Designation	Cutter Diameter D		No. of Teeth	Height H		Length of Cut Lc		Bore Diameter d		Weight		Max. RPM
		(mm)	(inch)		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(kg)	(lb)	
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.

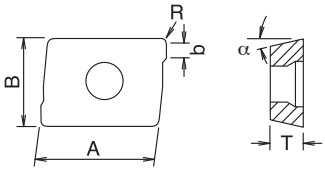
HTE

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List 6540

DISC CUTTER® S Inserts



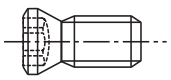
EDP No.	Description	No. of Cutting Edges	Insert Size					Grade
			AxB (mm)	T (mm)	α	R (mm)	b (mm)	
8033300	APHT0903PPR-73	2	9.52 x 6.75	3.18	11°	0.4	1.5	K10T
8059301	APKT0903PPR-52	2	9.52 x 6.75	3.18	11°	0.4	1.2	K15CA
8091278	APMT0903PPR-F56	2	9.52 x 6.75	3.18	11°	0.4	1.2	WQM25

Packed: 10 pcs.

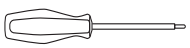
HTE

Accessories

DISC CUTTER® S Accessories

	EDP No.	Description
 Clamping Screw	8009023	FS923

Packed: 10 pcs.

	EDP No.	Description
 Screwdriver	8008430	FS230

Packed: 1 pc.

HTE

Recommended Materials by Application

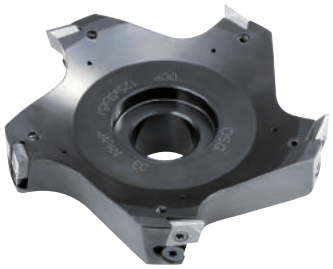
Insert Grade	Chip Breaker	P	M	K	N	S
K10T	25°				▣	
K15CA	16°			▣		
WQM25	16°	▣	▣			▣

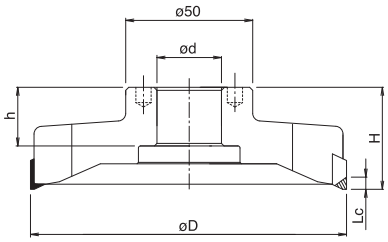
▢ good ▣ best

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List 6441

DISC CUTTER® PRO for Finishing





EDP No.	Designation	Cutter Diameter D		No. of Teeth	Height H		Length of Cut Lc		Bore Diameter d		Weight		Max. RPM
		(mm)	(inch)		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(kg)	(lb)	
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.

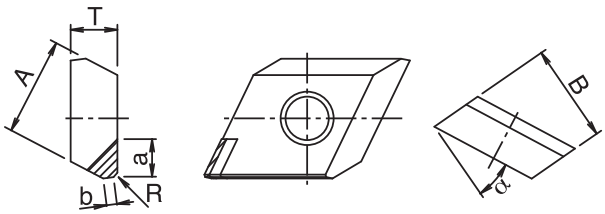
HTE

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List 6541

DISC CUTTER® PRO Inserts





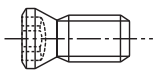
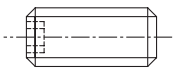
EDP No.	Description	No. of Cutting Edges	Insert Size						Grade
			AxB (mm)	T (mm)	α	R (mm)	b (mm)	a (mm)	
8080801	XOHW1104PDR	1	9.52x9.52	4.76	30°	0.4x45°	4	1.1	PCD

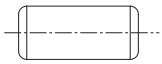
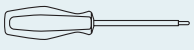
Packed: 1 pc.

HTE

Accessories

DISC CUTTER® PRO Accessories

	EDP No.	Description
 Clamping Screw	8008626	FS326
 Adjusting Bolt	8008747	FS747
 Set Screw	8009063	FS963

	EDP No.	Description
 Pad	8008748	FS748
 Screwdriver	8008429	FS229

Packed: Clamping Screws = 10 pcs.; Adjusting Bolts = 10 pcs.; Set Screws = 10 pcs.; Pads = 10 pcs.; Screwdriver = 1 pc.

HTE

Recommended Materials by Application

Insert Grade	Chip Breaker	P	M	K	N	S
PCD	–				▢	

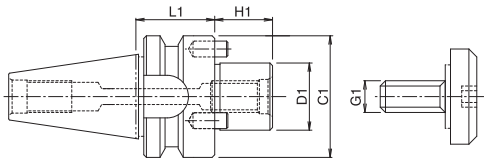
▢ good ▢ best

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List 6640

DISC CUTTER® Arbor



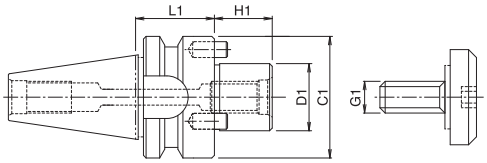


BT30

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.



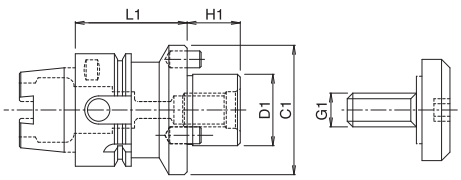


CAT 40

EDP No.	Description	D1		L1		C1		H1		G1	Weight	
		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		(kg)	(lb)
664001	CAT40-FM0A25.4-49	25.4	1.000	35	1.378	44.45	1.750	19	0.748	M12	1.10	2.43

Packed: 1 pc.





HSK40A

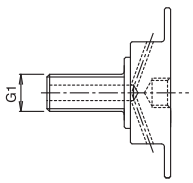
EDP No.	Description	D1		L1		C1		H1		G1	Weight	
		(mm)	(inch)	(mm)	(inch)	(mm)	(inch)	(mm)	(inch)		(kg)	(lb)
99634	HSK40A-FMOA25.4-49	25.4	1.000	49	1.929	46	1.811	19	0.748	M12	0.60	1.32

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.

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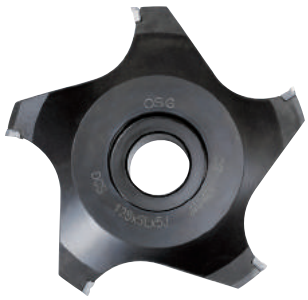
Cutting Conditions (Roughing)

DISC CUTTER® S

DISC CUTTER® S — Roughing

Work Material	Cutting Speed (RPM)	Feed Rate (Inch/Tooth)
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
Cast Iron	450 - 5,100	0.0027 - 0.0098
Ductile Cast Iron	375 - 4,100	0.0027 - 0.0098
Carbon Steel 1018, 1050	325 - 1,050	0.0021 - 0.0060
Stainless Steel 300, 400	300 - 865	0.0018 - 0.0042

DISC CUTTER S



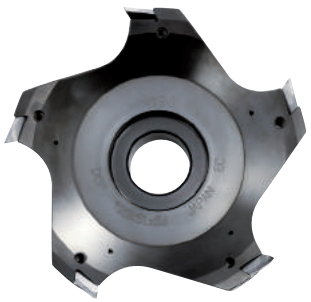
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Cutting Conditions (Finishing)

DISC CUTTER® PRO

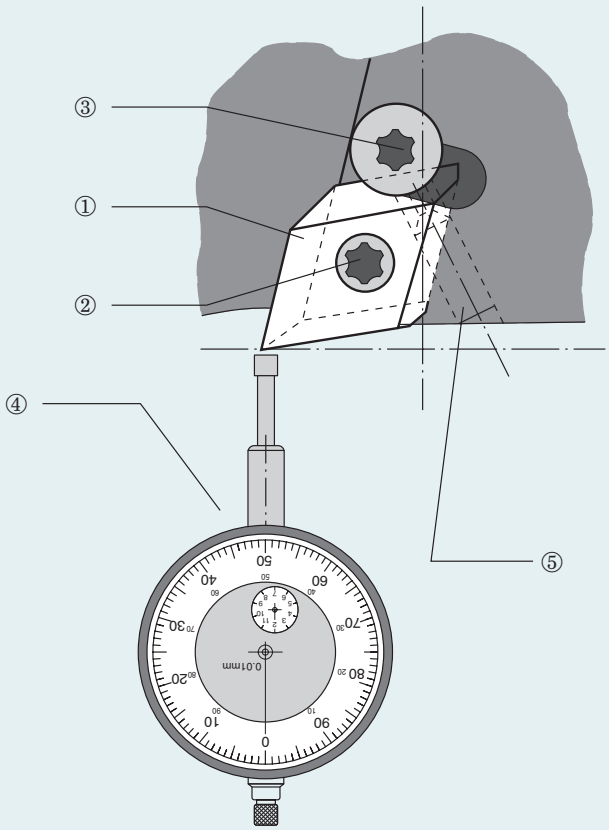
DISC CUTTER® PRO — Finishing

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



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Insert Setting Instructions for DISC CUTTER®PRO

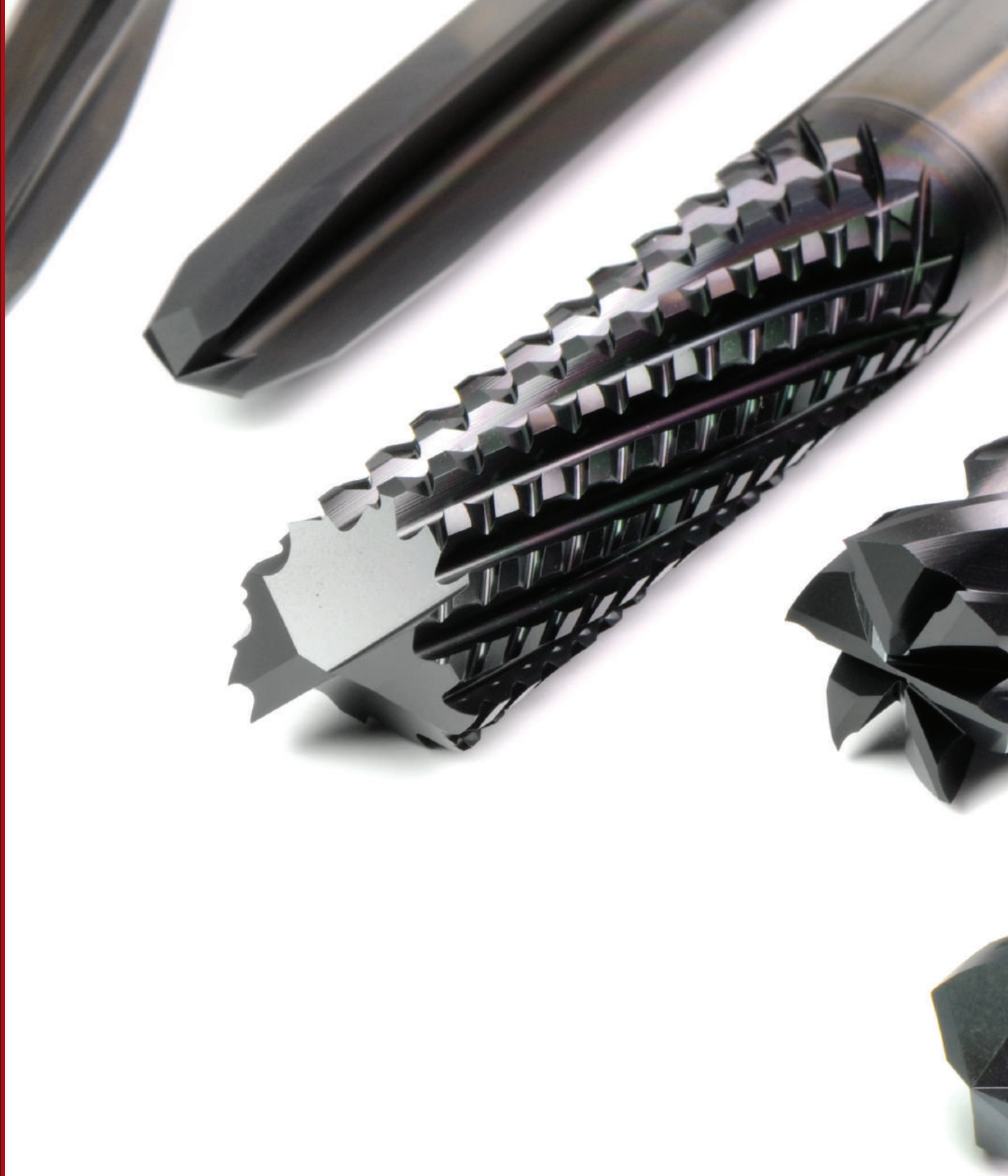


1. Loosen the set screw [5].
2. Place the indexable insert [1] on the insert seat and tighten it with the clamping screw [2].
3. Make sure the tapered neck of the adjusting screw [3] is in contact with the insert. If it is not in contact, tighten the adjusting screw [3] counter-clockwise until it contacts the insert [1].
4. In this stage, measure the edge height for each insert to determine the highest cutting edge [4]. Use the value of the highest cutting edge as the desired height for the remaining edges.
5. Adjust the remaining inserts to the highest cutting edge by turning the adjusting screw [3] counter-clockwise until each cutting edge reaches the preset height.
6. Tighten the set screw [5].

NOTE: Edge height can only be adjusted in the upward direction. The adjustable range is between 0.15mm and 0.20mm. The edge height may not increase easily near the upper limit of the adjustment range. In this case, first remove the insert [1] and loosen the adjusting screw [3] then readjust the height.

For setting diamond inserts, an optical (non-contact) tool presetter is preferred. Use caution not to damage the cutting edge when setting diamond inserts with a dial indicator.

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COMPOSITES

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COMPOSITES

EXOPRO®

OSG's top tier of high performance tooling for CFRP and CFRP stacks. Features include our patented ultra-fine diamond coating.

EXOCARB®

Ultra-premium performance tooling solutions for CFRP and stack drilling applications.

HY-PRO® CARB

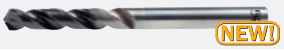
Premium high performance tooling solutions for the aerospace industry.

GENERAL PURPOSE

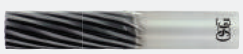
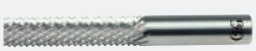
Premium uncoated tooling solutions for aerospace composite materials.

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Composite Drills

List	Item	Brand/Series	Inch/ Metric	Material	Coating	Size Range	Features	Page	Tech Page
7501		EXOPRO® AERO-STAD	Inch	Carbide	Diamond	#40 - 1/2"	Triple Angle	1126	1146
7520		EXOPRO® AERO-LHX	Inch	Carbide	Diamond	#40 - 1/2"	Low Helix	1127	1146
7500		EXOPRO® AERO-D-REAM	Inch	Carbide	Diamond	#40 - 1/2"	Tapered Reamer	1128	1146
7530		EXOPRO® AERO-S	Inch	Carbide	Diamond	#40 - 1/2"	High Helix, Stack Drill	1129	1146
7534		EXOPRO® AERO-N	Inch	Carbide	Diamond	#11 - 3/8"	Stack Drill with Nick	1130	1148
7532		EXOPRO® AERO-H	Inch	Carbide	Diamond	#40 - 1/2"	Stack Drill for All Stacks	1131	1147
5732		EXOCARB® AERO-H	Inch	Carbide	TiAlN	#11 - 1/2"	Stack Drill for All Stacks	1132	1147
HP700		HY-PRO CARB® NEPTUNE®	Inch	Carbide	TiAlN	#40 - 1/4"	Hand Drill	1133	1149
257		AERO-D-REAM	Inch	Carbide	Bright	#40 - 1/2"	Tapered Drill/ Reamer	1134-1135	1146

Composite Routers

List	Item	Brand/Series	Inch/ Metric	Material	Coating	Size Range	Features	Page	Tech Page
2061		EXOPRO® AERO-BNC	Inch	Carbide	Diamond	1/8 - 1/2"	Nick Router	1136	1150
2066		EXOPRO® AERO-HBC	Inch	Carbide	Diamond	1/8 - 1/2"	Compression Router, 30˚ Helix	1137	1150
2064		EXOPRO® AERO-HBC 45	Inch	Carbide	Diamond	1/4 - 1/2"	Compression Router, 45˚ Helix	1138	1150
2068		EXOPRO® AERO-HBC 60	Inch	Carbide	Diamond	1/4 - 1/2"	Compression Router, 60˚ Helix	1139	1151
2680		EXOPRO® AERO-REC	Inch	Carbide	Diamond	15/64 - 1/2"	Rougher Router	1140	1152
2650		EXOPRO® AERO-MFR	Inch	Carbide	Diamond	1/4 - 1/2"	Finishing Router	1141	1153
668		AERO-HBC 60	Inch	Carbide	Bright	1/4 - 1/2"	Compression Router, 60˚ Helix	1142	1151
641R		AERO-HFR	Inch	Carbide	Bright	3/16 - 1/2"	Hand Router	1143	1154

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Composite Drills

List No.	Machine Type			Composite Type				
	Hand	Pneumatic	CNC	CFRP	Honeycomb	CFRP/ Al Stack	CFRP/ Ti Stack	CFRP/ CRES Stack
7501	◎	◎	◎	◎	◎	○		
7520		○	◎	◎	◎			
7500	◎	◎	◎	◎	◎			
7530		◎	◎	◎	◎	◎		
7534		○	◎	◎			◎	○
7532		○	◎	◎		○	◎	◎
5732		○	◎	◎		○	◎	◎
HP700	◎	○	◎	◎		◎	◎	◎
257	◎	◎	◎	◎	◎			

○ Good ◎ Best

Composite Routers

List No.	Machine Style				Machining Efficiency	Machine Type			Composite Type	
	Slotting	Side Milling	Roughing	Finishing		Hand	CNC	5-Axis or Robot	Thin	Thick
2061	◎	◎	○	○	◎	○	◎	◎	◎	◎
2066	◎	◎	○	○	◎	○	◎	○	◎	◎
2064	◎	◎	○	◎	◎	○	◎	○	◎	◎
2068	◎	◎	○	◎	◎	○	◎	○	◎	◎
2680	◎	◎	◎		◎	◎	◎	◎	○	◎
2650		○		◎	○		◎	◎	◎	◎
668	◎	◎	○	○	○	○	◎	◎	◎	◎
641R	◎	◎	○	○	○	◎	◎	◎	◎	◎

Thin ≤ 0.100" and 0.2xD

○ Good ◎ Best

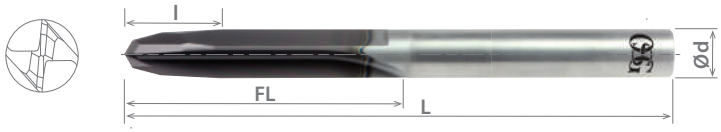
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List 7501 NEW!

Triple Angle

SPEED FEED P 1146 | CARBIDE | DIA | REG | 0°

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	l	L	d
750109816	–	#40	–	2.50	0.0985	0.6	0.150	2.0	0.0985
750112916	–	#30	–	3.28	0.1290	0.8	0.192	2.0	0.1290
750116116	–	#20	–	4.10	0.1615	1.0	0.236	3.0	0.1615
750119116	–	#11	–	4.86	0.1915	1.1	0.277	3.0	0.1915
750119216	–	#11	–	4.86	0.1915	1.9	0.277	4.0	0.1915
750122116	–	#2	–	5.63	0.2215	1.3	0.318	3.5	0.2215
750125116	1/4	–	–	6.38	0.2510	1.5	0.358	3.5	0.2510
750125216	1/4	–	–	6.38	0.2510	2.5	0.358	5.5	0.2510
750131316	5/16	–	–	7.96	0.3135	1.9	0.443	4.0	0.3135
750137616	3/8	–	–	9.55	0.3760	2.3	0.528	4.0	0.3760
750137716	3/8	–	–	9.55	0.3760	3.8	0.528	6.0	0.3760
750143816	7/16	–	–	11.14	0.4385	2.6	0.613	4.0	0.4385
750150116	1/2	–	–	12.73	0.5010	3.0	0.697	5.0	0.5010

Drills are oversize over nominal.
Brazed shanks available on request: Threaded, Quick Change and Tri-Flat.

EP

Threaded Shank



Quick Change Shank



Tri-Flat Shank



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	◎	○		◎	◎		◎	○	◎	○		

○ Good ◎ Best

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List 7520 NEW!

Low Helix

SPEED FEED P 1146 | CARBIDE | DIA | REG | 5°

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	l	L	d
752009816	–	#40	–	2.50	0.0985	0.6	0.276	2.0	0.0985
752012916	–	#30	–	3.28	0.1290	0.8	0.356	2.0	0.1290
752016116	–	#20	–	4.10	0.1615	1.0	0.442	3.0	0.1615
752019216	–	#11	–	4.86	0.1915	1.1	0.522	3.0	0.1915
752022116	–	#2	–	5.63	0.2215	1.3	0.601	3.5	0.2215
752025116	1/4	–	–	6.38	0.2510	1.5	0.679	3.5	0.2510
752031316	5/16	–	–	7.96	0.3135	1.9	0.844	4.0	0.3135
752037616	3/8	–	–	9.55	0.3760	2.3	1.010	4.0	0.3760
752043816	7/16	–	–	11.14	0.4385	2.6	1.175	4.0	0.4385
752050116	1/2	–	–	12.73	0.5010	3.0	1.340	5.0	0.5010

Drills are oversize over nominal.

EP

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	◎	○		◎	◎		◎		◎			

○ Good ◎ Best

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List 7500 NEW!

Tapered Drill

SPEED FEED P 1146 | CARBIDE | DIA | REG | 0°

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	l	L	d
750009816	–	#40	–	2.50	0.0985	0.573	0.199	3	0.0985
750012816	–	#30	–	3.26	0.1285	0.748	0.257	3	0.1285
750012916	–	#30	–	3.26	0.1285	1.257	0.257	6	0.1285
750016116	–	#20	–	4.10	0.1615	0.940	0.321	3	0.1615
750016216	–	#20	–	4.10	0.1615	1.581	0.321	6	0.1615
750018716	3/16	–	–	4.76	0.1875	1.841	0.371	6	0.1875
750019016	–	#11	–	4.83	0.1900	1.866	0.376	4	0.1900
750019116	–	#11	–	4.83	0.1900	1.866	0.376	6	0.1900
750019216	–	#11	–	4.85	0.1910	1.866	0.378	4	0.1910
750019316	–	#11	–	4.85	0.1910	1.866	0.378	6	0.1910
750019416	–	#11	–	4.86	0.1920	1.115	0.380	3	0.1920
750019516	–	#11	–	4.86	0.1920	1.881	0.380	4	0.1920
750019716	–	#11	–	4.86	0.1920	1.881	0.380	6	0.1920
750021816	7/32	–	–	5.54	0.2180	2.141	0.431	6	0.2180
750022116	–	#2	–	5.63	0.2215	2.175	0.437	4	0.2215
750025016	1/4	–	–	6.35	0.2500	2.455	0.493	4	0.2500
750025116	1/4	–	–	6.35	0.2500	2.455	0.493	6	0.2500
750025316	1/4	–	–	6.38	0.2510	1.461	0.494	3	0.2510
750025416	1/4	–	–	6.38	0.2510	2.465	0.494	4	0.2510
750025516	1/4	–	–	6.38	0.2510	2.465	0.494	6	0.2510
750031216	5/16	–	–	7.94	0.3125	1.819	0.614	4	0.3125
750031316	5/16	–	–	7.94	0.3125	2.444	0.614	6	0.3125
750031416	5/16	–	–	7.96	0.3135	1.824	0.616	4	0.3135
750031516	5/16	–	–	7.96	0.3135	2.452	0.616	6	0.3135
750037516	3/8	–	–	9.53	0.3750	2.183	0.735	4	0.3750
750037616	3/8	–	–	9.53	0.3750	2.933	0.735	6	0.3750
750037716	3/8	–	–	9.55	0.3760	2.188	0.737	4	0.3760
750037816	3/8	–	–	9.55	0.3760	2.940	0.737	6	0.3760
750043816	7/16	–	–	11.14	0.4385	2.552	0.858	4	0.4385
750050116	1/2	–	–	12.73	0.5010	3.918	0.979	6	0.5010

Drills are oversize over nominal.
Brazed shanks available on request: Threaded, Quick Change and Tri-Flat.

EP

Threaded Shank



Quick Change Shank



Tri-Flat Shank



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				
7500	◎	○		◎	◎		◎		◎			

○ Good ◎ Best

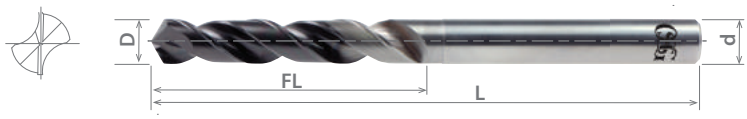
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List 7530 NEW!

High Helix

SPEED FEED P 1146 | CARBIDE | DIA | REG | 40°

Tolerance
+0/-0.001"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
753009816	–	#40	–	2.50	0.0985	0.6	2	0.0985
753012916	–	#30	–	3.28	0.1290	0.8	3	0.1290
753016116	–	#20	–	4.10	0.1615	1.0	4	0.1615
753019116	–	#11	–	4.86	0.1915	1.1	4	0.1915
753022116	–	#2	–	5.63	0.2215	1.3	4	0.2215
753025116	1/4	–	–	6.38	0.2510	1.5	4	0.2510
753031316	5/16	–	–	7.96	0.3135	1.9	4	0.3135
753037616	3/8	–	–	9.55	0.3760	2.3	6	0.3760
753043816	7/16	–	–	11.14	0.4385	2.6	6	0.4385
753050116	1/2	–	–	12.73	0.5010	3.0	6	0.5010

Drills are oversize over nominal.

EP

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	◎	◎		○	○		◎	◎		◎		

○ Good ◎ Best

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List 7534 NEW!

Nicked Stack Drill

SPEED FEED P 1148 | CARBIDE | DIA | COOLANT THROUGH | REG | 12°

Tolerance
+0/-0.001"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
753419116	–	#11	–	4.86	0.1915	2	4	0.1915
753425116	1/4	–	–	6.38	0.2510	2	4	0.2510
753437616	3/8	–	–	9.55	0.3760	2	4	0.3760

Drills are oversize over nominal.

EP

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				
7534	◎										◎	○

○ Good ◎ Best

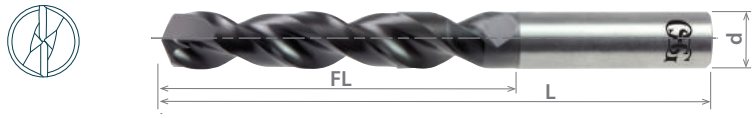
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List 7532 NEW!

Stack Drill

SPEED FEED P 1147 | CARBIDE | DIA | REG | 40°

Tolerance
+0/-0.001"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
753209816	–	#40	–	2.50	0.0985	0.6	2	0.0985
753212916	–	#30	–	3.28	0.1290	0.8	3	0.1290
753216116	–	#20	–	4.10	0.1615	1.0	4	0.1615
753219116	–	#11	–	4.86	0.1915	1.1	4	0.1915
753222116	–	#2	–	5.63	0.2215	1.3	4	0.2215
753225116	1/4	–	–	6.38	0.2510	1.5	4	0.2510
753231316	5/16	–	–	7.96	0.3135	1.9	4	0.3135
753237616	3/8	–	–	9.55	0.3760	2.3	6	0.3760
753243816	7/16	–	–	11.14	0.4385	2.6	6	0.4385
753250116	1/2	–	–	12.73	0.5010	3.0	6	0.5010

Drills are oversize over nominal.

EP

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	◎									○	◎	◎

○ Good ◎ Best

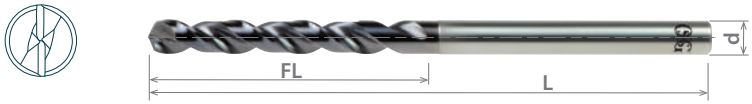
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List 5732 NEW!

Stack Drill

SPEED FEED P 1147 | CARBIDE | TiAlN | REG | 40°

Tolerance
+0/-0.0011"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
573219111	–	#11	–	4.86	0.1915	2	4	0.1915
573225111	1/4	–	–	6.38	0.2510	2	4	0.2510
573237611	3/8	–	–	9.55	0.3760	2	4	0.3760
573250111	1/2	–	–	12.73	0.5010	4	6	0.5010

Drills are oversize over nominal.

HTE

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	◎									○	◎	◎

○ Good ◎ Best

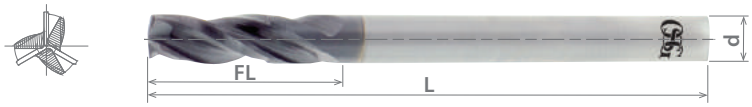
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List HP700 NEW!

Three Flute Drill

SPEED FEED P 1149 | CARBIDE | TiAlN | REG | 30°

Tolerance
+0/-0.001"



EDP Number	Approximate Hole Size			Drill Size		Flute Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	L	d
HP700-0980	–	#40	–	2.49	0.0980	0.500	1.5	0.0980
HP700-1285	–	#30	–	3.26	0.1285	0.500	1.5	0.1285
HP700-1610	–	#20	–	4.09	0.1610	0.500	1.5	0.1610
HP700-1910	–	#11	–	4.85	0.1910	0.500	1.5	0.1910
HP700-2500	1/4	–	–	6.35	0.2500	0.500	1.5	0.2500
HP700-2512	1/4	–	–	4.09 x 6.35	#20 x 0.250 Step	0.625	1.5	0.2500

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

HPC

Threaded Shank



Quick Change Shank



Tri-Flat Shank



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	◎									◎	◎	◎

○ Good ◎ Best

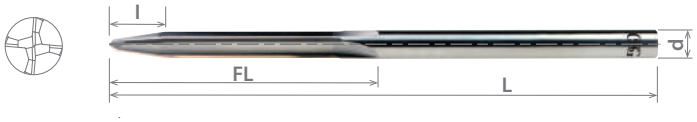
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List 257 NEW!

Tapered Drill/Reamer for Composites

SPEED FEED P 1146 | CARBIDE | BR | REG | 0°

Tolerance
+0.0005"/-0



EDP Number	Size					Flute Length	Taper Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	l	L	d
257-0980	–	#40	–	2.49	0.0980	0.570	0.201	3	0.0980
257-1094	7/64	–	–	2.78	0.1094	0.637	0.224	3	0.1094
257-1250	1/8	–	–	3.18	0.1250	0.728	0.254	3	0.1250
257-1280	–	–	–	3.25	0.1280	1.257	0.260	6	0.1280
257-1285	–	#30	–	3.26	0.1285	0.748	0.261	3	0.1285
257-1286	–	–	–	3.26	0.1285	1.262	0.261	6	0.1285
257-1299	–	–	–	3.30	0.1299	0.756	0.263	3	0.1299
257-1406	9/64	–	–	3.57	0.1406	0.818	0.284	3	0.1406
257-1440	–	#27	–	3.66	0.1440	0.838	0.291	3	0.1440
257-1562	5/32	–	–	3.97	0.1562	0.909	0.314	3	0.1562
257-1570	–	#22	–	3.99	0.1570	0.914	0.316	3	0.1570
257-1610	–	#20	–	4.09	0.1610	0.937	0.324	3	0.1610
257-1616	–	#20	–	4.09	0.1610	1.581	0.324	6	0.1610
257-1630	–	–	–	4.14	0.1630	0.949	0.327	3	0.1630
257-1719	11/64	–	–	4.37	0.1719	1.000	0.345	3	0.1719
257-1870	–	–	–	4.75	0.1870	1.088	0.374	3	0.1870
257-1875	3/16	–	–	4.76	0.1875	1.091	0.375	3	0.1875
257-1900	–	–	–	4.83	0.1900	1.866	0.380	4	0.1900
257-1906	–	–	–	4.83	0.1900	1.866	0.380	6	0.1900
257-1910	–	#11	–	4.85	0.1910	1.876	0.382	3	0.1910
257-1916	–	#11	–	4.85	0.1910	1.876	0.382	4	0.1910
257-1920	–	–	–	4.88	0.1920	1.885	0.384	4	0.1920
257-1930	–	–	–	4.90	0.1930	1.895	0.386	4	0.1930
257-1935	–	#10	–	4.91	0.1935	1.900	0.387	4	0.1935
257-1940	–	–	–	4.93	0.1940	1.905	0.387	4	0.1940
257-2010	–	#7	–	5.11	0.2010	1.974	0.401	4	0.2010
257-2031	13/64	–	–	5.16	0.2031	1.994	0.405	4	0.2031
257-2040	–	#6	–	5.18	0.2040	2.003	0.407	4	0.2040
257-2055	–	#5	–	5.22	0.2055	2.018	0.410	4	0.2055
257-2180	–	–	–	5.54	0.2180	2.141	0.434	4	0.2180
257-2188	7/32	–	–	5.56	0.2188	2.149	0.436	4	0.2188
257-2186	7/32	–	–	5.56	0.2188	2.141	0.435	6	0.2188
257-2210	–	#2	–	5.61	0.2210	2.170	0.440	4	0.2210
257-2280	–	#1	–	5.79	0.2280	2.239	0.453	4	0.2280
257-2344	15/64	–	–	5.95	0.2344	2.302	0.466	4	0.2344
257-2500	1/4	–	–	6.35	0.2500	2.141	0.496	4	0.2500
257-2506	1/4	–	–	6.35	0.2500	2.455	0.497	6	0.2500
257-2510	–	–	–	6.38	0.2510	2.465	0.498	4	0.2510
257-2516	–	–	–	6.38	0.2510	2.465	0.498	6	0.2510
257-2520	–	–	–	6.40	0.2520	2.475	0.500	4	0.2520
257-2530	–	–	–	6.43	0.2530	2.484	0.502	4	0.2530
257-2656	17/64	–	–	6.75	0.2656	2.608	0.526	4	0.2656
257-2812	9/32	–	–	7.14	0.2812	2.761	0.556	4	0.2812
257-2969	19/64	–	–	7.54	0.2969	2.916	0.587	4	0.2969
257-3120	–	–	–	7.92	0.3120	1.816	0.616	4	0.3120
257-3125	5/16	–	–	7.94	0.3125	1.819	0.617	4	0.3125
257-3135		–	–	7.96	0.3135	1.825	0.619	4	0.3135
257-3280	21/64	–	–	8.33	0.3280	1.909	0.647	4	0.3280
257-3438	11/32	–	–	8.73	0.3438	2.002	0.678	4	0.3438
257-3500	–	–	–	8.89	0.3500	2.037	0.690	4	0.3500
257-3594	23/64	–	–	9.13	0.3594	2.092	0.708	4	0.3594

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

HYE

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List 257 (Continued) NEW!

Tapered Drill/Reamer for Composites

SPEED FEED P 1146 | CARBIDE | BR | REG | 0°

Tolerance
+0.0005"/-0

EDP Number	Size					Flute Length	Taper Length	Overall Length	Shank Diameter
	Fractional Size	Wire Gage	Letter Size	mm	Inch	FL	l	L	d
257-3750	3/8	–	–	9.53	0.3750	2.183	0.738	4	0.3750
257-3756	3/8	–	–	9.53	0.3750	2.933	0.738	6	0.3750
257-3906	25/64	–	–	9.91	0.3900	3.050	0.767	6	0.3900
257-4066	13/32	–	–	10.31	0.4060	3.175	0.798	6	0.4060
257-4376	7/16	–	–	11.11	0.4375	3.421	0.859	6	0.4375
257-5006	1/2	–	–	12.70	0.5000	3.910	0.981	6	0.5000

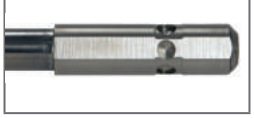
Brazed shanks available on request: Threaded, Quick Change and Tri-Flat.

HYE

Threaded Shank



Quick Change Shank



Tri-Flat Shank



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	◎	○		◎	◎		◎	◎	◎			

○ good ◎ best

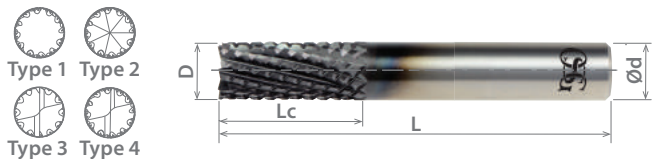
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List 2061 NEW SIZES

Multiple Flutes, Regular Length, Nicked Router

SPEED FEED P 1150 | CARBIDE | DIA | 15° | SHRINK h6

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.

EP

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	◎	○		○	○		○	○	◎			

○ Good ◎ Best

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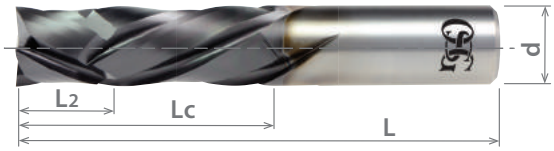
List 2066

4 Flute, Regular Length, 30° Compression Router

SPEED FEED P 1150 | CARBIDE | DIA | 30° | SHRINK h6

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.

EP

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	◎	◎	○	○	○	○	○	○				

○ Good ◎ Best

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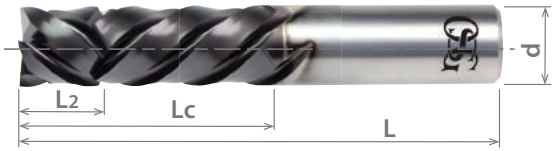
List 2064

4 Flute, Regular Length, 45° Compression Router

SPEED FEED P 1150 | CARBIDE | DIA | 45° | SHRINK h6

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.

EP

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	◎	◎	○	○	○	○	○	○				

○ Good ◎ Best

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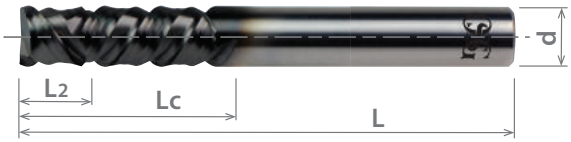
List 2068

2 Flute, Regular Length, 60° Compression Router

SPEED FEED P 1151 | CARBIDE | DIA | 60° | SHRINK h6

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.

EP

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	◎	◎	○	◎	◎	◎	◎	◎				

○ Good ◎ Best

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List 2680 NEW SIZES

Multiple Flute, Regular Length, Roughing Router

SPEED FEED P 1152 | CARBIDE | DIA | 15° | SHRINK h6

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.

EP

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	◎	◎		○	○		○	○	◎			

○ Good ◎ Best

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List 2650

Multiple Flute, Regular Length, Non End Cutting, Finishing Router

SPEED FEED P 1153 | CARBIDE | DIA | 15° | SHRINK h6

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.

EP

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	◎	◎		○	○		○	○	◎			

○ Good ◎ Best

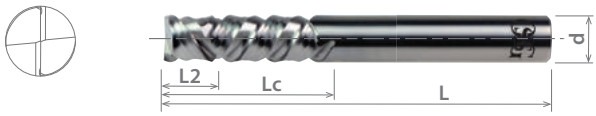
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List 668

2 Flute, Regular Length, 60° Compression Router

SPEED FEED P 1151 | CARBIDE | BR | 60° | SHRINK h6

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.

HYE

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			◎	◎	◎	◎	◎	◎				

○ Good ◎ Best

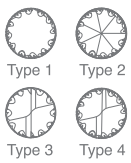
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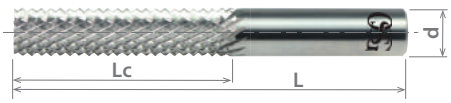
List 641R

Regular Length, General Purpose Router

SPEED FEED P 1154 | CARBIDE | BR | 30° | SHRINK h6

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.

HYE

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	◎	◎		○	○		○	○	○			

○ Good ◎ Best

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Special Drilling Tools

Spacematic Drill/Countersink

Carbide drill and countersink with internal thread and 60° cone seat straight shank style with pin spanner wrench holes or optional wrench flats for slotted type drill wrenches. **Application: Spacematic Drill motors with 1" stroke.**

Drivematic Drill/Countersink

Carbide drill and countersink with solid shank used in aerospace drivematic drill riveting machines.

Dagger Drill

Designed to produce holes in composite materials without delamination around the hole or fraying the composite materials.

Threaded Hex Shank Adapter Drill

Carbide adapter drill manufactured to NAS 907 construction with 135° split points. Used for general to medium duty drilling in low tensile strength materials in confined areas.

NAS 937 Jobbers Length Double Margin Step Drill

Carbide drill with 135° split point. Used for drilling close tolerance holes in low tensile strength materials. Can also be supplied in taper, screw machine lengths or special lengths.

Nutplate Drill/Countersink

Carbide drill and countersink with 135° split point. External thread and 60° cone seat straight shank style with pin spanner wrench holes. **Application: Nutplate and motors with nutplate pressure foot attachments.**

Special Milling Tools

Circular Milling Tool

The circular milling tool excels in hole machining utilizing helical interpolation. This tool can produce excellent quality holes in CF/Ti and CF/AL stack materials with an extremely high level of hole circularity. Chipping and burr formation in both metallic and composite structures are also reduced.

Electroplated Diamond Drill/Mill

The electroplated diamond drill can be used in various applications ranging from drilling through and blind holes to side and contour grinding.

Special Threading Tools

Electroplated Thread Mill (Thermosetting Plastics)

The electroplated thread mill is for grinding internal threads and composites.

Thread Mill & Tap (Thermoplastics)

Tapping and thread milling of composites is uncommon. Some composites are capable of being tapped or thread milled. In such cases, OSG can offer special-made tooling for these applications.

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COMPOSITES
Technical



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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 (mm)	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 (mm)	Speed RPM	Feed IPR	Speed RPM	Feed IPR
#40	8,000	0.0008 - 0.002	10135	0.001 - 0.003
#30	6,100	0.0008 - 0.003	8110	0.003 - 0.004
#20	4,900	0.0012 - 0.003	6310	0.004 - 0.005
#11	4,100	0.0012 - 0.003	5410	0.004 - 0.005
#2	3,550	0.0014 - 0.004	4730	0.005 - 0.006
1/4"	3,100	0.0016 - 0.004	4060	0.006 - 0.007
5/16"	3,170	0.0016 - 0.004	3380	0.007 - 0.008
3/8"	2,100	0.002 - 0.004	2710	0.009 - 0.010
7/16"	1,790	0.002 - 0.004	2370	0.010 - 0.011
1/2"	1,570	0.002 - 0.004	2030	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.

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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. (mm)	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.

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List 7534 - EXOPRO® AERO-N

Work Material	Carbon & Glass Fiber Reinforced Plastics		CFRP + Titanium Stack		CFRP + CRES Stack	
Cutting Speed	165 - 260 SFM		40-60 SFM		30-50 SFM	
Drill Diameter (mm)	Speed RPM	Feed IPR	Speed RPM	Feed IPR	Speed RPM	Feed IPR
#40	8,000	0.0008 - 0.002	1,900	0.0002 - 0.0007	1,550	0.0002 - 0.0007
#30	6,100	0.0008 - 0.003	1,500	0.0004 - 0.0009	1,150	0.0004 - 0.0009
#20	4,900	0.0012 - 0.003	1,225	0.0006 - 0.0011	950	0.0006 - 0.0011
#11	4,100	0.0012 - 0.003	1,000	0.0007 - 0.0012	800	0.0007 - 0.0012
#2	3,550	0.0014 - 0.004	875	0.0009 - 0.0014	675	0.0009 - 0.0014
1/4"	3,100	0.0016 - 0.004	750	0.001 - 0.0015	600	0.0010 - 0.0015
5/16"	3,170	0.0016 - 0.004	625	0.0013 - 0.0018	475	0.0013 - 0.0018
3/8"	2,100	0.002 - 0.004	500	0.0016 - 0.0021	400	0.0016 - 0.0021
7/16"	1,790	0.002 - 0.004	425	0.0019 - 0.0024	350	0.0019 - 0.0024
1/2"	1,570	0.002 - 0.004	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.

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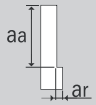
List HP700 - HY-PRO® CARB NEPTUNE®

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 (mm)	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

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List 2061 - EXOPRO® AERO-BNC
List 2066 - EXOPRO® AERO-HBC
List 2064 - EXOPRO® AERO-HBC 45

Side Milling

Work Material	Carbon & Glass Fiber Reinforced Plastics	
Cutting Speed	400-800 SFM	
Depth of Cut	ae: 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	ae: 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 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.

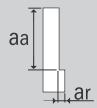
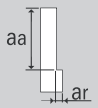
Feed Reduction

Material Thickness	Feed Reduction
≤0.25Dc	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%

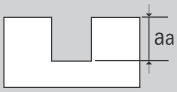
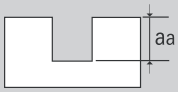
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List 2068 - EXOPRO® AERO-HBC 60
List 668 - CARBIDE AERO-HBC 60

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	aa: Up to 1.5D ar: Up to 1D 		aa: Up to 1.5D ar: 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	aa: Up to 1D 		aa: 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 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.

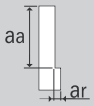
Feed Reduction

Material Thickness	Feed Reduction
≤0.25Dc	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%

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List 2680 - EXOPRO® AERO-REC

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
1/4	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	aa: 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 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.

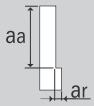
Feed Reduction

Material Thickness	Feed Reduction
≤0.25Dc	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%

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List 2650 - EXOPRO® AERO-MFR

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 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.

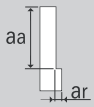
Feed Reduction

Material Thickness	Feed Reduction
≤0.25Dc	x80%
0.25Dc ~ 0.5Dc	x150%
0.5Dc ~ 1Dc	x120%
1Dc ~ 2Dc	x80%
2Dc ~ 3Dc	x50%

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List 641R - CARBIDE AERO-HFR

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
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	aa: 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

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SHRINK FIT TOOLING

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SHRINK FIT TOOLING

HY-PRO® SHRINK

OSG's shrink extensions and holders combine excellent gripping power and low runout, even in long extended applications.

HR-B Handy Type Unit

Compact hot air shrink device for general purpose shrinking operations.





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Product	Page	Inch/Metric	Tool Features

HY-PRO® SHRINK Machines

HR-B Handy Unit		1159-1161	-	General Purpose Shrink Device - By Hot Air

List	Product		Page	Inch/Metric	Tool Features

HY-PRO® SHRINK Tooling

–	HSK Holders		1167-1168	Metric	HSK-E25, HSK-E32, and HSK-E40 Holders for standard coolant-through the tool operations.
–	Base Holders		1169	Inch/Metric	Base Holders for general purpose & coolant-through the tool operations - BT, CT, and HSK.
–	Nozzle Holders		1170	Inch/Metric	Nozzle Type Holders for coolant-through the holder operations - BT, CT, and HSK.
–	Regular Extensions		1171	Inch/Metric	Regular Type Shrink Extensions for general purpose & coolant-through the tool operations.
–	Flush Type Extensions		1172	Inch/Metric	Flush Type Shrink Extensions for coolant-through the collet operations.
–	Slim Type Extensions		1173-1174	Inch/Metric	Slim Type Shrink Extensions for long reach & coolant-through the tool operations.
–	Straight Regular Extensions		1175	Inch/Metric	Straight Regular Type Shrink Extensions for standard milling / end mill chucks.
–	Straight Slim Extensions		1176-1177	Inch/Metric	Straight Slim Type Shrink Extensions for standard milling / end mill chucks.
–	Carbide Straight Extensions		1178	Metric	Straight Type Shrink Extenstions for increased rigidity and reach.
–	Carbide Straight Slim Extensions		1178	Metric	Taper Type Shrink Extenstions for increased rigidity and reach.

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HR-B Handy Unit

HTE



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

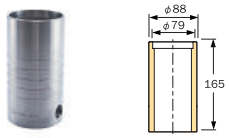
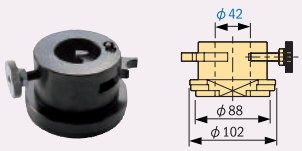
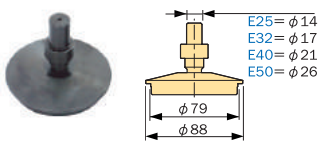
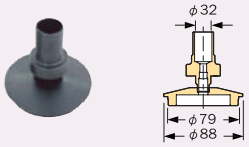
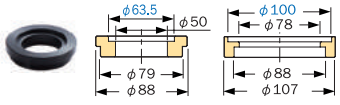
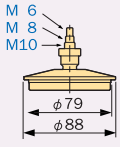
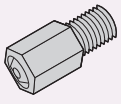
EDP Number	68802B
Name	HRB-02S-120NA SHRINK UNIT
Voltage required	120V
Power rating	1200W
Dimensions	362mm x 105mm x 570mm
Shrink fit capabilities	All OSG HY-PRO® Shrink holders
Heating cycle time	120 seconds
Included Accessories	Heat resistant gloves, timer, tool tweezer
Weight	16.5 lbs.

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.

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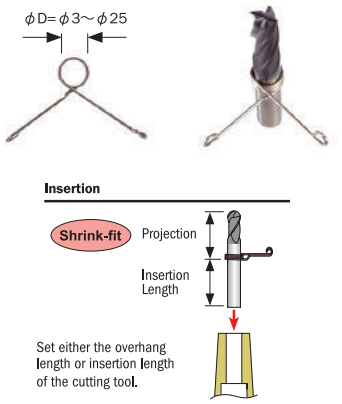
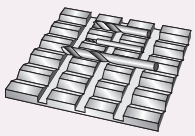
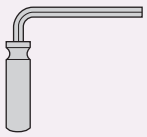
HR-B Handy Unit Accessories

	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 9910225 9910226 9910227	ADH-HSK25 ADH-HSK32 ADH-HSK40 ADH-HSK50	Used with HSK25 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. Used with HSK32 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. Used with HSK40 series tool holders. It fits into the top of the BAA-01 Base and accepts the tool holder. 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 9910230	ADH-40 ADH-50	Used with BT40 and CT40 series tool holders. It fits into the top of the BA-01 Base and accepts the tool holder. 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

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HR-B Handy Unit Accessories

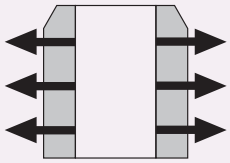
	Item Name	EDP No.	Size	Specification
	**Coil spring** (type depth stops)	8910172	HSA-3	3mm shanks, 10 pcs.
		8910174	HSA-4	4mm shanks, 10 pcs.
		9910213	HSA-5	5mm shanks, 10 pcs.
		8910176	HSA-6	6mm shanks, 10 pcs.
		9910215	HSA-7	7mm shanks, 10 pcs.
		8910178	HSA-8	8mm shanks, 10 pcs.
		9910217	HSA-9	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.
	**Tool Tray**	8910217	SDH-01	Cooling tray for tools removed from heat shrink holders.
	**Shrink Extension Stand**	9910201 9910202 9910203 9910204	SDKT-RE (Red) SDKT-BL (Blue) SDKT-GR (Green) SDKT-GD (Gold)	Vertical stand holds up to 25 extensions.
	**Wrench**	8910020	W-135	Used for the assembly and disassembly of the HY-PRO® Shrink two piece tooling system extensions and base holders.

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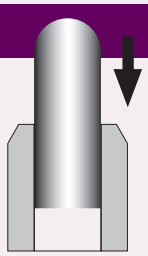
Tool Insertion

Heating



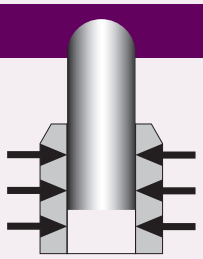
Heat the holder with hot air.

Attachment



Insert tool into the hole, which has been expanded by the heat.

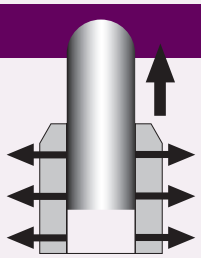
Fixing



The holder fixes the tool in place by cooling and clamping tightly.

Tool Removal

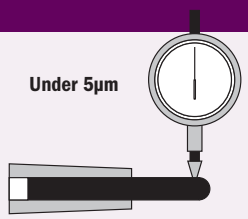
Detachment



The clamped tool can be removed by reheating.

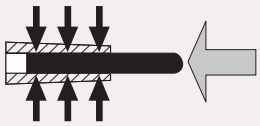
Features

Less Runout



The HY-PRO® shrink reduces runout and provides consistent precision. The holder, which is light weight and has good balance, is also suitable for high-speed operations.

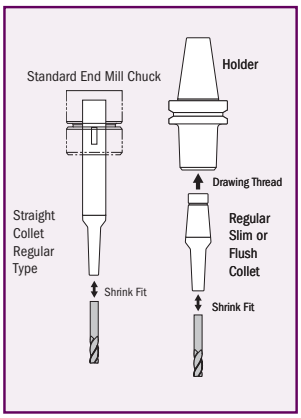
Holding Ability



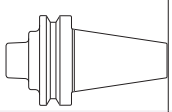
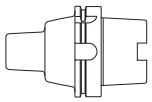
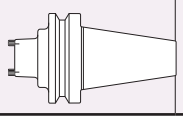
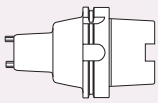
Compared to other tool holders such as the collet type, this holder has stronger holding ability and can securely hold tools during high load operations.

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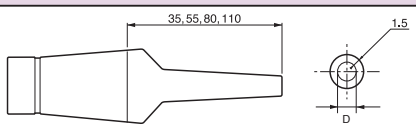
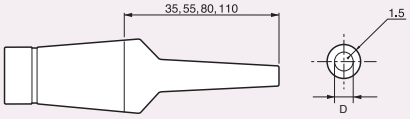
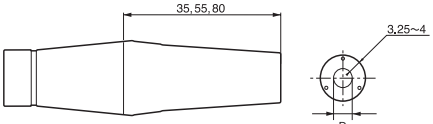
Holders		Shrink Extensions	Cutting Tools
Basic	BT30 BT40 BT50 CT-40 CT-50 HSK-A63 HSK-A100 HSK-F63M	Slim Regular Flush } Ø 3-12 Ø 1/4-1/2 in.	Carbide End Mills Carbide Drills Other Carbide Tools
Nozzle	BT40 BT50 CT-40 CT-50 HSK-A63 HSK-A100		



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 

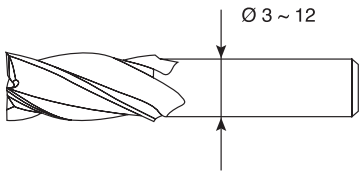
Extensions

Type	Application	Dimension/Size
Regular Type	For General Operations and Coolant-Through Tool	 inch/metric
Slim Type	Use this type when a slim holder is needed to avoid interference between the tool and the work piece	 inch/metric
Flush Type	Use this type when you want coolant supplied from the end face of the extension	 inch/metric

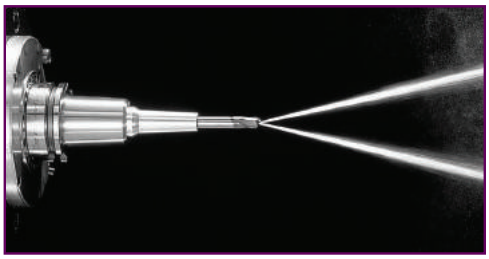
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For Small Shank Diameter use h7 Shanks

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

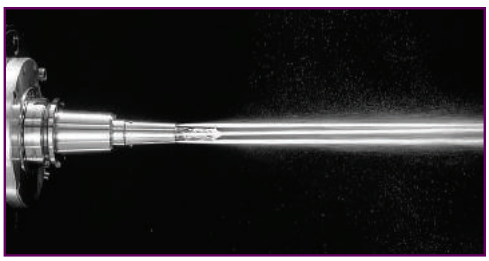
Suitable when using a tool with internal coolant to supply the point of the cutting edge. This is especially effective for drilling because the coolant is guaranteed to reach the cutting area.

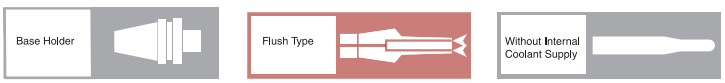




Through the Holder

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.

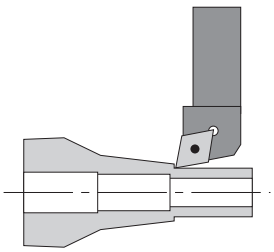
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Do-It-Yourself Extensions

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.





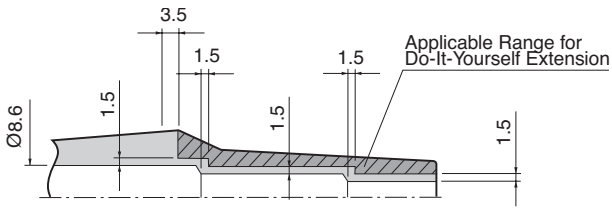
1. The shape of the flush collet cannot be adjusted.
2. Other adjustments should be based on the ranges described below. (Wall thickness should be at least 1.5mm)
3. DO NOT change the overall length.
4. For details, please refer to the instruction manual attached to the product package.

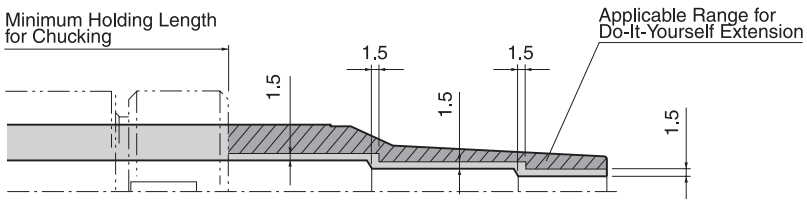
Recommended Cutting Conditions for Extension Modification

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 (min)
Roughing	30 - 50	0.1	0.2
Finishing	30 - 50	0.05	0.1





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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:

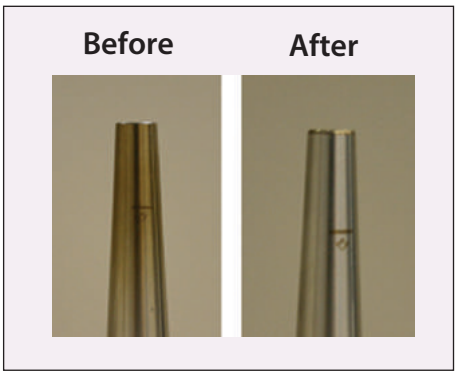
- When not in use, remove tool and clean/dry the inside & outside of holder as thoroughly as possible. Apply rust-proofing oil (WD-40® for example) to help inhibit oxidation. Excessive internal rusting will lead to hairline fractures in the steel.
- Be sure to use cutters with shank diameters that adhere 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!

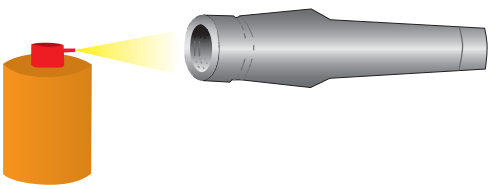
- Failure to use tools that adhere to these standards may result in complications with respect to inserting and removing tools.
- Be sure to observe minimum chucking lengths on extensions. Failure to do so can result in poor accuracy, deformation, or cracking of tool or extension.

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.

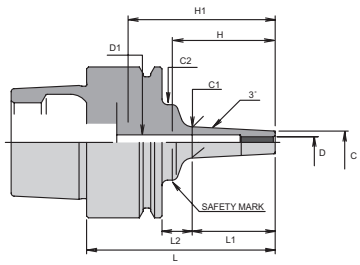


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HSK-E25 Mono Series

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

HTE

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

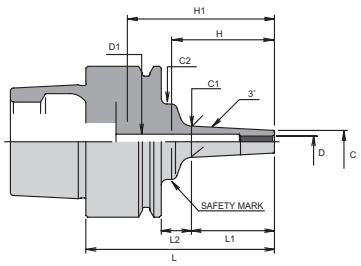
HTE

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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	42
	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

HTE

Applicable Machine Tools:

HSK-E25

- SODICK HIGHTECH
  MC430L
- ROKU-ROKU
  MEGA III/NANO-21
- MITSUBISHI
  μ Machining V1
- KERN
  HSPC2525

HSK-E32

- MAKINO
  V22/V33
- SODICK HIGHTECH
  MC430L/ MC650L/ HS150L
- MORI SEIKI
  NVD1500DCG
- MITSUI SEIKI
  VL30
- OKK
  VD300
- ROEDERS GMBH
  RHP600

HSK-E40

- ROKU-ROKU
  Cega-542
- MIKRON
  HSM400/ UCP600
- HERMLE
  C Series
- DIGMA
  HSC800/5

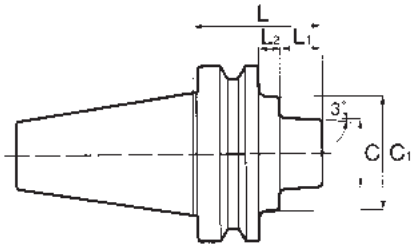
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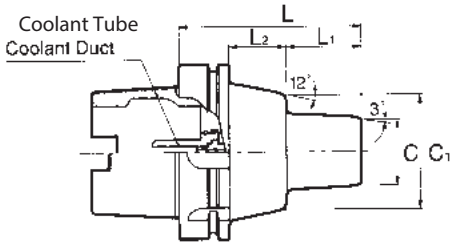
Base Holders: BT, CT and HSK 2PC Series

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

HTE

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

HTE

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.

HTE

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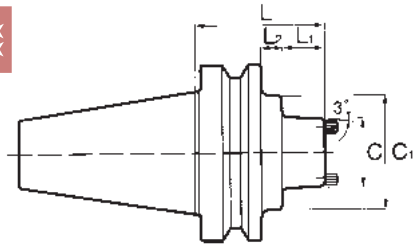
Nozzle Type Holders: BT, CT and HSK 2PC Series

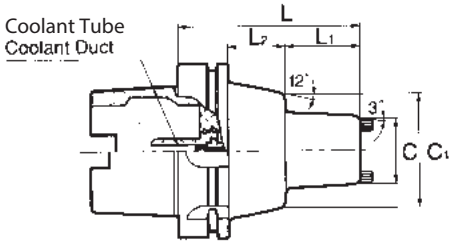
For Coolant-Through the Holder Operations











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

HTE

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

HTE

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.

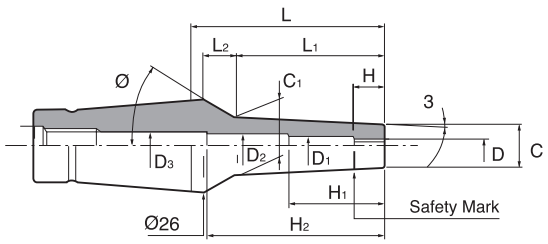
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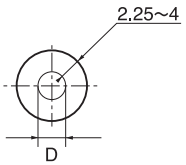
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Regular Type Shrink Extensions

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.

HTE

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

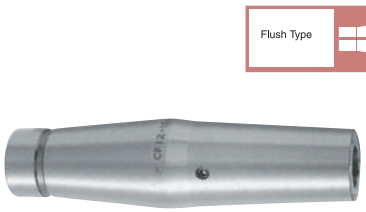
The tool should be inserted deeper than the safety mark.
Do not exceed the insertion limit.

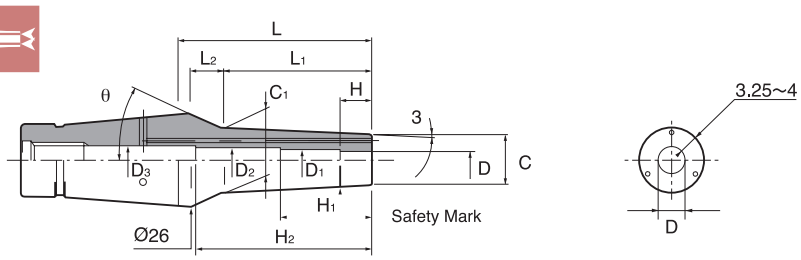
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Flush Type Shrink Extensions

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.

HTE

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.

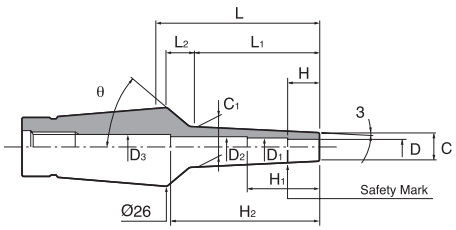
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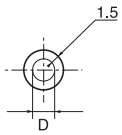
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Slim Type Shrink Extensions

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.

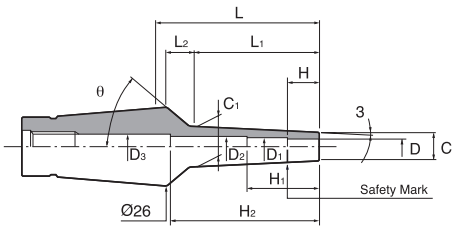
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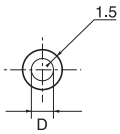
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Slim Type Shrink Extensions

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.

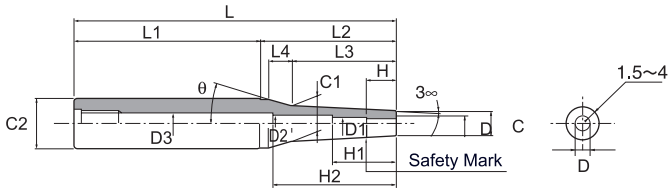
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Straight Regular Type Shrink Extensions

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.

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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.

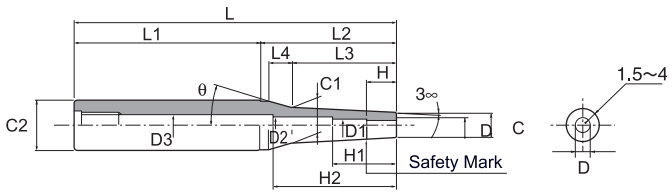
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Straight Slim Type Shrink Extensions

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.
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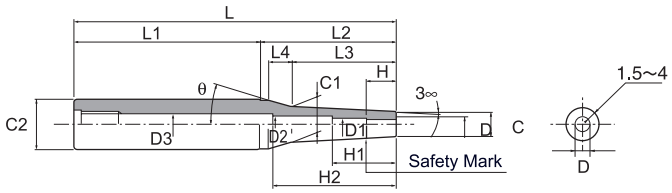
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Straight Slim Type Shrink Extensions

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.

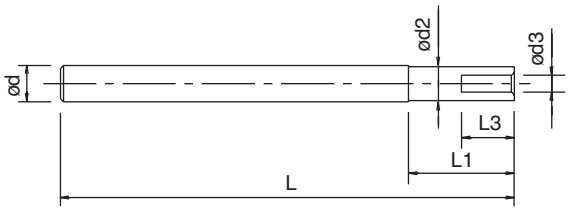
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Carbide Straight Type Shrink Extensions

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

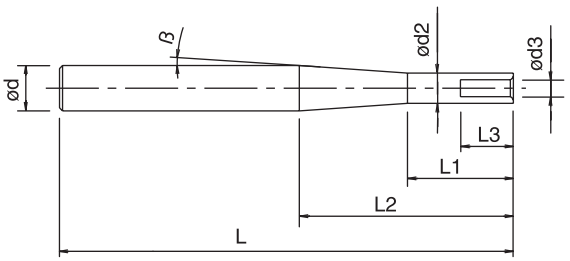
Packed: 1 pc.

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Carbide Straight Slim Type Shrink Extensions

For Increased Rigidity and Reach





Metric Sizes

EDP No.	Description	L	d3	d2	d	L1	L2	ß	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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EDP Index



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EDP Numerical Index

EDP Number	Page No.
0135401	375
0135408	375
0135501	375
0135508	375
0135601	375
0135608	375
0135701	375
0135708	375
0135801	375
0135808	375
0135901	375
0135908	375
0136001	375
0136008	375
0136101	375
0136108	375
0136201	375
0136208	375
0136301	375
0136308	375
0136401	375
0136408	375
0136501	375
0136508	375
0136601	375
0136608	375
0136701	375
0136708	375
0136801	375
0136808	375
0136901	375
0136908	375
0137001	375
0137008	375
0137101	376
0137108	376
0137201	376
0137208	376
0137301	376
0137308	376
0137401	376
0137408	376
0137501	376
0137508	376
0137601	376
0137608	376
0137701	376
0137708	376
0137801	376
0137808	376
0137901	376
0137908	376
0138001	376
0138008	376
0138101	376
0138108	376
0138201	376
0138208	376

EDP Number	Page No.
0138301	376
0138308	376
0138401	376
0138408	376
0138501	376
0138508	376
0138601	376
0138608	376
0138701	376
0138708	376
0138801	376
0138808	376
0138901	376
0138908	376
0139001	376
0139008	376
0139101	376
0139108	376
0139201	376
0139208	376
0139301	376
0139308	376
0139401	376
0139408	376
0139501	376
0139508	376
0139601	377
0139608	377
0139701	377
0139708	377
0139801	377
0139808	377
0139901	377
0139908	377
0140001	377
0140008	377
0140101	358
0140201	358
0140301	358
0140401	358
0140501	358
0140601	358
0140701	358
0140801	358
0140901	358
0141001	358
0141101	358
0141201	358
0141301	358
0141401	358
0141501	358
0141601	358
0141701	361
0141708	361
0141801	361
0141808	361
0141901	361
0141908	361

EDP Number	Page No.
0142001	361
0142008	361
0142101	361
0142108	361
0142201	361
0142208	361
0142301	361
0142308	361
0142401	361
0142408	361
0142501	361
0142508	361
0142601	361
0142608	361
0142701	361
0142708	361
0142801	361
0142808	361
0142901	361
0142908	361
0143001	361
0143008	361
0143101	361
0143108	361
0143201	361
0143208	361
0143301	362
0143308	362
0143401	362
0143408	362
0143501	362
0143508	362
0143601	362
0143608	362
0143701	379
0143801	379
0143901	379
0144001	379
0144101	379
0144201	379
0144301	379
0144401	379
0144501	379
0144601	379
0144701	501
0144708	501
0144801	501
0144808	501
0144901	501
0144908	501
0145001	501
0145008	501
0145101	501
0145108	501
0145201	501
0145208	501
0145301	501
0145308	501

EDP Number	Page No.
0145401	501
0145408	501
0145501	501
0145508	501
0145601	501
0145608	501
0145701	501
0145708	501
0145801	501
0145808	501
0145901	501
0145908	501
0146001	501
0146008	501
0146101	501
0146108	501
0146201	501
0146208	501
0146301	501
0146308	501
0146401	501
0146408	501
0146501	501
0146508	501
0146601	501
0146608	501
0146701	501
0146708	501
0146801	501
0146808	501
0146901	501
0146908	501
0147001	501
0147008	501
0147101	501
0147108	501
0147201	501
0147208	501
0147301	501
0147308	501
0147401	501
0147408	501
0147501	501
0147508	501
0147601	501
0147608	501
0147701	501
0147708	501
0147801	501
0147808	501
0147901	501
0147908	501
0148001	501
0148008	501
0148101	502
0148108	502
0148201	502
0148208	502

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
0148301	502
0148308	502
1000000	471
1000001	471
1000008	471
1000100	471
1000101	471
1000105	471
1000108	471
1000200	471
1000201	471
1000205	471
1000208	471
1000300	471
1000400	471
1000401	471
1000500	471
1000501	471
1000600	471
1000601	471
1000608	471
1000700	471
1000701	471
1000800	471
1000801	471
1000900	471
1001	478
1001000	471
1001100	471
1001108	471
1001300	471
1001400	471
1001600	471
1001900	471
1002	478
1002100	471
1002200	471
1002300	471
1002500	471
1003	478
1003100	471
1003200	471
1003400	471
1003408	471
1003600	471
1003700	471
1003800	471
1004200	472
1004208	472
1004300	472
1004308	472
1004400	472
1004600	472
1004800	472
1004900	472
1005000	472
1005001	472
1005100	472

EDP Number	Page No.
1005110508	455
1005110808	455
1005111008	455
1005111208	455
1005111408	455
1005111608	455
1005111808	455
1005112008	455
1005112208	455
1005112408	455
1005113008	455
1005113208	455
1005200	472
1005200108	457
1005200208	457
1005200308	457
1005200408	457
1005200508	457
1005200608	457
1005200708	457
1005200808	457
1005200908	457
1005201008	457
1005201108	457
1005201208	457
1005201308	457
1005201408	457
1005201508	457
1005201608	457
1005201708	457
1005201808	457
1005201908	457
1005202008	457
1005202108	457
1005202208	457
1005202308	457
1005202408	457
1005202508	457
1005202608	457
1005202708	457
1005202808	457
1005202908	457
1005203008	457
1005203108	457
1005203208	457
1005203308	457
1005203408	457
1005203508	457
1005300	472
1005300108	459
1005300208	459
1005300308	459
1005300408	459
1005300508	459
1005300608	459
1005300708	459
1005300808	459
1005300908	459

EDP Number	Page No.
1005301008	459
1005301108	459
1005301208	459
1005301308	459
1005301408	459
1005301508	459
1005301608	459
1005301708	459
1005301808	459
1005301908	459
1005302008	459
1005302108	459
1005302208	459
1005302308	459
1005302408	459
1005302508	459
1005302608	459
1005302708	459
1005302808	459
1005302908	459
1005303008	459
1005303108	459
1005303208	459
1005303308	459
1005303408	459
1005303508	459
1005500	472
1005600108	463
1005600208	463
1005600308	463
1005600408	463
1005600508	463
1005600608	463
1005600708	463
1005600808	463
1005600908	463
1005601008	463
1005601108	463
1005601208	463
1005601308	463
1005601408	463
1005601508	463
1005601608	463
1005601708	463
1005601808	463
1005601908	463
1005602008	463
1005602108	463
1005602208	463
1005602308	463
1005602408	463
1005602508	463
1005602608	463
1005602708	463
1005602808	463
1005602908	463
1005700108	464
1005700208	464

EDP Number	Page No.
1005700308	464
1005700408	464
1005700508	464
1005700608	464
1005700708	464
1005700808	464
1005700908	464
1005701008	464
1005701108	464
1005701208	464
1005701308	464
1005701408	464
1005701508	464
1005701608	464
1005701708	464
1005800	472
1005910100	490
1005910200	490
1005910300	490
1005910400	490
1005910500	490
1005910600	490
1005910700	490
1005910800	490
1005910900	490
1006100100	491
1006100300	491
1006100400	491
1006100500	491
1006100700	491
1006100800	491
1006100900	491
1006101000	491
1006101100	491
1006101300	491
1006101400	491
1006101500	491
1006101700	491
1006101800	491
1006101900	491
1006102000	491
10078505	202
1007900	475
1008000	471
1008008	471
1008100	475
10081005	202
10082005	202
1008600	472
10086005	202
1008700	472
1008800	468
1008900	469
10089005	202
1009000	469
1009100	470
1009108	470
1009200	470

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1009208	470
1009300	470
1009308	470
10093505	202
10093805	202
1009400	470
1009408	470
10096005	202
10098005	202
10099505	202
1010000	480
1010100	471
1010105	471
1010108	471
10101505	202
1010200	471
1010208	471
1010400	471
10104005	202
1010408	471
10106505	202
1010700	471
1010708	471
1010800	471
1010808	471
1010900	471
101-0900	169
1010901	471
1010908	471
10109405	202
1011000	471
10110005	202
1011001	471
1011005	471
1011008	471
1011100	471
10111005	202
1011101	471
1011105	471
1011108	471
1011200	471
101-1200	169
1011300	471
10113005	202
1011301	471
1011400	471
1011401	471
1011500	471
101-1500	169
1011501	471
1011508	471
1011600	471
10116005	202
1011601	471
1011608	471
1011700	471
1011701	471
1011708	471

EDP Number	Page No.
1011800	471
101-1800	169
1011801	471
1011900	471
1011901	471
1011908	471
1012000	471
10120005	202
1012001	471
1012008	471
1012100	471
101-2100	169
1012101	471
1012108	471
1012200	471
1012201	471
1012205	471
1012208	471
1012300	471
1012301	471
1012305	471
1012308	471
1012400	471
101-2400	169
1012408	471
1012500	471
10125005	202
1012501	471
1012508	471
1012600	471
1012601	471
1012608	471
1012700	471
101-2700	169
1012800	471
10128505	202
1012900	471
1012901	471
1013000	471
101-3000	169
1013001	471
1013008	471
1013100	471
1013101	471
1013105	471
1013108	471
1013200	471
1013201	471
1013205	471
1013208	471
1013300	471
1013301	471
1013308	471
1013400	471
1013401	471
1013408	471
1013500	471
1013501	471

EDP Number	Page No.
1013508	471
1013600	471
10136005	202
1013608	471
1013700	471
1013705	471
1013708	471
1013800	471
1013805	471
1013808	471
1013900	471
1013908	471
1014000	471
1014001	471
1014005	471
10140505	202
10140605	202
1014100	471
1014101	471
1014105	471
1014200	472
1014300	472
1014305	472
1014308	472
1014400	472
10144005	202
1014405	472
1014500	472
1014501	472
1014600	472
1014601	472
1014605	472
1014700	472
10147005	202
1014701	472
1014705	472
1014800	472
1014805	472
1014808	472
1014900	472
10149505	202
1015000	472
1015008	472
1015100	472
1015105	472
1015200	472
10152005	202
1015208	472
1015300	472
1015305	472
1015308	472
10154005	202
10156205	202
10157005	202
10159005	202
10161005	202
1016400	475
10166005	202

EDP Number	Page No.
10169505	202
10171905	202
10173005	202
10177005	202
10180005	202
10182005	202
10185005	202
10187505	202
10189005	202
10191005	202
10193505	202
10196005	202
1019800	472
1019900	472
10199005	202
1020000	480
10201005	203
10203105	203
10204005	203
10205505	203
10209005	203
10213005	203
10218805	203
10221005	203
10228005	203
10234005	203
10234405	203
1023600	471
1023601	471
1023608	471
1023700	471
1023701	471
1023705	471
1023708	471
1023800	471
10238005	203
1023801	471
1023805	471
1023808	471
1024200	472
10242005	203
1024201	472
1024208	472
1024300	472
1024301	472
1024305	472
1024308	472
1024400	472
1024401	472
1024405	472
1024408	472
10246005	203
1024800	472
1024801	472
1024900	472
1024901	472
1024905	472
1024908	472

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1025000	472
10250005	203
1025001	472
1025005	472
1025008	472
1025100	472
1025101	472
1025105	472
1025108	472
1025200	472
1025201	472
1025205	472
1025208	472
1025300	472
1025301	472
1025305	472
1025308	472
1025400	472
1025401	472
1025408	472
1025500	472
1025501	472
1025505	472
1025508	472
1025600	472
1025601	472
1025608	472
1025700	472
10257005	203
1025701	472
1025708	472
1025800	472
1025801	472
1025808	472
1025900	472
1025901	472
1025905	472
1025908	472
1026100	475
10261005	203
1026200	475
10265605	203
10272005	203
10277005	203
10281205	203
1028500	472
1028600	472
10290005	203
10295005	203
10296905	203
1030000	480
10302005	203
10312505	203
10316005	203
10323005	203
10328105	203
10332005	203
10339005	203

EDP Number	Page No.
10343805	203
10348005	203
1035600	474
10358005	203
10359405	203
10368005	203
10375005	203
10377005	203
10386005	203
10390605	203
10397005	203
1040000	480
1040100	474
1040200	474
10404005	203
10406205	203
1040700	474
10413005	204
10421905	204
10437505	204
1045100	474
1045200	474
10453105	204
1045700	474
1046000	474
1046100	474
1046200	474
10468805	204
10484405	204
1050000	454
10500005	204
1050100	474
1050200	474
1050700	474
1050800	474
1051000	474
1051001	474
1051005	474
1051100	474
1051101	474
1051105	474
1051600	468
1051608	468
1054700	474
1059300	474
1059300	474
1060000	480
1060100	475
1060200	475
1061100	468
1061108	468
1061300	475
1062800	475
1063200	468
1065100	475
1065200	475
1065700	475
1065800	475

EDP Number	Page No.
1066300	475
1066400	475
1066500	469
1067200	475
1067300	475
1067500	475
1067800	475
1067900	475
1068100	475
1068105	471
1068400	475
1068500	475
1069000	475
1069100	475
1069200	469
1069300	475
1069400	475
1070000	480
1071800	469
1071808	469
1071900	469
1072800	475
1072801	475
1072900	475
1072901	475
1073400	475
1073401	475
1073500	475
1073501	475
1074000	475
1074001	475
1074100	475
1074101	475
1074300	475
1074301	475
1074400	475
1074401	475
1080000	454
10800100	505
10800200	505
10800300	505
10800400	505
10800500	505
10800600	505
10800700	505
10800800	505
10800900	505
10801000	505
10801100	505
10801200	505
10801300	505
10801400	505
10801500	505
10801600	505
10801700	505
10801800	505
10801900	505
10802000	505

EDP Number	Page No.
10802100	505
10802200	505
10802300	505
10802400	505
10802500	505
10802600	505
10802700	505
10900100	506
10900200	506
10900300	506
10900400	506
10900500	506
10900600	506
10900700	506
10900800	506
10900900	506
10901000	506
10901100	506
10901200	506
10901300	506
10901400	506
10901500	506
1100000	468
1100008	468
1100100	468
1100108	468
1100200	468
1100208	468
1100400	468
1100500	468
1100700	468
1100800	468
1101000	468
1101100	468
1101200100	449
1101200300	449
1101200500	449
1101200700	449
1101200900	449
1101201100	449
1101300	468
1101400	468
1101500105	430
1101500205	430
1101500305	430
1101500405	430
1101500505	430
1101500605	430
1101500705	430
1101500805	430
1101500905	430
1101501005	430
1101501105	430
1101501205	430
1101501305	430
1101501405	430
1101501505	430
1101501605	430

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1101501705	430
1101501805	430
1101501905	430
1101502005	430
1101502105	430
1101502205	430
1101502305	430
1101502405	430
1101502505	430
1101502605	430
1101502705	430
1101502805	430
1101502905	431
1101503005	431
1101503105	431
1101503205	431
1101503305	431
1101503405	431
1101503505	431
1101503605	431
1101503705	431
1101503805	431
1101503905	431
1101504005	431
1101504105	431
1101504205	431
1101504305	431
1101504405	431
1101504505	431
1101504605	431
1101504705	431
1101504805	431
1101504905	431
1101505005	431
1101505105	431
1101505205	431
1101505305	431
1101505405	431
1101505505	430
1101505605	430
1101505705	430
1101505805	430
1101505905	431
1101506005	430
1101506105	430
1101506205	430
1101506305	430
1101506405	430
1101506505	430
1101506605	430
1101506705	430
1101506805	430
1101506905	430
1101507005	430
1101507105	430
1101507205	430
1101507305	430
1101507405	430

EDP Number	Page No.
1101507505	430
1101507605	430
1101507705	430
1101507805	430
1101507905	430
1101508005	430
1101508105	430
1101508205	430
1101508305	430
1101508405	430
1101508505	430
1101508605	430
1101508705	430
1101508805	430
1101508905	430
1101509005	430
1101509105	430
1101509205	430
1101509305	430
1101509405	430
1101509505	430
1101509605	430
1101509705	430
1101509805	430
1101509905	430
1101510005	430
1101510105	430
1101510205	430
1101510305	430
1101510405	430
1101510505	430
1101510605	430
1101510705	430
1101510805	430
1101510905	431
1101511005	431
1101511105	431
1101511205	431
1101511305	431
1101511405	431
1101511505	431
1101511605	431
1101511705	431
1101511805	431
1101511905	431
1101512005	431
1101512105	431
1101512205	431
1101512305	431
1101512405	431
1101512505	431
1101512605	431
1101512705	431
1101512805	431
1101512905	431
1101513005	431
1101513105	431
1101513205	431

EDP Number	Page No.
1101513305	431
1101513405	431
1101513505	431
1101513605	431
1101513705	431
1101513805	431
1101513905	431
1101514005	431
1101514105	431
1101514205	431
1101514305	431
1101514405	431
1101514505	431
1101514605	431
1101514705	431
1101514805	431
1101514905	431
1101515005	431
1101515105	431
1101515205	431
1101515305	431
1101515405	431
1101515505	430
1101515605	430
1101515705	430
1101515805	430
1101515905	430
1101516005	430
1101516105	430
1101516205	430
1101516305	430
1101516405	430
1101516505	430
1101516605	430
1101516705	430
1101516805	430
1101516905	430
1101517005	431
1101517105	431
1101517205	431
1101517305	431
1101517405	431
1101517505	431
1101517605	431
1101517705	431
1101517805	431
1101517905	431
1101518005	431
1101518105	431
1101518205	431
1101518305	431
1101518405	431
1101518505	431
1101518605	432
1101518705	432
1101518805	432
1101518905	432
1101519005	432

EDP Number	Page No.
1101519105	432
1101519205	432
1101519305	432
1101519405	432
1101519505	432
1101519605	432
1101519705	432
1101519805	432
1101519905	432
1101520005	432
1101520105	432
1101520205	432
1101520305	432
1101520405	432
1101520505	432
1101520605	432
1101520705	432
1101520805	432
1101520905	432
1101521005	432
1101600	468
1101600103	437
1101600203	437
1101600303	437
1101600403	437
1101600503	437
1101600603	437
1101600703	437
1101600803	437
1101600903	437
1101601003	437
1101601103	437
1101601203	437
1101601303	437
1101601403	437
1101601503	437
1101601603	437
1101601703	437
1101601803	437
1101601903	437
1101602003	437
1101602103	437
1101700	468
1101700108	438
1101700208	438
1101700308	438
1101700408	438
1101700508	438
1101700608	438
1101700708	438
1101700808	438
1101700908	438
1101701008	438
1101701108	438
1101701208	438
1101701308	438
1101701408	438
1101701508	438

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1101708	468
1102500	468
1102600	468
1102800	468
1102900	468
1103600100	513
1103600108	513
1103600200	513
1103600208	513
1103600300	513
1103600308	513
1103600400	513
1103600408	513
1103600500	513
1103600508	513
1103600600	513
1103600608	513
1103600700	513
1103600708	513
1103600800	513
1103600808	513
1103600900	513
1103600908	513
1103601000	513
1103601008	513
1103601100	513
1103601108	513
1103601200	513
1103601208	513
1103601300	513
1103601308	513
1103700	468
1104000	468
1105100108	455
1105100208	455
1105100308	455
1105100408	455
1105100508	455
1105100608	455
1105100708	455
1105100808	455
1105100908	455
1105101008	455
1105101108	455
1105101208	455
1105200	469
1105200108	458
1105200208	458
1105200308	458
1105200408	458
1105200508	458
1105200608	458
1105200708	458
1105200808	458
1105200908	458
1105201008	458
1105201108	458
1105201208	458

EDP Number	Page No.
1105201308	458
1105201408	458
1105201508	458
1105201608	458
1105201708	458
1105201808	458
1105201908	458
1105202008	458
1105202108	458
1105202208	458
1105202308	458
1105202408	458
1105208	469
1105300108	460
1105300208	460
1105300308	460
1105300408	460
1105300508	460
1105300608	460
1105300708	460
1105300808	460
1105301108	460
1105301208	460
1105301308	460
1105301408	460
1105301508	460
1105301608	460
1105301708	460
1105301808	460
1105301908	460
1105302008	460
1105302108	460
1105302208	460
1105302308	460
1105302408	460
1105302508	460
1105400108	461
1105400208	461
1105400308	461
1105500108	462
1105500208	462
1105500308	462
1105500408	462
1105600108	463
1105600208	463
1105600308	463
1105600408	463
1105600508	463
1105600608	463
1105600708	463
1105600808	463
1105600908	463
1105601008	463
1105610108	410
1105610208	410
1105610408	410
1105610508	410
1105610608	410

EDP Number	Page No.
1105610708	410
1105610808	410
1105610908	410
1105611008	410
1105611108	410
1105611208	410
1105611308	410
1105611408	410
1105611508	410
1105611608	410
1105611708	410
1105611808	410
1105611908	410
1105612008	410
1105612108	410
1105612208	410
1105612308	410
1105612408	410
1105612508	410
1105612608	410
1105612708	410
1105612808	410
1105612908	410
1105613008	410
1105613108	410
1105613208	410
1105613308	410
1105613408	410
1105613508	410
1105613608	410
1105613708	410
1105613808	410
1105613908	410
1105614008	410
1105614108	410
1105614208	410
1105614308	410
1105614408	410
1105614508	410
1105700108	464
1105700208	464
1105700308	464
1105700408	464
1105700508	464
1105700608	464
1105700708	464
1105700808	464
1110000	468
1110008	468
1110100	468
1110108	468
1110200	468
1110208	468
1110400	468
1110500	468
1110508	468
1110700	468
1110708	468

EDP Number	Page No.
1110800	468
1111	478
1111000	468
1111100	468
1111108	468
1111300	468
1111400	468
1111500105	433
1111500205	433
1111500305	433
1111500405	433
1111500505	433
1111500605	433
1111500705	433
1111500805	433
1111500905	433
1111501005	433
1111501105	433
1111501205	433
1111501305	433
1111501405	433
1111501505	433
1111501605	433
1111501705	433
1111501805	433
1111501905	433
1111502005	433
1111502105	433
1111502205	433
1111502305	433
1111502405	433
1111502505	433
1111502605	433
1111502705	433
1111502805	433
1111502905	433
1111503005	433
1111503105	433
1111503205	433
1111503305	433
1111503405	433
1111503505	433
1111503605	433
1111503705	433
1111503805	433
1111503905	433
1111504005	433
1111504105	433
1111504205	433
1111504305	433
1111504405	433
1111504505	433
1111504605	433
1111504705	433
1111504805	433
1111504905	433
1111505005	433
1111505105	433

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1111505205	433
1111505305	433
1111505405	433
1111505505	433
1111505605	433
1111505705	434
1111505805	434
1111505905	434
1111506005	434
1111506105	434
1111506205	434
1111506305	434
1111506405	434
1111506505	434
1111506605	434
1111506705	434
1111506805	434
1111506905	434
1111507005	433
1111507105	433
1111507205	433
1111507305	433
1111507405	433
1111507505	433
1111507605	433
1111507705	433
1111507805	433
1111507905	433
1111508005	433
1111508105	433
1111508205	433
1111508305	434
1111508405	434
1111508505	434
1111508605	434
1111508705	434
1111508805	434
1111600	468
1111600103	437
1111600303	437
1111600403	437
1111600503	437
1111600803	437
1111600903	437
1111601003	437
1111601103	437
1111601203	437
1111601303	437
1111608	468
1111700	468
1111700108	438
1111700308	438
1111700408	438
1111700508	438
1111700808	438
1111701008	438
1111701308	438
1111800201	453

EDP Number	Page No.
1111800301	453
1111800401	453
1111800501	453
1111800601	453
1111800701	453
1111800801	453
1111800901	453
1111801001	453
1111801101	453
1111801201	453
1111801301	453
1112	478
1112200	468
1112500	468
1112600	468
1113	478
1113400	468
1113700	468
1114000	468
1114900	469
1115200	469
1115710001	413
1115710008	413
1115710101	413
1115710108	413
1115710201	413
1115710208	413
1115710301	413
1115710308	413
1115710401	413
1115710408	413
1115710501	413
1115710508	413
1115710601	413
1115710608	413
1115710701	413
1115710708	413
1115710801	413
1115710808	413
1115800	469
1115810108	411
1115810208	411
1115810308	411
1115810408	411
1115810508	411
1115810608	411
1115810708	411
1115810808	411
1116100	469
1116700	469
1116708	469
1120000	468
1120001	468
1120008	468
1120100	468
1120101	468
1120105	468
1120108	468

EDP Number	Page No.
1120200	468
1120201	468
1120208	468
1120300	468
1120308	468
1120400	468
1120401	468
1120405	468
1120408	468
1120500	468
1120501	468
1120508	468
1120600	468
1120601	468
1120608	468
1120700	468
1120701	468
1120705	468
1120708	468
1120800	468
1120801	468
1120808	468
1120900	468
1120901	468
1120908	468
1121	478
1121000	468
1121001	468
1121005	468
1121008	468
1121100	468
1121101	468
1121108	468
1121200	468
1121201	468
1121208	468
1121300	468
1121301	468
1121305	468
1121308	468
1121400	468
1121401	468
1121408	468
1121500	468
1121501	468
1121508	468
1121600	468
1121601	468
1121605	468
1121608	468
1121700	468
1121701	468
1121708	468
1121800	468
1121808	468
1121900	468
1121908	468
1122	478

EDP Number	Page No.
1122000	468
1122008	468
1122100	468
1122101	468
1122108	468
1122200	468
1122201	468
1122205	468
1122208	468
1122300	468
1122301	468
1122308	468
1122400	468
1122401	468
1122408	468
1122500	468
1122501	468
1122505	468
1122508	468
1122600	468
1122601	468
1122608	468
1122700	468
1122701	468
1122708	468
1122800	468
1122801	468
1122805	468
1122808	468
1122900	468
1122901	468
1122908	468
1123	478
1123000	468
1123001	468
1123008	468
1123100	468
1123101	468
1123108	468
1123200	468
1123201	468
1123208	468
1123300	468
1123301	468
1123308	468
1123400	468
1123401	468
1123408	468
1123500	468
1123501	468
1123508	468
1123600	468
1123601	468
1123608	468
1123700	468
1123701	468
1123705	468
1123708	468

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1123800	468
1123801	468
1123808	468
1123900	468
1123901	468
1123908	468
1124000	468
1124001	468
1124005	468
1124008	468
1124100	468
1124101	468
1124108	468
1124200	468
1124300	468
1124308	468
1124400	468
1124408	468
1124500	469
1124508	469
1124600	469
1124608	469
1124700	469
1124708	469
1124800	469
1124808	469
1124900	469
1124901	469
1124905	469
1124908	469
1125000	469
1125001	469
1125008	469
1125100	469
1125108	469
1125200	469
1125201	469
1125205	469
1125208	469
1125300	469
1125301	469
1125308	469
1125700	470
1125708	470
1125900	470
1125901	470
1125908	470
1130400	468
1130500	468
1131000	468
1131100	468
1131108	468
1131600	468
1131608	468
1131700	468
1131708	468
1135400	469
1135408	469

EDP Number	Page No.
1135500	469
1135501	469
1135505	469
1135508	469
1135600	469
1135601	469
1135608	469
1135700	469
1135708	469
1135800	469
1135801	469
1135805	469
1135808	469
1135900	469
1135901	469
1135908	469
1136000	469
1136001	469
1136008	469
1136100	469
1136101	469
1136105	469
1136108	469
1136200	469
1136201	469
1136208	469
1136300	469
1136308	469
1136400	469
1136408	469
1136500	469
1136508	469
1136600	469
1136601	469
1136608	469
1136700	469
1136701	469
1136708	469
1136800	469
1136801	469
1136808	469
1136900	469
1136908	469
1137000	469
1137001	469
1137008	469
1137100	469
1137101	469
1137108	469
1137200	469
1137201	469
1137208	469
1137300	469
1137301	469
1137308	469
1137400	469
1137401	469
1137408	469

EDP Number	Page No.
1137500	469
1137508	469
1137600	469
1137608	469
1137700	469
1137701	469
1137708	469
1137800	469
1137808	469
1137900	469
1137901	469
1137908	469
1138000	469
1138001	469
1138008	469
1138100	469
1138101	469
1138200	469
1138208	469
1138300	469
1138308	469
1138400	469
1138401	469
1138408	469
1138500	469
1138501	469
1138508	469
1138600	469
1138601	469
1138608	469
1138700	469
1138701	469
1138708	469
1138800	469
1138801	469
1138808	469
1138900	469
1138901	469
1138908	469
1139000	469
1139001	469
1139008	469
1139100	469
1139101	469
1139108	469
1139200	469
1139201	469
1139208	469
1140100	468
1140108	468
1140200	468
1140208	468
1140700	468
1140708	468
1140800	468
1140808	468
1141300	468
1141308	468

EDP Number	Page No.
1141400	468
1141408	468
1141900	468
1142	478
1142000	468
1142200	468
1142208	468
1142300	468
1142308	468
1142500	468
1142508	468
1142600	468
1142800	468
1142900	468
1142908	468
1143100	468
1143108	468
1143400	468
1143408	468
1143500	468
1143508	468
1143700	468
1143708	468
1143800	468
1143808	468
1144000	468
1144008	468
1144100	468
1144108	468
1144900	469
1144908	469
1145000	469
1145008	469
1145200	469
1145208	469
1145300	469
1145308	469
1145500	469
1145508	469
1145800	469
1145808	469
1146100	469
1146108	469
11507615	197
11509115	197
11511115	197
11511615	197
11512915	197
11513615	197
11514915	197
11515915	197
11516915	197
11517715	197
11518815	197
11520415	197
11520915	197
11521515	197
11522215	197

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
11523815	197
11524115	197
11526115	197
11526915	197
11529615	197
11530815	198
11533115	198
11534815	198
11535515	198
11538815	198
11541315	198
11542715	198
11544	403
11545615	198
11546215	198
11546715	198
11549215	198
11550715	198
11551115	198
11553015	198
11554615	198
11555815	198
11556	403
11556115	198
11556215	198
11557815	198
11558315	198
11559315	198
11559915	198
11560415	198
11561315	198
11561815	199
11563215	199
11564115	199
11564715	199
11565015	199
11565915	199
11566815	199
11567715	199
11568415	199
11568815	199
11569415	199
11571	403
11583	403
11601	403
1160100	474
1160700	474
1161300	474
11621	403
11624	403
11650	403
1165100	474
11653	403
11680	403
11683	403
1170100	474
1170101	474
1170105	474

EDP Number	Page No.
1170200	474
1170201	474
1170205	474
1170400	474
1170401	474
1170405	474
11705	403
1170500	474
1170501	474
1170505	474
1170700	474
1170705	474
11708	403
1170800	474
1171000	474
1171001	474
1171005	474
1171100	474
1171101	474
1171105	474
1171300	474
1171301	474
1171305	474
1171400	474
1171401	474
1171405	474
1171600	474
1171601	474
1171605	474
1171700	474
1171701	474
1171705	474
1171900	474
1172000	474
1172200	474
1172500	474
1172501	474
1172505	474
1172600	474
1172601	474
1172605	474
1172800	474
11730	403
11735	403
11757	403
11762	403
11772	403
11799	403
1180100	474
1180200	474
1180700	474
1180800	474
1181300	474
1181400	474
1195100	475
1195101	475
1195200	475
1195201	475

EDP Number	Page No.
1195400	475
1195401	475
1195500	475
1195501	475
1195700	475
1195800	475
1200000	444
1200001	444
1200008	444
1200100	447
1200200	444
1200201	444
1200208	444
1200400	444
1200401	444
1200408	444
1200500	447
1200600	444
1200600100	525
1200600200	525
1200600300	525
1200600400	525
1200600500	525
1200600600	525
1200600700	525
1200600800	525
1200600900	525
1200601000	525
1200605	444
1200608	444
1200700	447
1200700200	525
1200700400	525
1200700500	525
1200700600	525
1200700700	525
1200800	444
1200808	444
1200900	447
1201000	444
1201008	444
1201200	444
1201208	444
1201400	444
1201405	444
1201408	444
1201600	444
1202000	444
1202008	444
1202400	444
1202405	444
1202408	444
1202600	444
1202800	444
1202805	444
1202808	444
1203200	444
1203208	444

EDP Number	Page No.
1203400	444
1203405	444
1203408	444
1203800	445
1203805	445
1203808	445
1204200	445
1205000	444
1205001	444
1205005	444
1205008	444
1205200	444
1205201	444
1205208	444
1205300	447
1205300108	520
1205300208	520
1205300308	520
1205300408	520
1205300508	520
1205300608	520
1205300708	520
1205400	444
1205400108	520
1205400208	520
1205400308	520
1205400408	520
1205400508	520
1205400608	520
1205400708	520
1205401	444
1205405	444
1205408	444
1205500	447
1205600	444
1205601	444
1205605	444
1205608	444
1205700	447
1205701	447
1205800	444
1205801	444
1205805	444
1205808	444
1206000	444
1206001	444
1206005	444
1206008	444
1206100	447
1206101	447
1206200	444
1206201	444
1206205	444
1206208	444
1206300	447
1206400	444
1206401	444
1206405	444

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1206408	444
1206500	447
1206501	447
1206600	444
1206601	444
1206605	444
1206608	444
1206700	447
1206800	444
1206801	444
1207000	444
1207001	444
1207005	444
1207008	444
1207100	447
1207101	447
1207200	444
1207201	444
1207205	444
1207208	444
1207300	447
1207400	444
1207401	444
1207405	444
1207408	444
1207500	447
1207600	444
1207601	444
1207605	444
1207608	444
1207700	447
1207701	447
1207800	444
1207801	444
1207805	444
1207808	444
1207900	447
1208200	444
1208201	444
1208205	444
1208208	444
1208300	447
1208400	444
1208401	444
1208405	444
1208408	444
1208500	447
1208800	445
1208801	445
1208808	445
1208900	447
1210000	444
1210001	444
1210008	444
1210600	444
1210601	444
1210608	444
1211000	444

EDP Number	Page No.
1211001	444
1211008	444
1211400	444
1211401	444
1211408	444
1212400	444
1212401	444
1212405	444
1212408	444
1212500	447
1212501	447
1212608	444
1212800	444
1212801	444
1212805	444
1212808	444
1212900	447
1212901	447
1213201	444
1213400	444
1213401	444
1213405	444
1213408	444
1213500	447
1213501	447
1213601	444
1213800	445
1213801	445
1213805	445
1213808	445
1213900	447
1213901	447
1214001	445
1214200	445
1214201	445
1214205	445
1214208	445
1214300	447
1214301	447
1214400	445
1214401	445
1214405	445
1214408	445
1214500	447
1214501	447
1214700	447
1215600	444
1215601	444
1215608	444
1216400	444
1216401	444
1216408	444
1217400	444
1217401	444
1217408	444
1217800	444
1217801	444
1217808	444

EDP Number	Page No.
1218800	445
1218801	445
1218808	445
1220000	445
1220001	445
1220005	445
1220008	445
1220400	445
1220408	445
1220800	445
1220805	445
1220808	445
1221200	445
1221208	445
1221600	445
1221608	445
1221800	445
1221808	445
1222400	446
1222408	446
1222600	446
1222608	446
1225000	445
1225001	445
1225005	445
1225008	445
1225400	445
1225405	445
1225408	445
1225500	447
1225600	445
1225605	445
1225608	445
1225800	445
1225805	445
1225808	445
1226200	445
1226205	445
1226208	445
1226400	445
1226405	445
1226408	445
1226600	445
1226601	445
1226605	445
1226608	445
1226800	445
1226805	445
1226808	445
1227000	445
1227008	445
1227200	446
1227208	446
1227400	446
1227405	446
1227408	446
1227600	446
1227608	446

EDP Number	Page No.
1230000	445
1230001	445
1230005	445
1230008	445
1230100	447
1230101	447
1230200	445
1230201	445
1230205	445
1230208	445
1230400	445
1230401	445
1230405	445
1230408	445
1230500	447
1230501	447
1230800	445
1230801	445
1230805	445
1230808	445
1230900	447
1230901	447
1231000	445
1231001	445
1231005	445
1231008	445
1231200	445
1231201	445
1231205	445
1231208	445
1231300	447
1231301	447
1231600	445
1231601	445
1231605	445
1231608	445
1231700	447
1231701	447
1231800	445
1231801	445
1231805	445
1231808	445
1232000	445
1232001	445
1232005	445
1232008	445
1232100	447
1232200	446
1232201	446
1232205	446
1232208	446
1232400	446
1232401	446
1232405	446
1232408	446
1232600	446
1232601	446
1232605	446

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1232608	446
1233200	446
1233201	446
1233205	446
1233208	446
1233400	446
1233401	446
1233405	446
1233408	446
1233600	446
1233601	446
1233605	446
1233608	446
1233800	446
1233801	446
1233808	446
1235400	445
1235408	445
1235600	445
1235608	445
1236200	445
1236208	445
1236400	445
1236408	445
1236500	447
1236800	445
1236805	445
1236808	445
1240000	445
1240001	445
1240005	445
1240008	445
1240200	445
1240208	445
1240800	445
1240805	445
1240808	445
1241000	445
1241001	445
1241005	445
1241008	445
1241600	445
1241601	445
1241605	445
1241608	445
1242000	445
1242005	445
1242008	445
1242200	446
1242205	446
1242208	446
1242400	446
1242405	446
1242408	446
1242600	446
1242608	446
1243200	446
1243205	446

EDP Number	Page No.
1243208	446
1243600	446
1243605	446
1243608	446
12500100	514
12500200	514
12500300	514
12500400	514
12500500	514
12500600	514
12500700	514
12500800	514
12500900	514
12501000	514
12501100	514
12501200	514
12501300	514
12501400	514
12501500	514
12501600	514
12501700	514
12501800	514
12501900	514
12502000	514
12502100	514
12502200	514
12502300	514
12502400	514
12502500	514
12502600	514
12502700	514
12502800	514
1250500	524
1250501	524
1250508	524
1250600	524
1250601	524
1250608	524
1251	478
1251300	524
1251301	524
1251308	524
1251400	524
1251401	524
1251408	524
1251700	524
1251701	524
1251708	524
1251800	524
1251801	524
1251808	524
1252	478
1252100	524
1252101	524
1252108	524
1252200	524
1252201	524
1252208	524

EDP Number	Page No.
1252500	524
1252501	524
1252508	524
1252600	524
1252601	524
1252608	524
1252900	524
1252901	524
1252908	524
1253	478
1253000	524
1253001	524
1253008	524
12600100	516
12600200	516
12600300	516
12600400	516
12600500	516
12600600	516
12600700	516
12600800	516
12600900	516
12601000	516
12601100	516
12601200	516
12601300	516
12601400	516
12601500	516
12601600	516
12601700	516
12601800	516
12601900	516
12602000	516
12602100	516
12602200	516
12602300	516
12602400	516
12602500	516
12602600	516
12602700	516
12602800	516
12602900	516
12603000	516
12603100	516
12603200	516
12603300	516
12603400	516
12603500	516
12603600	516
12603700	516
12603800	516
12603900	516
12604000	516
12604100	516
12604200	516
12604300	516
12604400	516
12604500	516

EDP Number	Page No.
12604600	516
12604700	516
12604800	516
12604900	516
12605000	516
12605100	516
12605200	516
12605300	516
12605400	516
1262	478
12700100	515
12700200	515
12700300	515
12700400	515
12700500	515
12700600	515
12700700	515
12700800	515
12700900	515
12701000	515
12701100	515
12701200	515
12701300	515
12701400	515
12701500	515
1271	478
1272	478
1273	478
12800100	517
12800200	517
12800300	517
12800400	517
12800500	517
12800600	517
12800700	517
12800800	517
12800900	517
12801000	517
12801100	517
12801200	517
12801300	517
12801400	517
12801500	517
1290001	479
1290201	479
1290401	479
1290601	479
1290801	479
1291001	479
1291201	479
1291401	479
1291601	479
1292001	479
1292201	479
1292401	479
1292601	479
1292801	479
1293001	479

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1293201	479
1293301	452
1293401	479
1293501	452
1293601	479
1293701	452
1293801	479
1293901	452
1294000	452
1294100	452
1294200	452
1294201	452
1294300	452
1294301	452
1294400	452
1294401	452
1294500	452
1294501	452
1294600	452
1294601	452
1294700	452
1294701	452
1294800	452
1294801	452
1294900	452
1294901	452
1295000	452
1295001	452
1295100	452
1295101	452
1295200	452
1295300	452
1295301	452
1295400	452
1295401	452
1295500	452
1295501	452
1295600	452
1295701	452
1295801	452
1296000	404
1296100	404
1296200	404
1296300	404
1296400	404
1296500	404
1296600	404
1296700	404
1296800	404
1296900	404
1297000	404
1297100	404
1297200	404
1297300	404
1297400	404
1297500	404
1297600	404
1297700	404
1297800	404
1297900	404
1298000	404
1298100	404
1298200	404
1298300	404
1298400	404
1298500	404
1298600	404
1298700	404
1298800	404
1298900	404
1299000	404
1299100	404
1299200	404
1299300	404
1299401	452
1301300508	383
1301300608	383
1301300708	383
1301300808	383
1301300908	383
1301301008	383
1301301108	383
1301301208	383
1301301308	383
1301301408	383
1301301508	383
1301301608	383
1301301708	383
1301301808	383
1301400101	384
1301400201	384
1301400301	384
1301400401	384
1301400501	384
1301400601	384
1301400701	384
1301400901	384
1301401101	384
1301401201	384
1301401401	384
1301401501	384
1301401701	384
1301401801	384
1301402001	384
1301402101	384
1301402201	384
1301402301	384
1301402401	384
1301402501	384
1301402601	384
1301402701	384
1301402801	384
1301402901	384
1301403001	384
1301403101	384
1301403201	384
1301403301	384
1301403501	384
1301403601	384
1301403701	384
1301403801	384
1301403901	384
1301404001	384
1301500101	386
1301500201	386
1301500301	386
1301500401	386
1301500501	386
1301500601	386
1301500701	386
1301500901	386
1301501101	386
1301501201	386
1301501401	386
1301501501	386
1301501701	386
1301501801	386
1301502001	386
1301502101	386
1301502201	386
1301502301	386
1301502401	386
1301502501	386
1301502601	386
1301502701	386
1301502801	386
1301502901	386
1301503001	386
1301503101	386
1301503201	386
1301503301	386
1301503401	386
1301503501	386
1301503601	386
1301503701	386
1301503801	386
1301504001	386
1301900103	394
1301900203	394
1301900303	394
1301900403	394
1301900503	394
1301900603	394
1301900703	394
1301900803	394
1301900903	394
1301901003	394
1301901103	394
1301901203	394
1301901303	394
1301901403	394
1301901503	394
1301901603	394
1301901703	394
1301901803	394
1301901903	394
1301902003	394
1301902103	394
1302000101	402
1302000201	402
1302000301	402
1302000401	402
1302000501	402
1302000601	402
1302000701	402
1302000801	402
1302000901	402
1302001001	402
1302001101	402
1302001201	402
1302001301	402
1302001401	402
1302001501	402
1302001601	402
1302001701	402
1302001801	402
1302001901	402
1302002001	402
1302002101	402
1302002201	402
1302002301	402
1302002401	402
1302002501	402
1302002601	402
1302400101	385
1302400201	385
1302400301	385
1302400401	385
1302400501	385
1302400601	385
1302400701	385
1302400901	385
1302401101	385
1302401201	385
1302401401	385
1302401501	385
1302401701	385
1302401801	385
1302402001	385
1302402101	385
1302402201	385
1302402301	385
1302402401	385
1302402501	385
1302402601	385
1302402701	385
1302402801	385
1302402901	385
1302403001	385
1302403101	385
1302403201	385
1302403301	385

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1302403501	385
1302403601	385
1302403701	385
1302403801	385
1302403901	385
1302404001	385
1302500101	387
1302500201	387
1302500301	387
1302500401	387
1302500501	387
1302500601	387
1302500701	387
1302500901	387
1302501101	387
1302501201	387
1302501401	387
1302501501	387
1302501701	387
1302501801	387
1302502001	387
1302502101	387
1302502201	387
1302502301	387
1302502401	387
1302502501	387
1302502601	387
1302502701	387
1302502801	387
1302502901	387
1302503001	387
1302503101	387
1302503201	387
1302503301	387
1302503501	387
1302503601	387
1302503701	387
1302503801	387
1302503901	387
1302504001	387
1303900100	504
1303900108	504
1303900200	504
1303900208	504
1303900300	504
1303900308	504
1303900400	504
1303900408	504
1303900500	504
1303900508	504
1303900600	504
1303900608	504
1303900700	504
1303900708	504
1303900800	504
1303900808	504
1303900900	504
1303900908	504

EDP Number	Page No.
1303901000	504
1303901008	504
1303901100	504
1303901108	504
1303901200	504
1303901208	504
1303901300	504
1303901308	504
1305710108	356
1305710208	356
1305710408	356
1305710508	356
1305710608	356
1305710708	356
1305710808	356
1305710908	356
1305711008	356
1305711108	356
1305711208	356
1305711308	356
1305711408	356
1305711508	356
1305711608	356
1305711708	356
1305711808	356
1305711908	356
1305712008	356
1305712108	356
1305712208	356
1305712308	356
1305712408	356
1305712508	356
1305712608	356
1305712708	356
1305712808	356
1305712908	356
1305713008	356
1305713108	356
1305713208	356
1305713308	356
1305713408	356
1305713508	356
1305713608	356
1305713708	356
1305713808	356
1305713908	356
1305714008	356
1305714108	356
1305714208	356
1305714308	356
1305714408	356
1305714508	356
1305714608	356
1305800108	392
1305800208	392
1305800308	392
1305800408	392
1305800508	392

EDP Number	Page No.
1305800608	392
1305800708	392
1305800808	392
1305800908	392
1305801008	392
1305801108	392
1305801208	392
1305900108	436
1305900208	436
1305900308	436
1305900408	436
1305900508	436
1305900608	436
1305900708	436
1305900808	436
1305900908	436
1305901008	436
1305901108	436
1305901208	436
1306300108	406
1306300208	406
1306300308	406
1306300408	406
1306300508	406
1306300608	406
1306300708	406
1306300808	406
1306300908	406
1306301008	406
1306301108	406
1306301208	406
1306301308	406
1306301408	406
1306301508	406
1306301608	406
1306301708	406
1306301808	406
1306301908	406
1306302008	406
1310000	522
1310001	522
1310005	522
1310008	522
1310100	522
1310101	522
1310105	522
1310108	522
1310200	522
1310201	522
1310205	522
1310208	522
1310300	522
1310301	522
1310305	522
1310308	522
1310400	522
1310401	522
1310405	522

EDP Number	Page No.
1310408	522
1310500	522
1310501	522
1310505	522
1310508	522
1310600	522
1310601	522
1310605	522
1310608	522
1310700	522
1310701	522
1310705	522
1310708	522
1310800	522
1310801	522
1310808	522
1310900	522
1310901	522
1310908	522
1311000	522
1311001	522
1311008	522
1311100	522
1311200	522
1311300	524
1311300508	383
1311300608	383
1311300708	383
1311300808	383
1311300908	383
1311301	524
1311301008	383
1311301108	383
1311301208	383
1311301308	383
1311301408	383
1311301508	383
1311301608	383
1311301708	383
1311301808	383
1311301908	383
1311308	524
1311400	522
1311500	522
1311600	522
1311600101	388
1311600201	388
1311600401	388
1311600501	388
1311600601	388
1311600701	388
1311600801	388
1311600901	388
1311601001	388
1311601101	388
1311601201	388
1311601301	388
1311601401	388

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1311601501	388
1311601601	388
1311601701	388
1311601801	388
1311601901	388
1311602001	388
1311602101	388
1311602201	388
1311602301	388
1311602401	388
1311602501	388
1311700	524
1311700101	390
1311700201	390
1311700401	390
1311700501	390
1311700601	390
1311700701	390
1311700801	390
1311700901	390
1311701	524
1311701001	390
1311701101	390
1311701201	390
1311701301	390
1311701401	390
1311701501	390
1311701601	390
1311701701	390
1311701801	390
1311701901	390
1311702001	390
1311702101	390
1311702201	390
1311702301	390
1311702401	390
1311702501	390
1311708	524
1311800	522
1311800108	435
1311800208	435
1311800408	435
1311800508	435
1311800608	435
1311800708	435
1311800808	435
1311800908	435
1311801008	435
1311801108	435
1311801208	435
1311801308	435
1311801408	435
1311801508	435
1311801608	435
1311801708	435
1311801808	435
1311801908	435
1311802008	435

EDP Number	Page No.
1311802108	435
1311802208	435
1311802308	435
1311802408	435
1311802508	435
1311900103	394
1311900303	394
1311900403	394
1311900503	394
1311900803	394
1311900903	394
1311901003	394
1311901103	394
1311901203	394
1311901303	394
1312100	524
1312101	524
1312108	524
1312500	523
1312501	523
1312505	523
1312508	523
1312600	523
1312600101	389
1312600201	389
1312600401	389
1312600501	389
1312600601	389
1312600701	389
1312600801	389
1312600901	389
1312601	523
1312601001	389
1312601101	389
1312601201	389
1312601301	389
1312601401	389
1312601501	389
1312601601	389
1312601701	389
1312601801	389
1312601901	389
1312602001	389
1312602101	389
1312602201	389
1312602301	389
1312602401	389
1312602501	389
1312605	523
1312608	523
1312700	523
1312700101	391
1312700201	391
1312700401	391
1312700501	391
1312700601	391
1312700701	391
1312700801	391

EDP Number	Page No.
1312700901	391
1312701	523
1312701001	391
1312701101	391
1312701201	391
1312701301	391
1312701401	391
1312701501	391
1312701601	391
1312701701	391
1312701801	391
1312701901	391
1312702001	391
1312702101	391
1312702201	391
1312702301	391
1312702401	391
1312702501	391
1312705	523
1312708	523
1312800	523
1312801	523
1312805	523
1312808	523
1312900	523
1312901	523
1312905	523
1312908	523
1313000	523
1313001	523
1313005	523
1313008	523
1313100	523
1313101	523
1313105	523
1313108	523
1313200	523
1313201	523
1313208	523
1313300	523
1313301	523
1313308	523
1313400	523
1313401	523
1313408	523
1313500	523
1313501	523
1313508	523
1315100	524
1315101	524
1315108	524
1315200	524
1315201	524
1315208	524
1315300	524
1315301	524
1315308	524
1315400	524

EDP Number	Page No.
1315401	524
1315408	524
1315500	524
1315501	524
1315508	524
1315600	524
1315601	524
1315608	524
1315700	524
1315701	524
1315708	524
1315800	524
1315800108	392
1315800208	392
1315800308	392
1315800408	392
1315800508	392
1315800608	392
1315800708	392
1315800808	392
1315800908	392
1315801	524
1315808	524
1315900	524
1315900108	436
1315900208	436
1315900308	436
1315900408	436
1315900508	436
1315900608	436
1315900708	436
1315900808	436
1315900908	436
1315901	524
1315908	524
1316000	524
1316001	524
1316110001	360
1316110101	360
1316110201	360
1316110301	360
1316110401	360
1316110501	360
1316110601	360
1316110701	360
1316110801	360
1316210008	357
1316210108	357
1316210208	357
1316210308	357
1316210408	357
1316210508	357
1316210608	357
1316210708	357
1316210808	357
1316210908	357
1316300108	407
1316300208	407

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1316300308	407
1316300408	407
1316300508	407
1316300808	407
1316300908	407
1316301008	407
1316301108	407
1316301308	407
1320000	454
1322000	480
1330100	526
1330101	526
1330200	526
1330201	526
1330300	526
1330301	526
1330400	526
1330401	526
1330500	526
1330501	526
1330600	526
1330601	526
1330700	526
1330701	526
1332600	526
1332601	526
1332700	526
1332701	526
1332800	526
1332801	526
1332900	526
1332901	526
1333000	526
1333001	526
1333100	526
1333101	526
1333200	526
1333201	526
1351120	530
1391	478
1392	478
1393	478
1400100000	330
1400100001	330
1400100005	330
1400100006	330
1400100008	330
1400100100	330
1400100101	330
1400100105	330
1400100108	330
1400100200	330
1400100201	330
1400100205	330
1400100208	330
1400100300	330
1400100301	330
1400100305	330

EDP Number	Page No.
1400100308	330
1400100400	330
1400100401	330
1400100405	330
1400100408	330
1400100500	330
1400100501	330
1400100505	330
1400100508	330
1400100600	330
1400100601	330
1400100608	330
1400100700	330
1400100701	330
1400100708	330
1400100800	330
1400100801	330
1400100805	330
1400100808	330
1400100900	330
1400100901	330
1400100905	330
1400100908	330
1400101000	330
1400101001	330
1400101005	330
1400101008	330
1400101100	330
1400101101	330
1400101105	330
1400101108	330
1400101200	330
1400101201	330
1400101208	330
1400101300	330
1400101301	330
1400101308	330
1400101400	330
1400101401	330
1400101405	330
1400101408	330
1400101500	330
1400101501	330
1400101505	330
1400101508	330
1400101600	330
1400101601	330
1400101605	330
1400101608	330
1400101700	330
1400101701	330
1400101705	330
1400101708	330
1400101800	330
1400101801	330
1400101805	330
1400101808	330
1400101900	330

EDP Number	Page No.
1400101901	330
1400101905	330
1400101908	330
1400102000	330
1400102001	330
1400102005	330
1400102008	330
1400102100	330
1400102101	330
1400102108	330
1400102200	330
1400102201	330
1400102205	330
1400102208	330
1400102300	330
1400102301	330
1400102305	330
1400102306	330
1400102308	330
1400102400	330
1400102401	330
1400102405	330
1400102408	330
1400102500	330
1400102501	330
1400102505	330
1400102508	330
1400102600	330
1400102601	330
1400102605	330
1400102608	330
1400102700	330
1400102701	330
1400102705	330
1400102708	330
1400102800	330
1400102801	330
1400102805	330
1400102808	330
1400102900	330
1400102901	330
1400102905	330
1400102908	330
1400103000	330
1400103001	330
1400103005	330
1400103008	330
1400103100	330
1400103101	330
1400103105	330
1400103108	330
1400103200	330
1400103201	330
1400103205	330
1400103208	330
1400103300	330
1400103301	330
1400103305	330

EDP Number	Page No.
1400103308	330
1400103400	330
1400103401	330
1400103408	330
1400103500	330
1400103501	330
1400103508	330
1400103600	330
1400103601	330
1400103608	330
1400103700	330
1400103701	330
1400103705	330
1400103708	330
1400103800	330
1400103801	330
1400103805	330
1400103808	330
1400103900	330
1400103901	330
1400103905	330
1400103908	330
1400104000	330
1400104001	330
1400104008	330
1400104100	330
1400104101	330
1400104108	330
1400104200	330
1400104201	330
1400104208	330
1400104300	330
1400104301	330
1400104305	330
1400104308	330
1400104400	330
1400104401	330
1400104405	330
1400104408	330
1400104500	330
1400104501	330
1400104505	330
1400104508	330
1400104600	330
1400104601	330
1400104605	330
1400104608	330
1400104700	330
1400104701	330
1400104705	330
1400104708	330
1400104800	330
1400104801	330
1400104808	330
1400104900	331
1400104901	331
1400104905	331
1400104906	331

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1400104908	331
1400105000	331
1400105001	331
1400105005	331
1400105008	331
1400105100	331
1400105101	331
1400105105	331
1400105108	331
1400105200	331
1400105201	331
1400105205	331
1400105208	331
1400105300	331
1400105301	331
1400105305	331
1400105306	331
1400105308	331
1400105400	331
1400105401	331
1400105405	331
1400105408	331
1400105500	331
1400105501	331
1400105505	331
1400105508	331
1400105600	331
1400105601	331
1400105605	331
1400105608	331
1400105700	331
1400105701	331
1400105705	331
1400105708	331
1400105800	331
1400105801	331
1400105805	331
1400105808	331
1400105900	331
1400105901	331
1400105905	331
1400105908	331
1400106000	331
1400106001	331
1400106005	331
1400106008	331
1400106100	331
1400106101	331
1400106105	331
1400106108	331
1400106200	331
1400106201	331
1400106205	331
1400106208	331
1400106300	331
1400106301	331
1400106305	331
1400106308	331

EDP Number	Page No.
1400106400	331
1400106401	331
1400106405	331
1400106408	331
1400106500	331
1400106501	331
1400106505	331
1400106508	331
1400106600	331
1400106601	331
1400106605	331
1400106608	331
1400106700	331
1400106701	331
1400106705	331
1400106708	331
1400106800	331
1400106801	331
1400106808	331
1400106900	331
1400106901	331
1400106908	331
1400107000	331
1400107001	331
1400107005	331
1400107008	331
1400107100	331
1400107101	331
1400107105	331
1400107108	331
1400107200	331
1400107201	331
1400107208	331
1400107300	331
1400107301	331
1400107308	331
1400107400	331
1400107401	331
1400107408	331
1400107500	331
1400107501	331
1400107508	331
1400107600	331
1400107601	331
1400107608	331
1400107700	331
1400107701	331
1400107705	331
1400107708	331
1400107800	331
1400107801	331
1400107808	331
1400107900	331
1400107901	331
1400107905	331
1400107908	331
1400108000	331
1400108001	331

EDP Number	Page No.
1400108005	331
1400108008	331
1400108100	331
1400108101	331
1400108105	331
1400108108	331
1400108200	331
1400108201	331
1400108205	331
1400108208	331
1400108300	331
1400108301	331
1400108305	331
1400108308	331
1400108400	331
1400108401	331
1400108405	331
1400108408	331
1400108500	331
1400108501	331
1400108505	331
1400108508	331
1400108600	331
1400108601	331
1400108605	331
1400108608	331
1400108700	331
1400108701	331
1400108705	331
1400108708	331
1400108800	332
1400108801	332
1400108805	332
1400108808	332
1400108900	332
1400108901	332
1400108905	332
1400108908	332
1400109000	332
1400109001	332
1400109005	332
1400109008	332
1400109100	332
1400109101	332
1400109105	332
1400109108	332
1400109200	332
1400109201	332
1400109205	332
1400109208	332
1400109300	332
1400109301	332
1400109305	332
1400109308	332
1400109400	332
1400109401	332
1400109405	332
1400109408	332

EDP Number	Page No.
1400109500	332
1400109501	332
1400109505	332
1400109508	332
1400109600	332
1400109601	332
1400109605	332
1400109608	332
1400109700	332
1400109701	332
1400109705	332
1400109708	332
1400109800	332
1400109801	332
1400109805	332
1400109808	332
1400109900	332
1400109901	332
1400109905	332
1400109908	332
1400110000	332
1400110001	332
1400110005	332
1400110008	332
1400110100	332
1400110101	332
1400110105	332
1400110108	332
1400110200	332
1400110201	332
1400110205	332
1400110206	332
1400110208	332
1400110300	332
1400110301	332
1400110305	332
1400110308	332
1400110400	332
1400110401	332
1400110405	332
1400110406	332
1400110408	332
1400110500	332
1400110501	332
1400110505	332
1400110508	332
1400110600	332
1400110601	332
1400110605	332
1400110606	332
1400110608	332
1400110700	332
1400110701	332
1400110705	332
1400110708	332
1400110800	332
1400110801	332
1400110805	332

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1400110808	332
1400110900	332
1400110901	332
1400110905	332
1400110908	332
1400111000	332
1400111001	332
1400111005	332
1400111008	332
1400111100	332
1400111101	332
1400111105	332
1400111108	332
1400111200	332
1400111201	332
1400111205	332
1400111208	332
1400111300	332
1400111301	332
1400111305	332
1400111308	332
1400111400	332
1400111401	332
1400111405	332
1400111408	332
1400111500	332
1400111501	332
1400111505	332
1400111508	332
1400111600	332
1400111601	332
1400111605	332
1400111608	332
1400111700	332
1400111701	332
1400111705	332
1400111708	332
1400111800	332
1400111801	332
1400111805	332
1400111808	332
1400111900	332
1400111901	332
1400111905	332
1400111908	332
1400112000	332
1400112001	332
1400112005	332
1400112008	332
1400112100	332
1400112101	332
1400112105	332
1400112108	332
1400112200	332
1400112201	332
1400112205	332
1400112208	332
1400112300	332

EDP Number	Page No.
1400112301	332
1400112305	332
1400112308	332
1400112400	332
1400112401	332
1400112405	332
1400112408	332
1400112500	332
1400112501	332
1400112505	332
1400112508	332
1400112600	332
1400112601	332
1400112605	332
1400112608	332
1400112700	332
1400112701	332
1400112705	332
1400112708	332
1400112800	332
1400112801	332
1400112805	332
1400112808	332
1400112900	332
1400112901	332
1400112905	332
1400112908	332
1400113000	332
1400113001	332
1400113005	332
1400113008	332
1400113100	332
1400113101	332
1400113105	332
1400113108	332
1400113200	333
1400113201	333
1400113205	333
1400113208	333
1400113300	333
1400113301	333
1400113305	333
1400113308	333
1400113400	333
1400113401	333
1400113405	333
1400113408	333
1400113500	333
1400113501	333
1400113505	333
1400113508	333
1400113600	333
1400113601	333
1400113605	333
1400113608	333
1400113700	333
1400113701	333
1400113705	333

EDP Number	Page No.
1400113708	333
1400113800	333
1400113801	333
1400113805	333
1400113808	333
1400113900	333
1400113901	333
1400113905	333
1400113908	333
1400114000	333
1400114001	333
1400114005	333
1400114008	333
1400114100	333
1400114101	333
1400114105	333
1400114106	333
1400114108	333
1400114200	333
1400114201	333
1400114205	333
1400114208	333
1400114300	333
1400114301	333
1400114305	333
1400114308	333
1400114400	333
1400114401	333
1400114405	333
1400114408	333
1400114500	333
1400114501	333
1400114505	333
1400114506	333
1400114508	333
1400114600	333
1400114601	333
1400114605	333
1400114608	333
1400114700	333
1400114701	333
1400114705	333
1400114708	333
1400114800	333
1400114801	333
1400114805	333
1400114808	333
1400114900	333
1400114901	333
1400114905	333
1400114908	333
1400115000	333
1400115001	333
1400115005	333
1400115008	333
1400115100	333
1400115101	333
1400115105	333

EDP Number	Page No.
1400115108	333
1400115200	333
1400115201	333
1400115205	333
1400115208	333
1400115300	333
1400115301	333
1400115305	333
1400115308	333
1400115400	333
1400115401	333
1400115405	333
1400115408	333
1400115500	333
1400115501	333
1400115505	333
1400115508	333
1400115600	333
1400115601	333
1400115605	333
1400115608	333
1400115700	333
1400115701	333
1400115705	333
1400115708	333
1400115800	333
1400115801	333
1400115805	333
1400115808	333
1400115900	333
1400115901	333
1400115905	333
1400115908	333
1400116000	333
1400116001	333
1400116005	333
1400116008	333
1400116100	333
1400116101	333
1400116105	333
1400116108	333
1400116200	333
1400116201	333
1400116205	333
1400116208	333
1400116300	333
1400116301	333
1400116305	333
1400116308	333
1400116400	333
1400116401	333
1400116405	333
1400116408	333
1400116500	333
1400116501	333
1400116505	333
1400116508	333
1400116600	333

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1400116601	333
1400116605	333
1400116608	333
1400116700	333
1400116701	333
1400116705	333
1400116708	333
1400116800	333
1400116801	333
1400116805	333
1400116808	333
1400116900	333
1400116901	333
1400116905	333
1400116908	333
1400117000	333
1400117001	333
1400117005	333
1400117008	333
1400117100	333
1400117101	333
1400117105	333
1400117108	333
1400117200	333
1400117201	333
1400117205	333
1400117208	333
1400117300	333
1400117301	333
1400117305	333
1400117308	333
1400117400	334
1400117401	334
1400117405	334
1400117408	334
1400117500	334
1400117501	334
1400117505	334
1400117508	334
1400117600	334
1400117601	334
1400117605	334
1400117608	334
1400117700	334
1400117701	334
1400117705	334
1400117708	334
1400117800	334
1400117801	334
1400117805	334
1400117808	334
1400117900	334
1400117901	334
1400117905	334
1400117908	334
1400118000	334
1400118001	334
1400118005	334

EDP Number	Page No.
1400118008	334
1400118100	334
1400118101	334
1400118105	334
1400118108	334
1400118200	334
1400118201	334
1400118205	334
1400118208	334
1400118300	334
1400118301	334
1400118305	334
1400118308	334
1400118400	334
1400118401	334
1400118405	334
1400118408	334
1400118500	334
1400118501	334
1400118505	334
1400118508	334
1400118600	334
1400118601	334
1400118605	334
1400118608	334
1400118700	334
1400118701	334
1400118705	334
1400118708	334
1400118800	334
1400118801	334
1400118805	334
1400118808	334
1400118900	334
1400118901	334
1400118905	334
1400118908	334
1400119000	334
1400119001	334
1400119005	334
1400119008	334
1400119100	334
1400119101	334
1400119105	334
1400119108	334
1400119200	334
1400119201	334
1400119205	334
1400119208	334
1400119300	334
1400119301	334
1400119305	334
1400119308	334
1400119400	334
1400119401	334
1400119405	334
1400119408	334
1400119500	334

EDP Number	Page No.
1400119501	334
1400119505	334
1400119508	334
1400119600	334
1400119601	334
1400119605	334
1400119608	334
1400119700	334
1400119701	334
1400119705	334
1400119708	334
1400119800	334
1400119801	334
1400119805	334
1400119808	334
1400119900	334
1400119901	334
1400119905	334
1400119908	334
1400120000	334
1400120001	334
1400120005	334
1400120008	334
1400120100	334
1400120101	334
1400120105	334
1400120108	334
1400120200	334
1400120201	334
1400120205	334
1400120208	334
1400120300	334
1400120301	334
1400120305	334
1400120308	334
1400120400	334
1400120401	334
1400120405	334
1400120406	334
1400120408	334
1400120500	334
1400120501	334
1400120505	334
1400120506	334
1400120508	334
1400120600	334
1400120601	334
1400120605	334
1400120608	334
1400120700	334
1400120701	334
1400120705	334
1400120706	334
1400120708	334
1400120800	334
1400120801	334
1400120805	334
1400120808	334

EDP Number	Page No.
1400120900	334
1400120901	334
1400120905	334
1400120908	334
1400121000	334
1400121001	334
1400121005	334
1400121008	334
1400121100	334
1400121101	334
1400121105	334
1400121108	334
1400121200	334
1400121201	334
1400121205	334
1400121208	334
1400121300	334
1400121301	334
1400121305	334
1400121308	334
1400121400	334
1400121401	334
1400121405	334
1400121408	334
1400121500	334
1400121501	334
1400121505	334
1400121508	334
1400121600	334
1400121601	334
1400121605	334
1400121608	334
1400121700	334
1400121701	334
1400121705	334
1400121708	334
1400121800	334
1400121801	334
1400121805	334
1400121808	334
1400121900	334
1400121901	334
1400121905	334
1400121908	334
1400122000	335
1400122001	335
1400122005	335
1400122008	335
1400122100	335
1400122101	335
1400122105	335
1400122108	335
1400122200	335
1400122201	335
1400122205	335
1400122208	335
1400122300	335
1400122301	335

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1400122305	335
1400122308	335
1400122400	335
1400122401	335
1400122405	335
1400122408	335
1400122500	335
1400122501	335
1400122505	335
1400122508	335
1400122600	335
1400122601	335
1400122605	335
1400122608	335
1400122700	335
1400122701	335
1400122705	335
1400122708	335
1400122800	335
1400122801	335
1400122805	335
1400122808	335
1400122900	335
1400122901	335
1400122905	335
1400122908	335
1400123000	335
1400123001	335
1400123005	335
1400123008	335
1400123100	335
1400123101	335
1400123105	335
1400123108	335
1400123200	335
1400123201	335
1400123205	335
1400123208	335
1400123300	335
1400123301	335
1400123305	335
1400123308	335
1400123400	335
1400123401	335
1400123405	335
1400123408	335
1400123500	335
1400123501	335
1400123505	335
1400123508	335
1400123600	335
1400123601	335
1400123605	335
1400123608	335
1400123700	335
1400123701	335
1400123705	335
1400123708	335

EDP Number	Page No.
1400123800	335
1400123801	335
1400123805	335
1400123808	335
1400123900	335
1400123901	335
1400123905	335
1400123908	335
1400124000	335
1400124001	335
1400124005	335
1400124008	335
1400124100	335
1400124101	335
1400124105	335
1400124108	335
1400124200	335
1400124201	335
1400124205	335
1400124208	335
1400124300	335
1400124301	335
1400124305	335
1400124308	335
1400124400	335
1400124401	335
1400124405	335
1400124408	335
1400124500	335
1400124501	335
1400124505	335
1400124508	335
1400124600	335
1400124601	335
1400124605	335
1400124608	335
1400124700	335
1400124701	335
1400124705	335
1400124708	335
1400124800	335
1400124801	335
1400124805	335
1400124808	335
1400124900	335
1400124901	335
1400124905	335
1400124908	335
1400125000	335
1400125001	335
1400125005	335
1400125008	335
1400125100	335
1400125101	335
1400125105	335
1400125108	335
1400125200	335
1400125201	335

EDP Number	Page No.
1400125205	335
1400125208	335
1400125300	335
1400125301	335
1400125305	335
1400125308	335
1400125400	335
1400125401	335
1400125405	335
1400125408	335
1400125500	335
1400125501	335
1400125505	335
1400125508	335
1400125600	335
1400125601	335
1400125605	335
1400125608	335
1400125700	335
1400125701	335
1400125705	335
1400125706	335
1400125708	335
1400125800	335
1400125801	335
1400125805	335
1400125808	335
1400125900	335
1400125901	335
1400125905	335
1400125908	335
1400126000	335
1400126001	335
1400126005	335
1400126008	335
1400126100	335
1400126101	335
1400126105	335
1400126106	335
1400126108	335
1400126200	335
1400126201	335
1400126205	335
1400126208	335
1400126300	335
1400126301	335
1400126305	335
1400126306	335
1400126308	335
1400126400	335
1400126401	335
1400126405	335
1400126408	335
1400126500	336
1400126501	336
1400126505	336
1400126508	336
1400126600	336

EDP Number	Page No.
1400126601	336
1400126605	336
1400126608	336
1400126700	336
1400126701	336
1400126705	336
1400126708	336
1400126800	336
1400126801	336
1400126805	336
1400126808	336
1400126900	336
1400126901	336
1400126905	336
1400126908	336
1400127000	336
1400127001	336
1400127005	336
1400127008	336
1400127100	336
1400127101	336
1400127105	336
1400127108	336
1400127200	336
1400127201	336
1400127205	336
1400127208	336
1400127300	336
1400127301	336
1400127305	336
1400127308	336
1400127400	336
1400127401	336
1400127405	336
1400127408	336
1400127500	336
1400127501	336
1400127505	336
1400127508	336
1400127600	336
1400127601	336
1400127605	336
1400127608	336
1400127700	336
1400127701	336
1400127705	336
1400127708	336
1400127800	336
1400127801	336
1400127805	336
1400127808	336
1400127900	336
1400127901	336
1400127905	336
1400127908	336
1400128000	336
1400128001	336
1400128005	336

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1400128008	336
1400128100	336
1400128101	336
1400128105	336
1400128108	336
1400128200	336
1400128201	336
1400128205	336
1400128208	336
1400128300	336
1400128301	336
1400128305	336
1400128308	336
1400128400	336
1400128401	336
1400128405	336
1400128408	336
1400128500	336
1400128501	336
1400128505	336
1400128508	336
1400128600	336
1400128601	336
1400128605	336
1400128608	336
1400128700	336
1400128701	336
1400128705	336
1400128708	336
1400128800	336
1400128801	336
1400128805	336
1400128808	336
1400128900	336
1400128901	336
1400128905	336
1400128908	336
1400129000	336
1400129001	336
1400129005	336
1400129008	336
1400129100	336
1400129101	336
1400129105	336
1400129108	336
1400129200	336
1400129201	336
1400129205	336
1400129208	336
1400129300	336
1400129301	336
1400129305	336
1400129308	336
1400129400	336
1400129401	336
1400129405	336
1400129408	336
1400129500	336

EDP Number	Page No.
1400129501	336
1400129505	336
1400129508	336
1400129600	336
1400129601	336
1400129605	336
1400129608	336
1400129700	336
1400129701	336
1400129705	336
1400129708	336
1400129800	336
1400129801	336
1400129805	336
1400129808	336
1400129900	336
1400129901	336
1400129905	336
1400129908	336
1400130000	336
1400130001	336
1400130005	336
1400130008	336
1400130100	336
1400130101	336
1400130105	336
1400130108	336
1400130200	336
1400130201	336
1400130205	336
1400130208	336
1400130300	336
1400130301	336
1400130305	336
1400130308	336
1400130400	336
1400130401	336
1400130405	336
1400130408	336
1400130500	336
1400130501	336
1400130505	336
1400130508	336
1400130600	336
1400130601	336
1400130605	336
1400130608	336
1400130700	336
1400130701	336
1400130705	336
1400130706	336
1400130708	336
1400130800	336
1400130801	336
1400130805	336
1400130808	336
1400130900	336
1400130901	336

EDP Number	Page No.
1400130905	336
1400130908	336
1400131000	336
1400131001	336
1400131005	336
1400131008	336
1400131100	337
1400131101	337
1400131105	337
1400131108	337
1400131200	337
1400131201	337
1400131205	337
1400131208	337
1400131300	337
1400131301	337
1400131305	337
1400131308	337
1400131400	337
1400131401	337
1400131405	337
1400131408	337
1400131500	337
1400131501	337
1400131505	337
1400131508	337
1400131600	337
1400131601	337
1400131605	337
1400131608	337
1400131700	337
1400131701	337
1400131705	337
1400131708	337
1400131800	337
1400131801	337
1400131805	337
1400131808	337
1400131900	337
1400131901	337
1400131905	337
1400131908	337
1400132000	337
1400132001	337
1400132005	337
1400132008	337
1400132100	337
1400132101	337
1400132105	337
1400132108	337
1400132200	337
1400132201	337
1400132205	337
1400132208	337
1400132300	337
1400132301	337
1400132305	337
1400132308	337

EDP Number	Page No.
1400132400	337
1400132401	337
1400132405	337
1400132408	337
1400132500	337
1400132501	337
1400132505	337
1400132508	337
1400132600	337
1400132601	337
1400132605	337
1400132608	337
1400132700	337
1400132701	337
1400132705	337
1400132708	337
1400132800	337
1400132801	337
1400132805	337
1400132808	337
1400132900	337
1400132901	337
1400132905	337
1400132908	337
1400133000	337
1400133001	337
1400133005	337
1400133008	337
1400133100	337
1400133101	337
1400133105	337
1400133108	337
1400133200	337
1400133201	337
1400133205	337
1400133208	337
1400133300	337
1400133301	337
1400133305	337
1400133308	337
1400133400	337
1400133401	337
1400133405	337
1400133408	337
1400133500	337
1400133501	337
1400133505	337
1400133508	337
1400133600	337
1400133601	337
1400133605	337
1400133608	337
1400133700	337
1400133701	337
1400133705	337
1400133708	337
1400133800	337
1400133801	337

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1400133805	337
1400133808	337
1400133900	337
1400133901	337
1400133905	337
1400133908	337
1400134000	337
1400134001	337
1400134005	337
1400134008	337
1400134100	337
1400134101	337
1400134105	337
1400134108	337
1400134200	337
1400134201	337
1400134205	337
1400134208	337
1400134300	337
1400134301	337
1400134305	337
1400134308	337
1400134400	337
1400134401	337
1400134405	337
1400134408	337
1400134500	337
1400134501	337
1400134505	337
1400134508	337
1400134600	337
1400134601	337
1400134605	337
1400134608	337
1400134700	337
1400134701	337
1400134705	337
1400134708	337
1400134800	337
1400134801	337
1400134805	337
1400134808	337
1400134900	337
1400134901	337
1400134905	337
1400134908	337
1400135000	337
1400135001	337
1400135005	337
1400135008	337
1400135100	337
1400135101	337
1400135105	337
1400135108	337
1400135200	337
1400135201	337
1400135205	337
1400135208	337

EDP Number	Page No.
1400135300	337
1400135301	337
1400135305	337
1400135308	337
1400135400	338
1400135401	338
1400135405	338
1400135408	338
1400135500	338
1400135501	338
1400135505	338
1400135508	338
1400135600	338
1400135601	338
1400135605	338
1400135608	338
1400135700	338
1400135701	338
1400135705	338
1400135708	338
1400135800	338
1400135801	338
1400135805	338
1400135808	338
1400135900	338
1400135901	338
1400135905	338
1400135908	338
1400136000	338
1400136001	338
1400136005	338
1400136008	338
1400136100	338
1400136101	338
1400136105	338
1400136108	338
1400136200	338
1400136201	338
1400136205	338
1400136208	338
1400136300	338
1400136301	338
1400136305	338
1400136308	338
1400136400	338
1400136401	338
1400136405	338
1400136408	338
1400136500	338
1400136501	338
1400136505	338
1400136508	338
1400136600	338
1400136601	338
1400136605	338
1400136608	338
1400136700	338
1400136701	338

EDP Number	Page No.
1400136705	338
1400136708	338
1400136800	338
1400136801	338
1400136805	338
1400136808	338
1400136900	338
1400136901	338
1400136905	338
1400136908	338
1400137000	338
1400137001	338
1400137005	338
1400137008	338
1400137100	338
1400137101	338
1400137105	338
1400137108	338
1400137200	338
1400137201	338
1400137205	338
1400137208	338
1400137300	338
1400137301	338
1400137305	338
1400137308	338
1400137400	338
1400137401	338
1400137405	338
1400137408	338
1400137500	338
1400137501	338
1400137505	338
1400137508	338
1400137600	338
1400137601	338
1400137605	338
1400137608	338
1400137700	338
1400137701	338
1400137705	338
1400137708	338
1400137800	338
1400137801	338
1400137805	338
1400137808	338
1400137900	338
1400137901	338
1400137905	338
1400137908	338
1400138000	338
1400138001	338
1400138005	338
1400138008	338
1400138100	338
1400138101	338
1400138105	338
1400138108	338

EDP Number	Page No.
1400138200	338
1400138201	338
1400138205	338
1400138208	338
1400138300	338
1400138301	338
1400138305	338
1400138308	338
1400138400	338
1400138401	338
1400138405	338
1400138408	338
1400138500	338
1400138501	338
1400138505	338
1400138508	338
1400138600	338
1400138601	338
1400138605	338
1400138608	338
1400138700	338
1400138701	338
1400138705	338
1400138708	338
1400138800	338
1400138801	338
1400138805	338
1400138808	338
1400138900	338
1400138901	338
1400138905	338
1400138908	338
1400139000	338
1400139001	338
1400139005	338
1400139008	338
1400139100	338
1400139101	338
1400139105	338
1400139108	338
1400139200	338
1400139201	338
1400139205	338
1400139208	338
1400139300	338
1400139301	338
1400139305	338
1400139308	338
1400139400	338
1400139401	338
1400139405	338
1400139408	338
1400139500	338
1400139501	338
1400139505	338
1400139508	338
1400139600	338
1400139601	338

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1400139605	338
1400139608	338
1400139700	338
1400139701	338
1400139705	338
1400139708	338
1400139800	338
1400139801	338
1400139805	338
1400139808	338
1400139900	338
1400139901	338
1400139905	338
1400139908	338
1400140000	338
1400140001	338
1400140005	338
1400140008	338
1400140100	338
1400140101	338
1400140105	338
1400140108	338
1400140200	338
1400140201	338
1400140205	338
1400140208	338
1400140300	338
1400140301	338
1400140305	338
1400140308	338
1400140400	339
1400140401	339
1400140405	339
1400140408	339
1400140500	339
1400140501	339
1400140505	339
1400140508	339
1400140600	339
1400140601	339
1400140605	339
1400140608	339
1400140700	339
1400140701	339
1400140705	339
1400140708	339
1400140800	339
1400140801	339
1400140805	339
1400140808	339
1400140900	339
1400140901	339
1400140905	339
1400140908	339
1400141000	339
1400141001	339
1400141005	339
1400141008	339

EDP Number	Page No.
1400141100	339
1400141101	339
1400141105	339
1400141108	339
1400141200	339
1400141201	339
1400141205	339
1400141208	339
1400141300	339
1400141301	339
1400141305	339
1400141308	339
1400141400	339
1400141401	339
1400141405	339
1400141408	339
1400141500	339
1400141501	339
1400141505	339
1400141508	339
1400141600	339
1400141601	339
1400141605	339
1400141608	339
1400141700	339
1400141701	339
1400141705	339
1400141708	339
1400141800	339
1400141801	339
1400141805	339
1400141808	339
1400141900	339
1400141901	339
1400141905	339
1400141908	339
1400142000	339
1400142001	339
1400142005	339
1400142008	339
1400142100	339
1400142101	339
1400142105	339
1400142108	339
1400142200	339
1400142201	339
1400142205	339
1400142208	339
1400142300	339
1400142301	339
1400142305	339
1400142308	339
1400142400	339
1400142401	339
1400142405	339
1400142408	339
1400142500	339
1400142501	339

EDP Number	Page No.
1400142505	339
1400142508	339
1400142600	339
1400142601	339
1400142605	339
1400142608	339
1400142700	339
1400142701	339
1400142705	339
1400142708	339
1400142800	339
1400142801	339
1400142805	339
1400142808	339
1400142900	339
1400142901	339
1400142905	339
1400142908	339
1400143000	339
1400143001	339
1400143005	339
1400143008	339
1400143100	339
1400143101	339
1400143105	339
1400143108	339
1400143200	339
1400143201	339
1400143205	339
1400143208	339
1400143300	339
1400143301	339
1400143305	339
1400143308	339
1400143400	339
1400143401	339
1400143405	339
1400143408	339
1400143500	339
1400143501	339
1400143505	339
1400143508	339
1400143600	339
1400143601	339
1400143605	339
1400143608	339
1400143700	339
1400143701	339
1400143705	339
1400143708	339
1400143800	339
1400143801	339
1400143805	339
1400143808	339
1400143900	339
1400143901	339
1400143905	339
1400143908	339

EDP Number	Page No.
1400144000	339
1400144001	339
1400144005	339
1400144008	339
1400144100	339
1400144101	339
1400144105	339
1400144108	339
1400144200	339
1400144201	339
1400144205	339
1400144208	339
1400144300	339
1400144301	339
1400144305	339
1400144308	339
1400144400	339
1400144401	339
1400144405	339
1400144408	339
1400144500	339
1400144501	339
1400144505	339
1400144508	339
1400144600	339
1400144601	339
1400144605	339
1400144608	339
1400144700	339
1400144701	339
1400144705	339
1400144708	339
1400144800	339
1400144801	339
1400144805	339
1400144808	339
1400144900	340
1400144901	340
1400144905	340
1400144908	340
1400145000	340
1400145001	340
1400145005	340
1400145008	340
1400145100	340
1400145101	340
1400145105	340
1400145108	340
1400145200	340
1400145201	340
1400145205	340
1400145208	340
1400145300	340
1400145301	340
1400145305	340
1400145308	340
1400145400	340
1400145401	340

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1400145405	340
1400145408	340
1400145500	340
1400145501	340
1400145505	340
1400145508	340
1400145600	340
1400145601	340
1400145605	340
1400145608	340
1400145700	340
1400145701	340
1400145705	340
1400145708	340
1400145800	340
1400145801	340
1400145805	340
1400145808	340
1400145900	340
1400145901	340
1400145905	340
1400145908	340
1400146000	340
1400146001	340
1400146005	340
1400146008	340
1400146100	340
1400146101	340
1400146105	340
1400146108	340
1400146200	340
1400146201	340
1400146205	340
1400146208	340
1400146300	340
1400146301	340
1400146305	340
1400146308	340
1400146400	340
1400146401	340
1400146405	340
1400146408	340
1400146500	340
1400146501	340
1400146505	340
1400146508	340
1400146600	340
1400146601	340
1400146605	340
1400146608	340
1400146700	340
1400146701	340
1400146705	340
1400146708	340
1400146800	340
1400146801	340
1400146805	340
1400146808	340

EDP Number	Page No.
1400146900	340
1400146901	340
1400146905	340
1400146908	340
1400147000	340
1400147001	340
1400147005	340
1400147008	340
1400147100	340
1400147101	340
1400147105	340
1400147108	340
1400147200	340
1400147201	340
1400147205	340
1400147208	340
1400147300	340
1400147301	340
1400147305	340
1400147308	340
1400147400	340
1400147401	340
1400147405	340
1400147408	340
1400147500	340
1400147501	340
1400147505	340
1400147508	340
1400147600	340
1400147601	340
1400147605	340
1400147608	340
1400147700	340
1400147701	340
1400147705	340
1400147708	340
1400147800	340
1400147801	340
1400147805	340
1400147808	340
1400147900	340
1400147901	340
1400147905	340
1400147908	340
1400148000	340
1400148001	340
1400148005	340
1400148008	340
1400148100	340
1400148101	340
1400148105	340
1400148108	340
1400148200	340
1400148201	340
1400148205	340
1400148208	340
1400148300	340
1400148301	340

EDP Number	Page No.
1400148305	340
1400148308	340
1400148400	340
1400148401	340
1400148405	340
1400148408	340
1400148500	340
1400148501	340
1400148505	340
1400148508	340
1400148600	340
1400148601	340
1400148605	340
1400148608	340
1400148700	340
1400148701	340
1400148705	340
1400148708	340
1400148800	340
1400148801	340
1400148805	340
1400148808	340
1400148900	340
1400148901	340
1400148905	340
1400148908	340
1400149000	340
1400149001	340
1400149005	340
1400149008	340
1400149100	340
1400149101	340
1400149105	340
1400149108	340
1400149200	340
1400149201	340
1400149205	340
1400149208	340
1400149300	340
1400149301	340
1400149305	340
1400149308	340
1400149400	340
1400149401	340
1400149405	340
1400149408	340
1400149500	340
1400149501	340
1400149505	340
1400149508	340
1400149600	340
1400149601	340
1400149605	340
1400149608	340
1400149700	340
1400149701	340
1400149705	340
1400149708	340

EDP Number	Page No.
1400149800	340
1400149801	340
1400149805	340
1400149808	340
1400149900	341
1400149901	341
1400149905	341
1400149908	341
1400150000	341
1400150001	341
1400150005	341
1400150008	341
1400150100	341
1400150101	341
1400150105	341
1400150108	341
1400150200	341
1400150201	341
1400150205	341
1400150208	341
1400150300	341
1400150301	341
1400150305	341
1400150308	341
1400150400	341
1400150401	341
1400150405	341
1400150408	341
1400150500	341
1400150501	341
1400150505	341
1400150508	341
1400150600	341
1400150601	341
1400150605	341
1400150608	341
1400150700	341
1400150701	341
1400150705	341
1400150708	341
1400150800	341
1400150801	341
1400150805	341
1400150808	341
1400150900	341
1400150901	341
1400150905	341
1400150908	341
1400151000	341
1400151001	341
1400151005	341
1400151008	341
1400151100	341
1400151101	341
1400151105	341
1400151108	341
1400151200	341
1400151201	341

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1400151205	341
1400151208	341
1400151300	341
1400151301	341
1400151305	341
1400151308	341
1400151400	341
1400151401	341
1400151405	341
1400151408	341
1400151500	341
1400151501	341
1400151505	341
1400151508	341
1400151600	341
1400151601	341
1400151605	341
1400151608	341
1400151700	341
1400151701	341
1400151705	341
1400151708	341
1400151800	341
1400151801	341
1400151805	341
1400151808	341
1400151900	341
1400151901	341
1400151905	341
1400151908	341
1400152000	341
1400152001	341
1400152005	341
1400152008	341
1400152100	341
1400152101	341
1400152105	341
1400152108	341
1400152200	341
1400152201	341
1400152205	341
1400152208	341
1400152300	341
1400152301	341
1400152305	341
1400152308	341
1400152400	341
1400152401	341
1400152405	341
1400152408	341
1400152500	341
1400152501	341
1400152505	341
1400152508	341
1400152600	341
1400152601	341
1400152605	341
1400152608	341

EDP Number	Page No.
1400152700	341
1400152701	341
1400152705	341
1400152708	341
1400152800	341
1400152801	341
1400152805	341
1400152808	341
1400152900	341
1400152901	341
1400152905	341
1400152908	341
1400153000	341
1400153001	341
1400153005	341
1400153008	341
1400153100	341
1400153101	341
1400153105	341
1400153108	341
1400153200	341
1400153201	341
1400153205	341
1400153208	341
1400153300	341
1400153301	341
1400153305	341
1400153308	341
1400153400	341
1400153401	341
1400153405	341
1400153408	341
1400153500	341
1400153501	341
1400153505	341
1400153508	341
1400153600	341
1400153601	341
1400153605	341
1400153608	341
1400153700	341
1400153701	341
1400153705	341
1400153708	341
1400153800	341
1400153801	341
1400153805	341
1400153808	341
1400153900	341
1400153901	341
1400153905	341
1400153908	341
1400154000	341
1400154001	341
1400154005	341
1400154008	341
1400154100	341
1400154101	341

EDP Number	Page No.
1400154105	341
1400154108	341
1400154200	341
1400154201	341
1400154205	341
1400154208	341
1400154300	341
1400154301	341
1400154305	341
1400154308	341
1400154400	342
1400154401	342
1400154405	342
1400154408	342
1400154500	342
1400154501	342
1400154505	342
1400154508	342
1400154600	342
1400154601	342
1400154605	342
1400154608	342
1400154700	342
1400154701	342
1400154705	342
1400154708	342
1400154800	342
1400154801	342
1400154805	342
1400154808	342
1400154900	342
1400154901	342
1400154905	342
1400154908	342
1400155000	342
1400155001	342
1400155005	342
1400155008	342
1400155100	342
1400155101	342
1400155105	342
1400155108	342
1400155200	342
1400155201	342
1400155205	342
1400155208	342
1400155300	342
1400155301	342
1400155305	342
1400155308	342
1400155400	342
1400155401	342
1400155405	342
1400155408	342
1400155500	342
1400155501	342
1400155505	342
1400155508	342

EDP Number	Page No.
1400155600	342
1400155601	342
1400155605	342
1400155608	342
1400155700	342
1400155701	342
1400155705	342
1400155708	342
1400155800	342
1400155801	342
1400155805	342
1400155808	342
1400155900	342
1400155901	342
1400155905	342
1400155908	342
1400156000	342
1400156001	342
1400156005	342
1400156008	342
1400156100	342
1400156101	342
1400156105	342
1400156108	342
1400156200	342
1400156201	342
1400156205	342
1400156208	342
1400156300	342
1400156301	342
1400156305	342
1400156308	342
1400156400	342
1400156401	342
1400156405	342
1400156408	342
1400156500	342
1400156501	342
1400156505	342
1400156508	342
1400156600	342
1400156601	342
1400156605	342
1400156608	342
1400156700	342
1400156701	342
1400156705	342
1400156708	342
1400156800	342
1400156801	342
1400156805	342
1400156808	342
1400156900	342
1400156901	342
1400156905	342
1400156908	342
1400157000	342
1400157001	342

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1400157005	342
1400157008	342
1400157100	334
1400157101	334
1400157105	334
1400157108	334
1400157200	334
1400157201	334
1400157205	334
1400157208	334
1400157300	331
1400157301	331
1400157305	331
1400157308	331
1400157400	331
1400157401	331
1400157405	331
1400157408	331
1400157500	332
1400157501	332
1400157600	332
1400157601	332
1400157700	332
1400157701	332
1400157808	330
1400157908	330
1400158008	331
1400158108	331
1400158208	331
1400158308	332
1400158408	332
1400158508	333
1400158608	333
1400158708	334
1400158808	334
1400158908	336
1400159008	336
1400159108	336
1400159208	336
1400159308	337
1400159408	337
1400159508	338
1400159608	340
1400159708	340
1400159808	331
1400159908	332
1400160008	333
1400160108	334
1405000008	325
1405000108	325
1405000208	325
1405000308	325
1405000408	325
1405000508	325
1405000608	325
1405000708	325
1405000808	325
1405000908	325

EDP Number	Page No.
1405001008	325
1405001108	325
1405001208	325
1405001308	325
1405001408	325
1405001508	325
1405001608	325
1405001708	325
1405001808	325
1405001908	325
1405002008	325
1405002108	325
1405002208	325
1405002308	325
1405002408	325
1405002508	325
1405002608	325
1405002708	325
1405002808	325
1405002908	325
1405003008	325
1405003108	325
1405003208	325
1405003308	325
1405003408	325
1405003508	325
1405003608	325
1405003708	325
1405003808	325
1405003908	325
1405004008	326
1405004108	326
1405004208	326
1405004308	326
1405004408	326
1405004508	326
1405004608	326
1405004708	326
1405004808	326
1405004908	326
1405005008	326
1405005108	326
1405005208	326
1405005308	326
1405005408	326
1405005508	326
1405005608	326
1405005708	326
1405005808	326
1405005908	326
1405006008	326
1405006108	326
1405006208	326
1405006308	326
1405006408	326
1405006508	326
1405006608	326
1405006708	326

EDP Number	Page No.
1405006808	326
1405006908	326
1405007008	326
1405007108	326
1405007208	326
1405007308	326
1405007408	326
1405007508	326
1405007608	326
1405007708	326
1405007808	326
1405007908	326
1405008008	326
1405008108	326
1405008208	326
1405008308	326
1405008408	326
1405008508	326
1405008608	326
1405008708	326
1405008808	326
1405008908	327
1405009008	327
1405009108	327
1405009208	327
1405009308	327
1405009408	327
1405009508	327
1405009608	327
1405009708	327
1405009808	327
1405009908	327
1405010008	327
1405010108	327
1405010208	327
1405010308	327
1405010408	327
1405010508	327
1405010608	327
1405010708	327
1405010808	327
1405010908	327
1405011008	327
1405011108	327
1405011208	327
1405011308	327
1405011408	327
1405011508	327
1405011608	327
1405011708	327
1405011808	327
1405011908	327
1405012008	327
1405012108	327
1405012208	327
1405012308	327
1406000	400
1406100	400

EDP Number	Page No.
1406400	400
1406401	400
1406405	400
1406408	400
1406500	400
1406501	400
1406505	400
1406508	400
1407000	400
1407008	400
1407100	400
1407108	400
1410100000	343
1410100001	343
1410100005	343
1410100008	343
1410100100	343
1410100101	343
1410100105	343
1410100108	343
1410100200	343
1410100201	343
1410100205	343
1410100208	343
1410100300	343
1410100301	343
1410100305	343
1410100400	343
1410100401	343
1410100405	343
1410100406	343
1410100408	343
1410100500	343
1410100501	343
1410100505	343
1410100508	343
1410100600	343
1410100601	343
1410100605	343
1410100608	343
1410100700	343
1410100701	343
1410100705	343
1410100708	343
1410100800	343
1410100801	343
1410100805	343
1410100806	343
1410100808	343
1410100900	343
1410100901	343
1410100905	343
1410100908	343
1410101000	343
1410101001	343
1410101005	343
1410101008	343
1410101100	343

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1410101101	343
1410101105	343
1410101106	343
1410101108	343
1410101200	343
1410101201	343
1410101205	343
1410101300	343
1410101301	343
1410101305	343
1410101400	343
1410101401	343
1410101405	343
1410101406	343
1410101408	343
1410101500	343
1410101501	343
1410101505	343
1410101508	343
1410101600	343
1410101601	343
1410101605	343
1410101608	343
1410101700	343
1410101701	343
1410101705	343
1410101708	343
1410101800	343
1410101801	343
1410101805	343
1410101808	343
1410101900	343
1410101901	343
1410101905	343
1410101908	343
1410102000	343
1410102001	343
1410102005	343
1410102008	343
1410102100	344
1410102101	344
1410102105	344
1410102108	344
1410102200	344
1410102201	344
1410102205	344
1410102208	344
1410102300	344
1410102301	344
1410102305	344
1410102308	344
1410102400	344
1410102401	344
1410102405	344
1410102406	344
1410102408	344
1410102500	344
1410102501	344

EDP Number	Page No.
1410102505	344
1410102508	344
1410102600	344
1410102601	344
1410102605	344
1410102608	344
1410102700	344
1410102701	344
1410102705	344
1410102708	344
1410102800	344
1410102801	344
1410102805	344
1410102808	344
1410102900	344
1410102901	344
1410102905	344
1410102908	344
1410103000	344
1410103001	344
1410103005	344
1410103008	344
1410103100	344
1410103101	344
1410103105	344
1410103108	344
1410103200	344
1410103201	344
1410103205	344
1410103208	344
1410103300	344
1410103301	344
1410103305	344
1410103308	344
1410103400	344
1410103401	344
1410103405	344
1410103408	344
1410103500	344
1410103501	344
1410103505	344
1410103508	344
1410103600	344
1410103601	344
1410103605	344
1410103608	344
1410103700	344
1410103701	344
1410103705	344
1410103708	344
1410103800	344
1410103801	344
1410103805	344
1410103808	344
1410103900	344
1410103901	344
1410103905	344
1410103906	344

EDP Number	Page No.
1410103908	344
1410104000	344
1410104001	344
1410104005	344
1410104008	344
1410104100	344
1410104101	344
1410104105	344
1410104108	344
1410104200	344
1410104201	344
1410104205	344
1410104208	344
1410104300	344
1410104301	344
1410104305	344
1410104308	344
1410104400	344
1410104401	344
1410104405	344
1410104408	344
1410104500	344
1410104501	344
1410104505	344
1410104506	344
1410104508	344
1410104600	344
1410104601	344
1410104605	344
1410104608	344
1410104700	344
1410104701	344
1410104705	344
1410104708	344
1410104800	345
1410104801	345
1410104805	345
1410104808	345
1410104900	345
1410104901	345
1410104905	345
1410104908	345
1410105000	345
1410105001	345
1410105005	345
1410105008	345
1410105100	345
1410105101	345
1410105105	345
1410105108	345
1410105200	345
1410105201	345
1410105205	345
1410105208	345
1410105300	345
1410105301	345
1410105305	345
1410105308	345

EDP Number	Page No.
1410105400	345
1410105401	345
1410105405	345
1410105408	345
1410105500	345
1410105501	345
1410105505	345
1410105508	345
1410105600	345
1410105601	345
1410105605	345
1410105608	345
1410105700	345
1410105701	345
1410105705	345
1410105708	345
1410105800	345
1410105801	345
1410105805	345
1410105808	345
1410105900	345
1410105901	345
1410105905	345
1410105908	345
1410106000	343
1410106108	343
1410106208	343
1410106308	343
1410106408	343
1410106508	343
1410106608	343
1410106708	343
1410106808	343
1410106908	343
1410107008	343
1410107108	343
1410107208	343
1410107308	343
1410107408	343
1410107508	343
1410107608	343
1410107708	344
1410107808	344
1410107908	344
1410108008	344
1410108108	344
1410108208	344
1410108308	344
1410108408	344
1410108508	344
1410108608	344
1410108708	344
1410108808	344
1410108908	344
1410109008	344
1410109108	344
1410109208	344
1410109308	344

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1410109408	344
1410109508	344
1410109608	344
1410109708	344
1410109808	345
1410109908	345
1410110008	345
1410110108	345
1410110208	345
1410110308	345
1410110508	344
1410110608	344
1410110700	343
1411	478
1412	478
1412400	400
1412401	400
1412405	400
1412408	400
1412500	400
1412501	400
1412505	400
1412508	400
1412800	400
1412805	400
1412808	400
1412900	400
1412901	400
1412905	400
1412908	400
1413	478
1413200	400
1413205	400
1413208	400
1413300	400
1413301	400
1413305	400
1413308	400
1413400	400
1413405	400
1413408	400
1413500	400
1413501	400
1413505	400
1413508	400
1413600	400
1413700	400
1413701	400
1413708	400
1415000008	328
1415000108	328
1415000208	328
1415000308	328
1415000408	328
1415000508	328
1415000608	328
1415000708	328
1415000808	328

EDP Number	Page No.
1415000908	328
1415001008	328
1415001108	328
1415001208	328
1415001308	328
1415001408	328
1415001508	328
1415001608	328
1415001708	328
1415001808	328
1415001908	328
1415002008	328
1415002108	328
1415002208	328
1415002308	328
1415002408	328
1415002508	328
1415002608	328
1415002708	328
1415002808	328
1415002908	328
1415003008	328
1415003108	328
1415003208	328
1415003308	328
1415003408	328
1415003508	328
1415003608	328
1415003708	328
1415003808	328
1415003908	328
1415004008	328
1415004108	328
1415004208	329
1415004308	329
1415004408	329
1415004508	329
1415004608	328
1415004708	328
1415004808	328
1415004908	328
1415310100	347
1415310200	347
1415310300	347
1415310400	347
1430000	400
1430001	400
1430005	400
1430008	400
1430100	400
1430101	400
1430105	400
1430108	400
1430200	400
1430205	400
1430208	400
1430300	400
1430305	400

EDP Number	Page No.
1430308	400
1430400	400
1430401	400
1430405	400
1430408	400
1430500	400
1430501	400
1430505	400
1430508	400
1430600	400
1430605	400
1430608	400
1430700	400
1430705	400
1430708	400
1430800	400
1430801	400
1430805	400
1430808	400
1430900	400
1430901	400
1430905	400
1430908	400
1431000	400
1431005	400
1431008	400
1431100	400
1431105	400
1431108	400
1431200	400
1431205	400
1431208	400
1431300	400
1431305	400
1431308	400
1431600	400
1431605	400
1431608	400
1431700	400
1431705	400
1431708	400
1432000	400
1432001	400
1432005	400
1432008	400
1432100	400
1432101	400
1432105	400
1432108	400
1432400	400
1432405	400
1432408	400
1432500	400
1432505	400
1432508	400
1432800	400
1432808	400
1432900	400

EDP Number	Page No.
1432905	400
1432908	400
1433200	400
1433208	400
1433300	400
1433305	400
1433308	400
1433600	400
1433605	400
1433608	400
1433700	400
1433705	400
1433708	400
1434000	400
1434008	400
1434100	400
1434105	400
1434108	400
1500100100	531
1500100100LF	531
1500100200	531
1500100200LF	531
1500100300	531
1500100300LF	531
1500100400	531
1500100400LF	531
1500100500	531
1500100500LF	531
1500100600	531
1500100600LF	531
1500100700	531
1500100700LF	531
1500100800	531
1500100800LF	531
1500100900	531
1500100900LF	531
1500101000	531
1500101000LF	531
1500101100	531
1500101100LF	531
1500101200	531
1500101200LF	531
1500101300	531
1500101300LF	531
1500101400	531
1500101400LF	531
1500101500	531
1500101500LF	531
1500101600	531
1500101600LF	531
1500101700	531
1500101700LF	531
1500101800	531
1500101800LF	531
1500101900	531
1500101900LF	531
1500102000	531
1500102000LF	531

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1500102100	531
1500102100LF	531
1500102200	531
1500102200LF	531
1500102300	531
1500102300LF	531
1500102400	531
1500102400LF	531
1500102500	531
1500102500LF	531
1500102600	531
1500102600LF	531
1500102700	531
1500102700LF	531
1500102800	531
1500102800LF	531
1500102900	531
1500102900LF	531
1500103000	531
1500103000LF	531
1500103100	531
1500103100LF	531
1500103200	531
1500103200LF	531
1500103300	531
1500103300LF	531
1500103400	531
1500103400LF	531
1500103500	531
1500103500LF	531
1500103600	531
1500103600LF	531
1500103700	531
1500103700LF	531
1500103800	531
1500103800LF	531
1500103900	531
1500103900LF	531
1500104000	531
1500104000LF	531
1500104100	531
1500104100LF	531
1500104200	531
1500104200LF	531
1500104300	531
1500104300LF	531
1500104400	531
1500104400LF	531
1500104500	531
1500104500LF	531
1500200100	532
1500200100LF	532
1500200200	532
1500200200LF	532
1500200300	532
1500200300LF	532
1500200400	532
1500200400LF	532

EDP Number	Page No.
1500200500	532
1500200500LF	532
1500200600	532
1500200600LF	532
1500200700	532
1500200700LF	532
1500200800	532
1500200800LF	532
1500200900	532
1500200900LF	532
1500201000	532
1500201000LF	532
1500201100	532
1500201100LF	532
1500201200	532
1500201200LF	532
1500201300	532
1500201300LF	532
1500201400	532
1500201400LF	532
1500201500	532
1500201500LF	532
1500201600	532
1500201600LF	532
1500201700	532
1500201700LF	532
1500201800	532
1500201800LF	532
1500201900	532
1500201900LF	532
1500202000	532
1500202000LF	532
1500202100	532
1500202100LF	532
1500202200	532
1500202200LF	532
1500202300	532
1500202300LF	532
1500202400	532
1500202400LF	532
1500202500	532
1500202500LF	532
1500202600	532
1500202600LF	532
1500202700	532
1500202700LF	532
1500202800	532
1500202800LF	532
1501	478
1502	478
1503	478
15078505	205
15081005	205
15082005	205
15086005	205
15089005	205
15093505	205
15093805	205

EDP Number	Page No.
15096005	205
15098005	205
15099505	205
15101505	205
15104005	205
15106505	205
15109405	205
15110005	205
15111005	205
15113005	205
15116005	205
15120005	205
15125005	205
15128505	205
15136005	205
15140505	205
15140605	205
15144005	205
15147005	205
15149505	205
15152005	205
15154005	205
15156205	205
15157005	205
15159005	205
15161005	205
15166005	205
15169505	205
15171905	205
15173005	205
15177005	205
15180005	206
15182005	206
15185005	206
15187505	206
15189005	206
15191005	206
15193505	206
15196005	206
15199005	206
15201005	206
15203105	206
15204005	206
15205505	206
15209005	206
15213005	206
15218805	206
1522	478
15221005	206
15228005	206
1523	478
15234005	206
15234405	206
15238005	206
15242005	206
15246005	206
15250005	206
15257005	206

EDP Number	Page No.
15261005	206
15265605	206
15272005	206
15277005	206
15281205	206
15290005	206
15295005	206
15296905	206
15302005	206
15312505	206
15316005	206
15323005	206
15328105	206
15332005	206
15339005	206
15343805	206
15348005	206
15358005	206
15359405	206
15368	451
15368005	206
15375005	206
15377005	206
15386	451
15386005	207
15390605	207
15397005	207
15401	451
15404005	207
15406205	207
15413	451
15413005	207
15421905	207
15431	451
15437505	207
15453105	207
15456	451
15460	451
15468805	207
15480	451
15483	451
15484405	207
15500005	207
15509	451
15512	451
15531205	207
15557	451
15560	451
15562505	207
15578105	207
15593	451
15593805	207
15601	451
15625005	207
15629	451
15637	451
15645	451
15656205	207

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
15673	451
15687505	207
15718805	207
15750005	207
1590000	449
1590001	449
1590008	449
1590100	470
1590101	470
1590108	470
1590200	449
1590201	449
1590208	449
1590300	470
1590301	470
1590308	470
1590700	470
1590701	470
1590708	470
1590800	449
1590801	449
1590808	449
1591100	470
1591108	470
1591200	449
1591208	449
1591300	470
1591308	470
1591500	470
1591508	470
1591600	449
1591601	449
1591608	449
1591800	449
1591801	449
1591808	449
1591900	470
1592000	449
1592001	449
1592008	449
1592100	470
1592400	449
1592401	449
1592408	449
1592500	470
1592508	470
1592600	449
1592601	449
1592608	449
1592700	470
1592708	470
1592800	449
1592801	449
1592808	449
1593200	449
1593201	449
1593208	449
1593400	449

EDP Number	Page No.
1593401	449
1593408	449
1593500	473
1593600	449
1593601	449
1593608	449
1593700	470
1593708	470
1593800	449
1593801	449
1593808	449
1594000	449
1594001	449
1594008	449
1594200	449
1594201	449
1594208	449
1594300	473
1594700	470
1594701	470
1594900	473
1595100	473
1595101	473
1600007	467
1600107	467
1600207	467
1600307	467
1600407	467
1600507	467
1600607	467
1600707	467
1600807	467
1600907	467
1601	478
1601007	467
1601107	467
1601207	467
1601307	467
1601407	467
1601507	467
1601607	467
1601707	467
1601807	467
1601907	467
1602	478
1602007	467
1602107	467
1602207	467
1602307	467
1602407	467
1602507	467
1602607	467
1602707	467
1602807	467
1602907	467
1603	478
1603007	467
1603107	467

EDP Number	Page No.
1603207	467
1603307	467
1603407	467
1603507	467
1603607	467
1603707	467
1603807	467
1603907	467
1604007	467
1604107	467
1604207	467
1604307	467
1604407	467
1604507	467
1604607	467
1604707	467
1604807	467
1604907	467
1605001081	309
1605001088	309
1605001121	309
1605001128	309
1605007	467
1605011211	309
1605011241	309
1605011268	309
1605011288	309
1605011826	309
1605011878	309
1605011888	309
1605012118	308
1605012126	309
1605012135	308
1605012138	308
1605012148	308
1605012205	308
1605012208	308
1605012218	308
1605012248	308
1605012526	309
1605012578	309
1605012588	309
1605013126	309
1605013768	309
1605013788	309
1605014204	308
1605014206	308
1605014216	308
1605014246	308
1605014284	308
1605014286	308
1605014816	308
1605014846	308
1605016288	309
1605017558	309
1605017588	309
1605018111	309
1605018411	309

EDP Number	Page No.
1605034100	309
1605034107	309
1605034110	309
1605034140	309
1605034160	309
1605034167	309
1605034610	309
1605034640	309
1605038117	308
1605038147	308
1605038165	308
1605038167	308
1605038217	308
1605038245	308
1605038247	308
1605038447	308
1605051617	308
1605051647	308
1605056185	308
1605056187	308
1605056217	308
1605056245	308
1605056247	308
1605056447	308
1605058110	308
1605058117	308
1605058140	309
1605058150	308
1605058180	309
1605058187	309
1605058810	309
1605058840	309
1605076118	308
1605076145	308
1605076148	308
1605076205	308
1605076208	308
1605076218	308
1605076248	308
1605076448	308
1605078111	309
1605078141	309
1605078142	309
1605078148	309
1605078149	309
1605078901	309
1605078908	309
1605078911	309
1605078941	309
1605091110	308
1605091140	308
1605091810	308
1605091840	308
1605096120	308
1605096127	308
1605096180	308
1605096187	308
1605207	467

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1605400	448
1605401	448
1606000	448
1608107	467
1608207	467
1608307	467
1608407	467
1608507	467
1608607	467
1608707	467
1608807	467
1611400	448
1611401	448
1611800	448
1611801	448
1612200	448
1612201	448
1612400	448
1612401	448
1612600	448
1612601	448
1615006015	310
1615006018	310
1615006754	310
1615006757	310
1615007015	310
1615007018	310
1615008015	310
1615008018	310
1615008255	310
1615008259	310
1615008754	310
1615008757	310
1615010015	310
1615010018	310
1615010110	310
1615010118	310
1615010119	310
1615010140	310
1615010148	310
1615010149	310
1615010150	310
1615010156	310
1615010255	310
1615010259	310
1615010751	310
1615012100	310
1615012106	310
1615012110	310
1615012111	310
1615012140	311
1615012141	310
1615012151	310
1615012156	310
1615012210	310
1615012240	310
1615012250	310
1615012256	310

EDP Number	Page No.
1615012541	310
1615012711	310
1615012756	310
1615014022	311
1615014027	311
1615014151	311
1615014156	311
1615014212	311
1615014242	311
1615014511	311
1615014541	311
1615016111	311
1615016141	311
1615016151	311
1615016152	311
1615016202	311
1615016207	311
1615016212	311
1615016242	311
1615018111	311
1615018141	311
1615018151	311
1615018156	311
1615018212	311
1615018242	311
1615018252	311
1615018257	311
1615020111	311
1615020141	311
1615020151	311
1615020156	311
1615020212	311
1615020242	311
1615020252	311
1615020257	311
1615022111	311
1615022141	311
1615022151	311
1615022156	311
1615022202	311
1615022207	311
1615022212	311
1615022242	311
1615022252	311
1615022257	311
1615022512	311
1615022542	311
1615024111	312
1615024141	312
1615024151	312
1615024156	312
1615024203	312
1615024207	312
1615024223	312
1615024243	312
1615024305	312
1615024309	312
1615024315	312

EDP Number	Page No.
1615024345	312
1615024349	312
1615027309	312
1615030350	312
1615033350	312
1615036411	312
1615042451	312
1615045451	312
1615060118	310
1615060148	310
1615067517	310
1615067547	310
1615070118	310
1615070148	310
1615080118	310
1615080148	310
1615081219	310
1615081249	310
1615087517	310
1615087547	310
1625000802	313
1625000803	313
1625001081	316
1625001088	316
1625001121	316
1625001128	316
1625001642	313
1625001643	313
1625001722	313
1625001723	313
1625002562	313
1625002563	313
1625002642	313
1625002643	313
1625003482	313
1625003483	313
1625003562	313
1625003563	313
1625004403	313
1625004405	313
1625004483	313
1625004485	313
1625005403	313
1625005405	313
1625005443	314
1625005445	314
1625006323	314
1625006325	314
1625006403	314
1625006405	314
1625008013	313
1625008043	313
1625008323	314
1625008325	314
1625008363	314
1625008365	314
1625010216	314
1625010244	314

EDP Number	Page No.
1625010246	314
1625010249	314
1625010316	314
1625010324	314
1625010326	314
1625010346	314
1625011211	316
1625011241	316
1625011268	316
1625011288	316
1625011826	316
1625011878	316
1625011888	316
1625012118	315
1625012126	316
1625012135	315
1625012138	315
1625012148	315
1625012205	315
1625012208	315
1625012218	315
1625012245	314
1625012247	314
1625012248	315
1625012285	314
1625012287	314
1625012417	314
1625012447	314
1625012526	316
1625012578	316
1625012588	316
1625012817	314
1625012847	314
1625013126	316
1625013768	316
1625013788	316
1625014204	314
1625014206	314
1625014216	314
1625014246	314
1625014284	314
1625014286	314
1625014816	314
1625014846	314
1625016288	316
1625016413	313
1625016443	313
1625017213	313
1625017243	313
1625017558	316
1625017588	316
1625018111	316
1625018411	316
1625025613	313
1625025643	313
1625026413	313
1625026443	313
1625034100	316

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1625034107	316
1625034110	316
1625034140	316
1625034160	316
1625034167	316
1625034610	316
1625034640	316
1625034813	313
1625034843	313
1625035613	313
1625035643	313
1625038117	315
1625038147	315
1625038165	315
1625038167	315
1625038217	315
1625038245	315
1625038247	315
1625038249	315
1625044015	313
1625044045	313
1625044815	313
1625044845	313
1625051617	314
1625051647	314
1625054015	313
1625054045	314
1625054415	314
1625054445	314
1625056185	314
1625056187	314
1625056217	315
1625056245	315
1625056247	315
1625056249	315
1625058110	315
1625058117	315
1625058140	315
1625058180	315
1625058187	315
1625058410	315
1625058810	315
1625058840	315
1625063215	314
1625063245	314
1625064015	314
1625064045	314
1625076118	315
1625076145	315
1625076148	315
1625076149	315
1625076205	315
1625076208	315
1625076218	315
1625076248	315
1625078111	316
1625078141	316
1625078148	316
1625078149	316
1625078901	316
1625078908	316
1625078911	316
1625078941	316
1625083215	314
1625083245	314
1625083615	314
1625083645	314
1625091117	315
1625091147	315
1625091810	315
1625091840	315
1625096120	315
1625096127	315
1625096180	315
1625096187	315
1625510226	321
1625510256	321
1625510326	321
1625510426	321
1625511428	322
1625512028	322
1625512128	321
1625512227	321
1625512228	322
1625512257	321
1625512328	321
1625512427	321
1625512827	321
1625514026	321
1625514208	322
1625514226	321
1625514256	321
1625514826	321
1625518208	322
1625518258	322
1625531627	322
1625534027	322
1625534127	322
1625534627	322
1625538127	321
1625538227	321
1625538427	321
1625538627	321
1625551127	321
1625551227	321
1625551427	321
1625551827	322
1625554025	321
1625554205	321
1625554255	321
1625554425	321
1625556127	321
1625558127	322
1625558257	322
1625558827	322
1625563225	321
1625563255	321
1625564025	321
1625564255	321
1625571128	321
1625571228	321
1625575258	322
1625576128	321
1625576228	321
1625578128	322
1625578428	322
1625579828	322
1625583225	321
1625583255	321
1625583625	321
1625586255	321
1625591127	322
1625591227	322
1625591827	322
1625596827	322
1626000108	494
1626000208	494
1626000308	494
1626000408	494
1626000508	494
1626000608	494
1626000708	494
1626000808	494
1626000908	494
1626001008	494
1626001108	494
1626001208	494
1626001308	494
1626001408	494
1626001508	494
1626001608	494
1626001708	494
1626001808	494
1626001908	494
1626002008	494
1626002108	494
1626002208	494
1626002308	494
1626002408	494
1626002508	494
1626002608	494
1626002708	494
1626002808	494
1626002908	494
1626003008	494
1626003108	494
1626003208	494
1626003308	494
1626003408	494
1626003508	494
1626003608	494
1626003708	494
1626003808	494
1626003908	494
1626004008	494
1626004108	494
1626004208	494
1626004308	494
1626004408	494
1626004508	494
1626004608	494
1626004708	494
1626004808	494
1626004908	494
1626005008	494
1626005108	495
1626005208	495
1626005308	495
1626005408	495
1626005508	495
1626005608	495
1626005708	495
1626005808	495
1630000	448
1630001	448
1630400	448
1630800	448
1631600	448
1632	478
1635002043	317
1635002045	317
1635003053	317
1635003055	317
1635003353	317
1635003355	317
1635004054	318
1635004056	318
1635004074	318
1635004076	318
1635005053	318
1635005055	318
1635005084	318
1635005087	318
1635006015	318
1635006018	318
1635006754	318
1635006757	318
1635007015	318
1635007018	318
1635008015	318
1635008018	318
1635008255	318
1635008259	318
1635008754	318
1635008757	318
1635010015	319
1635010018	319
1635010110	319
1635010118	319
1635010119	319
1635010140	319
1635010148	319

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1635010149	319
1635010150	319
1635010156	319
1635010255	319
1635010259	319
1635012110	319
1635012111	319
1635012120	319
1635012140	319
1635012141	319
1635012151	319
1635012156	319
1635012171	319
1635012210	319
1635012215	317
1635012220	319
1635012225	317
1635012240	319
1635012245	317
1635012515	317
1635012525	317
1635012541	319
1635012545	317
1635012751	319
1635012756	319
1635014022	319
1635014027	319
1635014151	319
1635014156	319
1635014212	319
1635014242	319
1635014315	317
1635014325	317
1635014345	317
1635014511	319
1635014541	319
1635016111	319
1635016141	319
1635016151	319
1635016156	319
1635016202	319
1635016207	319
1635016212	319
1635016242	319
1635016315	317
1635016345	317
1635016353	317
1635016355	317
1635017315	317
1635017345	317
1635017353	317
1635017355	317
1635018111	320
1635018141	320
1635018151	320
1635018156	320
1635018212	319
1635018242	319
1635018252	319
1635018257	319
1635018315	317
1635018345	317
1635018353	317
1635018355	317
1635020111	320
1635020141	320
1635020151	320
1635020156	320
1635020212	320
1635020242	320
1635020252	320
1635020257	320
1635022111	320
1635022121	320
1635022141	320
1635022212	320
1635022222	320
1635022242	320
1635022512	320
1635022522	320
1635022542	320
1635024111	320
1635024121	320
1635024123	320
1635024141	320
1635024155	317
1635024223	320
1635024243	320
1635024315	320
1635024325	320
1635024345	320
1635024455	317
1635025415	317
1635025445	317
1635025453	317
1635025455	317
1635026415	317
1635026425	317
1635026445	317
1635027039	320
1635030350	320
1635030515	317
1635030545	317
1635033350	320
1635033515	317
1635033545	317
1635035064	318
1635035066	318
1635035616	318
1635035646	318
1635036411	320
1635040516	318
1635040546	318
1635040716	318
1635040746	318
1635042451	320
1635045451	320
1635045716	318
1635045746	318
1635045754	318
1635045756	318
1635050515	318
1635050545	318
1635050817	318
1635050847	318
1635060118	318
1635060148	318
1635067517	318
1635067547	318
1635070118	318
1635070148	318
1635080118	318
1635080148	318
1635081219	318
1635081249	318
1635087517	318
1635087547	318
1635510120	323
1635510128	323
1635510129	323
1635510229	323
1635510258	323
1635510520	323
1635512120	324
1635512121	323
1635512210	324
1635512250	324
1635512251	323
1635512520	324
1635512721	323
1635512751	323
1635514121	324
1635514222	324
1635514252	324
1635514521	324
1635516121	324
1635516222	324
1635516252	324
1635516521	324
1635518121	324
1635518252	324
1635518521	324
1635518552	324
1635520121	324
1635520222	324
1635520252	324
1635520521	324
1635530325	323
1635530525	323
1635533525	323
1635535025	323
1635535226	323
1635535626	323
1635540526	323
1635540726	323
1635545256	323
1635545526	323
1635545726	323
1635547256	323
1635550255	323
1635550257	323
1635550525	323
1635550827	323
1635560727	323
1635561028	323
1635561258	323
1635567527	323
1635571028	323
1635571258	323
1635580727	323
1635581028	323
1635581229	323
1635581258	323
1635582529	323
1635587527	323
1636000108	496
1636000208	496
1636000308	496
1636000408	496
1636000508	496
1636000608	496
1636000708	496
1636000808	496
1636000908	496
1636001008	496
1636001108	496
1636001208	496
1636001308	496
1636001408	496
1636001508	496
1645002562	350
1645003482	350
1645004402	350
1645004482	350
1645005402	350
1645006322	350
1645006323	350
1645006402	350
1645008322	350
1645008323	350
1645008362	350
1645010084	351
1645010086	351
1645010124	351
1645010126	351
1645010242	350
1645010243	350
1645010322	350
1645010323	350
1645012133	350
1645012135	350
1645012203	350

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1645012205	350
1645012243	350
1645012283	350
1645014203	350
1645014205	350
1645014283	350
1645014284	350
1645034103	351
1645034105	351
1645034163	351
1645034165	351
1645038163	350
1645038165	350
1645038243	350
1645038244	350
1645056183	350
1645056185	350
1645056243	350
1645056244	350
1645058113	350
1645058115	350
1645058183	350
1645058185	350
1645076143	350
1645076145	350
1645076203	350
1645076205	350
1645078094	351
1645078096	351
1645078144	351
1645078146	351
1645096123	350
1645096125	350
1645096183	350
1645096185	350
1645502043	352
1645503054	352
1645504074	352
1645505084	352
1645506103	352
1645506105	352
1645508124	352
1645508126	352
1645510154	352
1645510156	352
1645512174	352
1645512176	352
1645514205	352
1645514207	352
1645516205	352
1645516207	352
1645518257	352
1645520258	352
1645524309	352
1645525453	352
1645526453	352
1650000108	367
1650000208	367

EDP Number	Page No.
1650000308	367
1650000408	367
1650000508	367
1650000608	367
1650000708	367
1650000808	367
1650000908	367
1650001008	367
1650001108	368
1650001208	368
1650001308	367
1650001408	368
1650001508	368
1650001608	368
1650001708	368
1650001808	368
1650001908	368
1650002008	368
1650002108	368
1650002208	368
1650002308	368
1650002408	368
1650002508	368
1650002608	368
1650002708	368
1650002808	368
1650002908	368
1650003008	367
1650003108	367
1650003208	367
1650003308	367
1650003408	367
1650003508	367
1650003608	367
1650003708	367
1650003808	367
1650003908	367
1650004008	367
1650004108	367
1650004208	367
1650004308	367
1650004408	367
1650004508	367
1650004608	367
1650004708	367
1650004808	367
1650004908	367
1650005008	367
1650005108	367
1650005208	367
1650005308	368
1650005408	368
1650005508	368
1650005608	368
1650005708	368
1650005808	368
1650005908	368
1650006008	368

EDP Number	Page No.
1650006108	368
1650006208	368
1650006308	368
1650006408	368
1650006508	368
1650006608	368
1650006708	368
1650006808	368
1650006908	368
1650007008	368
1650007108	368
1650007208	368
1650007308	368
1650007408	368
1650007508	368
1650007608	368
1650007708	368
1650007808	368
1650007908	368
1650008008	368
1650008108	369
1650008208	369
1650008308	368
1650008408	368
1650008508	369
1650008608	369
1650008708	369
1650008808	369
1650008908	369
1650009008	369
1650009108	369
1650009208	369
1650009308	369
1650009408	369
1650009508	369
1650009608	369
1650009708	367
1650009808	367
1650009908	367
1650010008	367
1650010108	367
1650010208	367
1650010308	367
1650010408	367
1650010508	367
1650010608	367
1650010708	367
1650010808	367
1650010908	367
1650011008	367
1650011108	367
1650011208	367
1650011308	367
1650011408	367
1650011508	367
1650011608	367
1650011708	367
1650011808	367

EDP Number	Page No.
1650011908	368
1650012008	368
1650012108	368
1650012208	367
1650012308	368
1650012408	368
1650012508	368
1650012608	368
1650012708	368
1650012808	368
1650012908	368
1650013008	368
1650100	483
1650200	483
16502715	200
1650300	483
16503915	200
1650400	483
1650500	483
1650500108	364
1650500208	364
1650500308	364
1650500408	364
1650500508	364
1650500608	364
1650500708	364
1650500808	364
1650500908	364
1650501008	364
1650501108	364
1650501208	364
1650501308	364
1650501408	364
1650501508	364
1650501608	364
1650501708	364
1650501808	364
1650501908	364
1650502008	364
1650502108	364
1650502208	364
1650502308	364
1650502408	364
1650502508	364
1650502608	364
1650502708	364
1650502808	364
1650502908	364
1650503008	365
1650503108	365
1650503208	365
1650503308	365
1650503408	365
1650503508	365
1650503608	365
1650503708	365
1650503808	365
1650503908	365

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1650504008	365
1650504108	365
1650504208	365
1650504308	365
1650504408	365
1650504508	365
1650504608	365
1650504708	365
1650504808	365
1650504908	365
1650505008	365
1650505108	365
1650505208	365
1650505308	365
1650505408	365
1650505508	365
1650505608	364
1650505708	364
1650505808	364
1650505908	364
1650506008	365
1650506108	365
1650506208	365
1650506308	365
1650506408	365
1650506508	365
1650506608	365
1650506708	365
1650506808	365
1650506908	365
1650507008	365
1650507108	365
1650507208	365
1650507308	365
1650507408	365
1650507508	365
1650507608	365
1650507708	365
1650507808	366
1650507908	366
1650508008	366
1650508108	366
1650508208	366
1650508308	366
1650508408	366
1650508508	366
1650508608	366
1650508708	366
1650508808	366
1650508908	364
1650509008	364
1650509108	364
1650509208	364
1650509308	364
1650509408	364
1650509508	364
1650509608	364
1650509708	364

EDP Number	Page No.
1650509808	364
1650509908	364
1650510008	364
1650510108	364
1650510208	364
1650510308	364
1650510408	364
1650510508	364
1650510608	364
1650510708	364
1650510808	364
1650510908	364
1650511008	364
1650511108	364
1650511208	364
1650511308	364
1650511408	364
1650511508	364
1650511608	364
1650511708	364
1650511808	364
1650511908	364
1650512008	364
1650512108	364
1650512208	364
1650512308	365
1650512408	365
1650512508	365
1650512608	365
1650512708	365
1650512808	365
1650512908	365
1650513008	365
16505915	200
1650600	483
1650700	483
1650800	483
16508815	200
1650900	483
1651000	483
1651000108	417
1651000208	417
1651000308	417
1651000408	417
1651000508	417
1651000608	417
1651000708	417
1651000808	417
1651000908	417
1651001008	417
1651001108	417
1651001208	417
1651001308	417
1651001408	417
1651001508	417
1651001608	417
1651001708	417
1651001808	417

EDP Number	Page No.
1651001908	417
1651002008	417
1651002108	417
1651002208	417
1651002308	417
1651002408	417
1651002508	417
1651002608	417
1651002708	417
1651002808	417
1651002908	417
1651003008	417
1651003108	417
1651003208	417
1651003308	417
1651003408	417
1651003508	417
1651003608	417
1651003708	417
1651003808	417
1651003908	417
1651004008	417
1651004108	417
1651004208	417
1651004308	417
1651004408	417
1651004508	417
1651004608	417
1651004708	417
1651004808	417
1651004908	417
1651005008	417
1651005108	417
1651005208	417
1651005308	417
1651005408	417
1651005508	417
1651005608	417
1651005708	417
1651005808	417
1651005908	417
1651006008	417
1651006108	417
1651006208	417
1651006308	417
1651006408	417
1651006508	417
1651006608	417
1651006708	417
1651006808	417
1651006908	417
1651007008	417
1651007108	417
1651100	483
16511915	200
1651200	483
16514615	200
1651500108	416

EDP Number	Page No.
1651500208	416
1651500308	416
1651500408	416
1651500508	416
1651500608	416
1651500708	416
1651500808	416
1651500908	416
1651501008	416
1651501108	416
1651501208	416
1651501308	416
1651501408	416
1651501508	416
1651501608	416
1651501708	416
1651501808	416
1651501908	416
1651502008	416
1651502108	416
1651502208	416
1651502308	416
1651502408	416
1651502508	416
1651502608	416
1651502708	416
1651502808	416
1651502908	416
1651503008	416
1651503108	416
1651503208	416
1651503308	416
1651503408	416
1651503508	416
1651503608	416
1651503708	416
1651503808	416
1651503908	416
1651504008	416
1651504108	416
1651504208	416
1651504308	416
1651504408	416
1651504508	416
1651504608	416
1651504708	416
1651504808	416
1651504908	416
1651505008	416
1651505108	416
1651505208	416
1651505308	416
1651505408	416
1651505508	416
1651505608	416
1651505708	416
1651505808	416
1651505908	416

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1651506008	416
1651506108	416
1651506208	416
1651506308	416
1651506408	416
1651506508	416
1651506608	416
1651506708	416
1651506808	416
1651506908	416
1651507008	416
1651507108	416
1651507208	416
1651507308	416
16515815	200
16518115	200
16519815	200
1652001208	373
1652001308	373
1652001408	373
1652001508	373
1652001608	373
1652001708	373
1652001808	373
1652001908	373
1652002008	373
1652002108	373
1652002208	373
1652002308	373
1652002508	373
1652002708	373
1652003308	373
1652003508	373
1652003708	373
1652004508	373
1652004708	373
1652004908	373
1652005108	373
1652006108	373
1652006308	373
1652006508	373
1652006708	373
1652006808	373
1652006908	373
1652007008	373
1652007108	373
1652007208	373
1652007308	373
1652007408	373
1652007508	373
1652007708	373
1652008008	373
1652008108	373
1652008208	373
1652008308	373
1652008408	374
1652008508	374
1652008608	373

EDP Number	Page No.
1652008708	373
1652008808	374
1652008908	374
1652009008	374
1652009108	374
1652009208	374
1652009308	374
1652009408	374
1652009508	374
16520515	200
1652500608	372
1652500708	372
1652500908	372
1652501008	372
1652501108	372
1652501308	372
1652501408	372
1652501508	372
1652501708	372
1652501908	372
1652502108	372
1652502308	372
1652502508	372
1652502708	372
1652502908	372
1652503108	372
1652503308	372
1652503508	372
1652503708	372
1652503908	372
1652504108	372
1652504308	372
1652504508	372
1652504708	372
1652504908	372
1652505108	372
1652505308	372
1652505508	372
16527715	200
1653001208	421
1653001308	421
1653001408	421
1653001508	421
1653001608	421
1653001708	421
1653001808	421
1653001908	421
1653002008	421
1653002108	421
1653002208	421
1653002308	421
1653002508	421
1653002708	421
1653003308	421
1653003508	421
1653003708	421
1653004508	421
1653004708	421

EDP Number	Page No.
1653004908	421
1653005108	421
1653006108	421
1653006308	421
1653006508	421
1653006708	421
1653006808	421
1653006908	421
1653007008	421
1653007108	421
1653007208	421
1653007308	421
1653007408	421
1653007508	421
1653007708	421
1653008008	421
1653008108	421
1653008208	421
1653008308	421
1653008408	421
1653008508	421
1653008608	421
1653008708	421
1653008808	421
1653008908	421
1653009008	421
1653009108	421
1653009208	421
1653009308	421
1653009408	421
1653009508	421
16531215	200
16531715	200
16534215	200
1653501008	420
1653501108	420
1653501308	420
1653501408	420
1653501508	420
1653501708	420
1653501808	420
1653501908	420
1653502108	420
1653502308	420
1653502508	420
1653502708	420
1653502908	420
1653503108	420
1653503308	420
1653503508	420
1653503708	420
1653503908	420
1653504108	420
1653504308	420
1653504508	420
1653504708	420
1653504908	420
1653505108	420

EDP Number	Page No.
1653505308	420
1653505508	420
1653505708	420
1653505908	420
16535715	200
1654000108	371
1654000208	371
1654000308	371
1654000408	371
1654000508	371
1654000608	371
1654000708	371
1654000808	371
1654000908	371
1654001008	371
1654001108	371
1654001208	371
1654001308	371
1654001408	371
1654001508	371
1654001608	371
1654001708	371
1654001808	371
1654001908	371
1654002008	371
1654002108	371
1654002208	371
1654002308	371
1654002408	371
1654002508	371
1654002608	371
1654002708	371
1654002808	371
1654002908	371
1654003008	371
1654003108	371
1654003208	371
1654003308	371
1654003408	371
1654003508	371
1654003608	371
1654003708	371
1654003808	371
1654003908	371
1654004008	371
16540815	200
16544015	200
1654500108	370
1654500208	370
1654500308	370
1654500408	370
1654500508	370
1654500608	370
1654500708	370
1654500808	370
1654500908	370
1654501008	370
1654501108	370

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1654501208	370
1654501308	370
1654501408	370
1654501508	370
1654501608	370
1654501708	370
1654501808	370
1654501908	370
1654502008	370
1654502108	370
1654502208	370
1654502308	370
1654502408	370
1654502508	370
1654502608	370
1654502708	370
1654502808	370
1654502908	370
1654503008	370
1654503108	370
1654503208	370
1654503308	370
1654503408	370
1654503508	370
1654503608	370
1654503708	370
1654503808	370
1654503908	370
16547315	200
1655000108	419
1655000208	419
1655000308	419
1655000408	419
1655000508	419
1655000608	419
1655000708	419
1655000808	419
1655000908	419
1655001008	419
1655001108	419
1655001208	419
1655001308	419
1655001408	419
1655001508	419
1655001608	419
1655001708	419
1655001808	419
1655001908	419
1655002008	419
1655002108	419
1655002208	419
1655002308	419
1655002408	419
1655002508	419
1655002608	419
1655002708	419
1655002808	419
1655002908	419

EDP Number	Page No.
1655003008	419
1655003108	419
16550615	201
16553115	201
1655500108	418
1655500208	418
1655500308	418
1655500408	418
1655500508	418
1655500608	418
1655500708	418
1655500808	418
1655500908	418
1655501008	418
1655501108	418
1655501208	418
1655501308	418
1655501408	418
1655501508	418
1655501608	418
1655501708	418
1655501808	418
1655501908	418
1655502008	418
1660100	483
1660200	483
1660300	483
1660400	483
1660500	483
1660600	483
1660700	483
1660800	483
1660900	483
1661000	483
1661100	483
1661200	483
1661300	483
1661400	483
1661500	483
1661600	483
1661700	483
1661800	483
1661900	483
1662000	483
1662100	483
1662200	483
1662300	483
1662400	483
1662500	483
1662600	483
1662700	483
1662800	483
1663300	483
1663400	483
1663500	483
1663600	483
1663700	483
1663800	483

EDP Number	Page No.
1663900	483
1664000	483
1664100	483
1664200	483
1664300	483
1664400	483
1670100	476
1670200	476
16710	451
16714	451
16722	451
16728	451
16734	451
1680100	476
1680200	476
1680300	476
1680400	476
1680500	476
1680600	476
1680700	476
1680800	476
1680900	476
1681000	476
1681100	476
1681200	476
1681300	476
1681400	476
1681500	476
1681600	476
1681700	476
1681800	476
1681900	476
1682000	476
1682100	476
1682200	476
1682300	476
1682400	476
1682500	476
1682600	476
1690100	482
1690200	482
1690400	482
1690500	482
1690700	482
1690800	482
1691000	482
1691100	482
1691300	482
1691400	482
1691600	482
1691700	482
1692200	482
1692300	482
1700201	414
1700208	414
1700301	414
1700308	414
1700401	414

EDP Number	Page No.
1700408	414
1700501	414
1700508	414
1700601	414
1700608	414
1700701	414
1700708	414
1700801	414
1700808	414
1700901	414
1700908	414
1701001	414
1701008	414
1701101	414
1701108	414
1701201	414
1701208	414
1701301	414
1701308	414
1701401	414
1701408	414
1701501	414
1701508	414
1701601	414
1701608	414
1701701	414
1701708	414
1701801	414
1701808	414
1702201	415
1702208	415
1702301	415
1702308	415
1702401	415
1702408	415
1702501	415
1702508	415
1702601	415
1702608	415
1702701	415
1702708	415
1702801	415
1702808	415
1702901	415
1702908	415
1703001	361
1703008	361
1703101	361
1703108	361
1703201	361
1703208	361
1703301	361
1703308	361
1703401	361
1703408	361
1703501	361
1703508	361
1703601	361

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1703608	361
1703701	361
1703708	361
1703801	361
1703808	361
1703901	361
1703908	361
1704001	361
1704008	361
1704101	361
1704108	361
1704201	361
1704208	361
1704301	361
1704308	361
1704401	361
1704408	361
1704501	362
1704508	362
1704601	362
1704608	362
1704701	362
1704708	362
1704801	362
1704808	362
1704901	362
1704908	362
1705001	362
1705008	362
1705101	362
1705108	362
1705501	363
1705508	363
1705601	363
1705608	363
1705701	363
1705708	363
1705801	363
1705808	363
1705901	363
1705908	363
1706001	363
1706008	363
1706101	363
1706108	363
1706201	363
1706208	363
1706301	412
1706308	412
1706401	412
1706501	412
1706508	412
1706601	412
1706701	412
1706708	412
1706801	412
1706901	412
1706908	412

EDP Number	Page No.
1707001	412
1707101	412
1707108	412
1707201	412
1707301	412
1707308	412
1707401	412
1707501	412
1707508	412
1707601	412
1707701	412
1707708	412
1707801	412
1707901	412
1707908	412
1708001	412
1708101	412
1708108	412
1708201	412
1708301	412
1708401	412
1708501	412
1708508	412
1708601	412
1708701	412
1708708	412
1708801	412
1708901	412
1708908	412
1709001	412
1709101	358
1709108	358
1709201	358
1709301	358
1709308	358
1709401	358
1709501	358
1709508	358
1709601	358
1709701	358
1709708	358
1709801	358
1709901	358
1709908	358
1710001	358
1710101	358
1710108	358
1710201	358
1710301	358
1710401	358
1710501	358
1710508	358
1710601	358
1710701	358
1710801	358
1710901	358
1711	478
1711001	359

EDP Number	Page No.
1711101	359
1711201	359
1711301	359
1711401	359
1711501	359
1711601	359
1711701	359
1712	478
1712401	511
1712408	511
1712501	511
1712508	511
1712601	511
1712608	511
1712701	511
1712708	511
1712801	511
1712808	511
1712901	511
1712908	511
1713	478
1713001	511
1713008	511
1713101	511
1713108	511
1713201	511
1713208	511
1713301	511
1713308	511
1713401	511
1713408	511
1713501	501
1713601	501
1713701	501
1713801	501
1713901	501
1714001	501
1714101	501
1714201	501
1714301	501
1714401	501
1714501	501
1714601	509
1714608	509
1714701	509
1714708	509
1714801	509
1714808	509
1714901	509
1714908	509
1715001	509
1715008	509
1715101	509
1715108	509
1715201	509
1715208	509
1715301	509
1715308	509

EDP Number	Page No.
1715401	509
1715408	509
1715501	509
1715508	509
1715601	509
1715608	509
1715701	499
1715708	499
1715801	499
1715808	499
1715901	499
1715908	499
1716001	499
1716008	499
1716101	499
1716108	499
1716201	499
1716208	499
1716301	499
1716308	499
1716401	499
1716408	499
1716501	499
1716508	499
1716601	499
1716608	499
1716701	499
1716708	499
1717201	412
1717301	412
1717401	412
1717501	412
1717601	412
1717701	412
1717801	412
1717901	412
1718001	412
1718101	412
1718201	412
1718301	412
1718401	412
1719001	358
1719008	358
1719101	358
1719501	358
1719508	358
1719601	358
1719701	358
1719708	358
1719801	358
1719901	358
1719908	358
1720001	358
1720101	358
1720108	358
1720201	358
1720301	358
1720401	358

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1720501	358
1720508	358
1720601	358
1720701	358
1720800	448
1720805	448
1721200	448
1721205	448
1721600	448
1721800	448
1721805	448
1722001	375
1722008	375
1722201	375
1722208	375
1722301	375
1722308	375
1722501	375
1722508	375
1722601	376
1722608	376
1722701	376
1722708	376
1722801	376
1722808	376
1722901	376
1722908	376
1723001	376
1723008	376
1723101	376
1723108	376
1723201	376
1723208	376
1723301	376
1723308	376
1723401	376
1723408	376
17234408	185
1723501	376
1723508	376
17236208	185
1724201	375
1724208	375
1724301	375
1724308	375
1724501	375
1724508	375
1724601	375
1724608	375
17250008	185
1725001	422
1725005	422
1725008	422
1725101	422
1725105	422
1725108	422
1725201	422
1725205	422

EDP Number	Page No.
1725208	422
1725301	422
1725305	422
1725308	422
1725401	422
1725405	422
1725408	422
1725501	422
1725601	422
17257008	185
1725801	422
1726001	376
1726008	376
1726101	376
1726108	376
1726201	377
1726208	377
1726301	377
1726308	377
1726401	377
1726408	377
17265608	185
1726801	422
1726901	422
1727001	422
1727101	422
17272008	185
1727201	422
1727301	422
1727401	422
1727501	422
1727601	422
1727701	422
1727801	422
1727901	422
1728001	422
1728101	422
17281208	185
1728201	422
1728301	422
1728401	422
1728501	422
1728601	422
1728701	422
1728801	422
1728901	422
1729001	422
1729101	422
1729201	422
1729301	422
1729401	422
1729501	422
1729601	422
17296908	185
1729701	422
1729801	422
1729901	422
1730001	422

EDP Number	Page No.
1730005	422
1730008	422
1730101	422
1730108	422
1730201	422
1730208	422
1730301	422
1730305	422
1730308	422
1730401	422
1730405	422
1730408	422
1730501	422
1730505	422
1730508	422
1730601	422
1730605	422
1730608	422
1730701	422
1730705	422
1730708	422
1730801	422
1730805	422
1730808	422
1730901	422
1730905	422
1730908	422
1731	478
1731001	422
1731005	422
1731008	422
1731101	422
1731105	422
1731108	422
1731201	422
1731205	422
1731208	422
17312508	185
1731301	422
1731305	422
1731308	422
1731401	422
1731405	422
1731408	422
17315008	185
1731501	422
1731505	422
1731508	422
1731601	422
1731605	422
1731608	422
1731701	422
1731705	422
1731708	422
1731801	422
1731805	422
1731808	422
1731901	422

EDP Number	Page No.
1731905	422
1731908	422
1732	478
1732001	375
1732008	375
1732101	375
1732108	375
1732201	375
1732205	375
1732208	375
1732301	375
1732305	375
1732308	375
1732401	375
1732405	375
1732408	375
1732501	375
1732505	375
1732508	375
1732601	376
1732605	376
1732608	376
1732701	376
1732705	376
1732708	376
1732801	376
1732805	376
1732808	376
17328108	185
1732901	376
1732905	376
1732908	376
1733	478
1733001	376
1733005	376
1733008	376
1733101	376
1733105	376
1733108	376
1733201	376
1733205	376
1733208	376
1733301	376
1733305	376
1733308	376
1733401	376
1733405	376
1733408	376
1733501	376
1733505	376
1733508	376
1733601	376
1733608	376
1733701	376
1733708	376
1733801	377
1733805	377
1733808	377

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1733901	377
1733905	377
1733908	377
1734000	456
1734100	456
1734200	456
1734300	456
17343808	185
1734400	456
1734500	456
1734601	422
1734608	422
1734701	422
1734708	422
1734801	422
1734808	422
1734901	422
1734908	422
1735001	518
1735005	518
1735101	518
1735105	518
1735201	518
1735205	518
1735301	518
1735305	518
1735401	518
1735405	518
1735501	518
1735505	518
1735601	518
1735701	518
1735801	422
1735808	422
1735901	422
1735908	422
17359408	185
1736000	521
1736100	521
1736200	521
1736300	521
1736400	521
1736501	422
1736508	422
1736601	422
1736608	422
1736701	422
1736708	422
1736801	422
1736808	422
1736901	422
1736908	422
1737001	422
1737008	422
1737101	422
1737108	422
1737201	422
1737208	422
1737301	422
1737308	422
1737401	422
1737408	422
17375008	185
1737501	519
1737505	519
1737601	519
1737605	519
17377008	185
1737701	519
1737705	519
1737801	519
1737805	519
1737901	519
1737905	519
1738001	519
1738005	519
1738101	519
1738201	519
1738301	422
1738308	422
1738401	422
1738408	422
1738501	422
1738508	422
1738601	422
1738608	422
1738701	422
1738708	422
1738801	422
1738808	422
1738901	422
1738908	422
1739000	456
17390608	185
1739100	456
1739200	456
1739300	456
17393708	185
1739400	456
1739500	456
1739600	456
1739700	456
1739801	422
1739805	422
1739808	422
1739905	519
1740005	425
1740105	425
1740205	425
1740305	425
1740405	425
1740505	425
1740605	425
17406208	185
1740705	425
1740805	425
1740905	425
1741005	425
1741105	425
1741205	425
1741305	425
1741405	425
1741505	425
1741605	425
1741705	425
1741805	425
1741905	425
1742005	425
1742105	425
17421908	185
1742205	425
1742305	425
1742405	425
1742505	425
1742605	425
1742705	425
1742805	425
17437508	185
1744605	519
1744805	518
1744905	518
1745000	456
1745100	456
1745200	456
1745300	456
17453108	185
1745400	456
1745500	456
1745600	456
1745701	378
1745801	378
1745901	378
1746001	378
1746101	378
1746201	378
1746301	378
1746401	378
1746501	378
1746601	378
1746701	375
1746801	375
17468808	185
1746901	375
1747001	375
1747101	375
1747201	375
1747301	375
1747401	375
1747501	375
1747601	375
1747701	375
1748001	375
1748101	375
1748201	375
1748301	375
1748401	375
17484408	185
1748501	375
1748601	375
1748701	375
1748801	375
1748901	375
1749001	377
1749101	376
1749105	376
1749108	376
1749201	376
1749301	376
1749401	375
1749501	375
1749601	375
1749701	375
1749801	375
1749901	376
1749905	376
1749908	376
17500008	185
1750001	376
1750101	423
1750108	423
17502411	190
17503111	190
17503811	190
1750401	423
1750405	423
1750408	423
17504411	190
17504711	190
17505311	190
17505911	190
17506511	190
1750701	423
1750705	423
1750708	423
17507211	190
17507711	190
17508111	190
17508511	191
17508811	191
17509111	191
17509411	191
17509611	191
17509911	191
1751001	423
1751005	423
1751008	423
17510211	191
17510511	191
17510711	191
17511011	191
17511311	191
17511511	191

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
17511611	191
17511711	191
17511811	191
17512011	191
1751301	423
1751305	423
1751308	423
17515311	192
1751601	423
17516011	192
1751605	423
1751608	423
17516711	192
17517311	192
17517611	192
17518211	192
17518811	192
1751901	423
1751905	423
1751908	423
17519411	192
1752001	361
1752008	361
17520111	192
17520611	192
1752101	361
17521011	192
1752108	361
17521411	192
17521711	192
1752201	361
17522011	192
1752208	361
17522311	192
17522511	193
17522811	193
1752301	361
1752308	361
17523111	193
17523411	193
17523611	193
17523911	193
1752401	361
1752408	361
17524211	193
17524411	193
17524511	193
17524611	193
17524711	193
17524911	193
1752501	361
1752508	361
17525111	189
17525311	189
17525511	189
17525711	191
17525911	191
1752601	361

EDP Number	Page No.
1752608	361
17526111	191
17526311	193
17526511	193
1752701	361
1752708	361
1752801	361
1752808	361
1752901	361
1752908	361
1753001	361
1753008	361
1753101	361
1753108	361
17531208	185
1753201	362
1753208	362
1753301	362
1753308	362
1753401	362
1753408	362
1753501	362
1753508	362
1753601	362
1753608	362
1753701	362
1753708	362
1753801	362
1753808	362
1753901	362
1753908	362
1754001	361
1754008	361
1754101	361
1754108	361
1754201	361
1754208	361
17542411	187
1754301	361
1754308	361
17543111	187
17543811	187
1754401	361
1754408	361
17544411	187
17544711	187
1754501	361
1754508	361
17545311	187
17545911	187
1754601	361
1754608	361
17546511	187
1754701	361
1754708	361
17547211	188
17547711	188
1754801	361

EDP Number	Page No.
1754808	361
17548111	188
17548511	188
17548811	188
1754901	361
1754908	361
17549111	188
17549411	188
17549611	188
17549911	188
1755001	378
17550211	188
17550511	188
17550711	189
1755101	378
17551011	189
17551311	189
17551511	189
17551611	189
17551711	189
17551811	189
1755201	378
17552011	189
1755301	378
1755401	378
1755405	378
1755408	378
1755501	378
1755601	378
1755701	378
1755705	378
1755708	378
1755801	378
1755901	378
1756001	378
1756005	378
1756008	378
1756101	378
1756201	378
17562508	185
1756301	378
1756305	378
1756308	378
1756501	378
1756601	378
1756605	378
1756608	378
1756801	378
1756901	378
1756905	378
1756908	378
1757001	414
1757008	414
1757101	414
1757108	414
1757201	414
1757208	414
1757301	414

EDP Number	Page No.
1757308	414
1757401	414
1757408	414
1757501	414
1757508	414
1757601	414
1757608	414
1757701	414
1757708	414
1757801	414
1757808	414
17578108	185
1757901	414
1757908	414
1758001	414
1758008	414
1758101	414
1758108	414
1758201	414
1758208	414
1758301	414
1758308	414
1758401	414
1758408	414
1758501	414
1758508	414
1758601	414
1758608	414
1758701	414
1758708	414
1758801	414
1758808	414
1758901	414
1758908	414
1759001	414
1759008	414
1759101	414
1759108	414
1759201	414
1759208	414
1759301	414
1759308	414
17593808	185
1759401	414
1759408	414
1759501	414
1759508	414
1759601	414
1759608	414
1759701	414
1759708	414
1759801	414
1759808	414
1759901	414
1759908	414
1760001	414
1760008	414
1760101	414

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
1760108	414
1760201	414
1760208	414
1760301	414
1760308	414
1760401	414
1760408	414
1760501	414
1760508	414
1760601	414
1760608	414
1761701	376
1761801	376
1761905	376
1761908	376
1762001	376
1762101	376
1762201	376
1762301	376
1762305	376
1762308	376
1762401	376
17625008	185
1762501	376
1762601	376
1762701	376
1762801	376
1762901	376
1763001	376
1763101	376
1763201	376
1763301	376
1763401	376
1763501	376
1763601	376
1763701	376
1763801	376
1763901	375
1763905	375
1763908	375
1764001	424
1764101	424
1764201	424
1764301	424
1764401	424
1764501	424
1764601	424
1764701	424
1764801	424
1764901	424
1765001	424
1765101	424
1765201	424
1765301	424
1765401	424
1765501	424
1765601	424
17656208	185

EDP Number	Page No.
1765701	424
1765801	424
1765901	424
1766001	424
1766101	379
1766201	424
1766301	379
1766501	379
1766701	379
1766901	379
1767101	379
1767301	379
1767501	379
1767701	379
1767901	379
1768101	379
1768301	379
1768501	379
1768601	379
1768701	379
17687508	185
1768801	379
1768901	379
1769001	379
1769101	379
1769201	379
1769301	379
1770001	358
1770101	358
1770201	358
1770301	358
1770401	358
1770501	358
1770601	358
1770701	358
1770801	359
1770901	358
1771001	358
1771101	358
1771201	358
1771301	358
1771401	358
1771501	412
1771601	412
1771701	412
1771801	412
17718808	185
1771901	412
1772001	412
1772101	412
1772201	412
1772301	412
1772401	412
1772501	412
1772601	423
1772701	423
1772801	423
1772901	423

EDP Number	Page No.
1773001	423
1773101	423
1773201	423
1773301	423
1773401	423
1773501	423
17750008	185
1776201	412
1776208	412
1776301	412
1776401	422
1776408	422
17781308	185
17812508	185
17843808	185
17875008	185
17906208	185
17937508	185
17968808	185
18000008	185
18031208	185
1804000	516
1804100	516
1805600	516
1805700	516
1805800	516
1805900	516
18062508	186
1806600	516
1806700	516
18093808	186
1810400	516
1810500	516
1810800	516
1810900	516
1811400	516
1811500	516
1812000	516
1812100	516
1812400	516
1812500	516
18125008	186
1812800	516
1812900	516
1813200	516
1813400	516
1813500	516
1813600	516
1813800	516
1813900	516
1820400	514
1821	478
18218808	186
1822	478
1823	478
1824000	514
1824800	514
18250008	186

EDP Number	Page No.
1825200	514
1825600	514
1825800	514
1826400	514
1826600	514
1830400	514
1830800	514
1832000	514
1832200	514
1841	478
1842	478
1843	478
1871	478
1872	478
1873	478
1929000	480
1931	478
1932	478
1933	478
1966900	477
1970000	477
1970100	477
1970101	477
1970200	477
1970201	477
1970300	477
1970400	477
1970401	477
1970500	477
1970501	477
1970600	477
1970700	477
1970701	477
1970800	477
1970801	477
1970900	477
1971000	477
1971001	477
1971100	477
1971101	477
1971200	477
1971300	477
1971301	477
1971400	477
1971401	477
1971500	477
1971600	477
1971601	477
1971700	477
1971701	477
1971800	477
1971900	477
1971901	477
1972000	477
1972001	477
1972200	477
1972201	477
1972300	477

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
1972301	477
1972500	477
1972501	477
1972600	477
1972601	477
1972800	477
1972801	477
1972900	477
1972901	477
1973100	477
1973101	477
1973200	477
1973201	477
1973400	477
1973401	477
1973500	477
1973501	477
1973700	477
1973701	477
1973800	477
1973801	477
1974000	477
1974001	477
1974100	477
1974101	477
1974300	477
1974301	477
1974400	477
1974401	477
1974600	477
1974700	477
1974900	477
1975000	477
1975100	477
1975200	477
1975201	477
1975300	477
1975500	477
1975501	477
1975600	477
1975601	477
1975700	477
1975800	477
1975801	477
1975900	477
1975901	477
1976100	477
1976200	477
1976201	477
1976400	477
1976401	477
1976500	477
1976700	477
1976800	477
1976801	477
1977000	477
1977001	477
1977100	477

EDP Number	Page No.
1977101	477
1977200	477
1977300	477
1977400	477
1977500	477
1977600	477
1977700	477
1978000	477
1978200	477
1978300	477
1978400	477
1978600	477
1978700	477
1978800	477
1980100	450
1980101	450
1980105	450
1980108	450
1980400	450
1980401	450
1980405	450
1980408	450
1980700	450
1980701	450
1980705	450
1981	478
1981000	450
1981001	450
1981005	450
1981008	450
1981300	450
1981301	450
1981305	450
1981308	450
1981400	450
1981401	450
1981500	450
1981600	450
1981601	450
1981605	450
1981608	450
1981900	450
1981901	450
1981905	450
1981908	450
1982	478
1982000	450
1982001	450
1982100	450
1982101	450
1982200	450
1982201	450
1982300	450
1982301	450
1982400	450
1982401	450
1982500	450
1982501	450

EDP Number	Page No.
1982600	450
1982601	450
1982700	450
1982701	450
1982800	450
1982801	450
1982900	450
1983	478
1983000	450
1983001	450
1983100	450
1983101	450
1983200	450
1983201	450
1983300	450
1983400	450
1983401	450
1983500	450
1983600	450
1983700	450
1983800	450
1983900	450
1985100	401
1985105	401
1985200	401
1985201	401
1985208	401
1985400	401
1985405	401
1985408	401
1985500	401
1985501	401
1985508	401
1985700	401
1985705	401
1985708	401
1985800	401
1985801	401
1985808	401
1986000	401
1986005	401
1986008	401
1986100	401
1986101	401
1986108	401
1986300	401
1986305	401
1986308	401
1986400	401
1986401	401
1986408	401
1986600	401
1986605	401
1986608	401
1986700	401
1986701	401
1986708	401
1986900	401

EDP Number	Page No.
1986905	401
1986908	401
1987000	401
1987001	401
1987008	401
200-0465	159
200-0469	159
200-0520	159
200-0550	159
200-0591	159
200-0595	159
200-0625	159
200-0635	159
200-0670	159
200-0700	159
200-0730	159
200-0760	159
200-0781	159
200-0785	159
200-0787	159
200-0810	159
200-0820	159
200-0860	159
200-0890	159
200-0935	159
200-0938	159
200-0960	159
200-0980	159
200-0984	159
200-0995	159
200-1015	159
200-1040	159
200-1065	159
200-1094	159
200-1100	159
200-1110	159
200-1130	159
200-1160	159
200-1181	159
200-1200	159
200-1250	159
200-1285	159
200-1360	159
200-1378	159
200-1405	159
200-1406	160
200-1440	160
200-1470	160
200-1495	160
200-1520	160
200-1540	160
200-1562	160
200-1570	160
200-1575	160
200-1590	160
200-1610	160
200-1660	160
200-1695	160

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
200-1719	160
200-1730	160
200-1770	160
200-1772	160
200-1800	160
200-1820	160
200-1850	160
200-1875	160
200-1890	160
200-1910	160
200-1935	160
200-1960	160
200-1968	160
200-1990	160
200-2010	160
200-2031	160
200-2040	160
200-2055	160
200-2090	160
2002100	444
2002108	444
200-2130	160
200-2165	160
200-2188	160
200-2210	160
200-2280	160
200-2340	160
200-2344	160
200-2362	160
200-2380	160
200-2420	160
200-2460	160
200-2500	160
200-2559	160
200-2570	160
200-2610	160
200-2656	160
200-2660	160
200-2720	160
200-2756	161
200-2770	161
200-2810	161
200-2812	161
200-2900	161
200-2950	161
200-2953	161
200-2969	161
200-3020	161
2003100	448
200-3125	161
200-3150	161
200-3160	161
200-3230	161
200-3281	161
2003300	444
2003308	444
200-3320	161
200-3346	161

EDP Number	Page No.
200-3390	161
200-3438	161
200-3480	161
200-3543	161
200-3580	161
200-3594	161
200-3680	161
200-3740	161
200-3750	161
200-3770	161
200-3860	161
2003900	444
2003905	444
200-3906	161
2003908	444
200-3937	161
200-3970	161
200-4040	161
200-4062	161
200-4130	161
200-4134	161
2004200	444
2004208	444
200-4219	161
200-4331	161
200-4375	161
200-4528	161
200-4531	161
200-4688	161
200-4724	161
200-4844	161
2005000	444
200-5000	161
2005005	444
2005008	444
2006000	445
2006008	445
2006500	444
2006508	444
2006600	444
2006605	444
2006608	444
20100100	694
20100200	694
20100300	694
20100400	694
20100500	694
20100600	694
20100700	694
20100800	694
20100900	694
20101000	694
2013000	446
2013005	446
2013008	446
2013400	446
2013405	446
2013408	446

EDP Number	Page No.
20150111	678
20150211	678
20150311	678
20150411	678
20150511	678
20150611	678
20150811	678
20151011	678
20151111	678
20151211	678
20151411	678
20151511	678
20151911	678
20152111	678
20152211	678
20152711	678
20152911	678
20153211	678
20210100	686
20210200	686
20210500	686
20210600	686
20210900	686
20211000	686
20211300	686
20211400	686
20211700	686
20211800	686
20211900	686
20212000	686
20212100	686
20212500	686
20212600	686
20212700	686
20212900	686
20213000	686
20213300	686
20213400	686
20213500	686
20213600	686
20213700	686
20214100	686
20214200	686
20214500	686
20214900	686
20215000	686
20215100	686
20215200	686
20215300	686
20215400	686
20215500	686
20215600	686
20215700	686
20215800	686
20215900	686
20216000	686
20216100	686
20216200	686

EDP Number	Page No.
20216300	686
20216400	686
20220100	687
20220200	687
20220500	687
20220600	687
20220900	687
20221000	687
20221300	687
20221400	687
20221700	687
20221800	687
20221900	687
20222000	687
20222100	687
20222200	687
20222500	687
20222600	687
20222700	687
20222900	687
20223000	687
20223300	687
20223400	687
20223500	687
20223600	687
20223700	687
20223800	687
20224100	687
20224200	687
20224500	687
20224600	687
20224900	687
20225000	687
20225100	687
20225200	687
20225300	687
20225400	687
20225500	687
20225600	687
20225700	687
20225800	687
20225900	687
20226000	687
20226100	687
20226200	687
20226300	687
20226400	687
20230100	688
20230200	688
20230300	688
20230400	688
20230500	688
20230600	688
20230700	688
20230800	688
20230900	688
20231000	688
20231100	688

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
20231200	688
20231300	688
20231400	688
20231500	688
20231600	688
20231700	688
20231800	688
20231900	688
20232000	688
20240100	689
20240200	689
20240300	689
20240400	689
20240500	689
20240600	689
20240700	689
20240800	689
20240900	689
20241000	689
20241100	689
20241200	689
20241300	689
20241400	689
20241500	689
20241600	689
20241700	689
20241800	689
20241900	689
20242000	689
2031	478
2032	478
2033	478
20410100	690
20410200	690
20410900	690
20411000	690
20411700	690
20411800	690
20411900	690
20412000	690
20412500	690
20412600	690
20412700	690
20413300	690
20413400	690
20413500	690
20413600	690
20414100	690
20414200	690
20414900	690
20415000	690
20415100	690
20415200	690
20415300	690
20415400	690
20415500	690
20415600	690
20415700	690

EDP Number	Page No.
20415800	690
20415900	690
20416000	690
20416100	690
20416200	690
20416300	690
20416400	690
20420100	691
20420200	691
20420900	691
20421000	691
20421700	691
20421800	691
20421900	691
20422000	691
20422500	691
20422600	691
20422700	691
20423300	691
20423400	691
20423500	691
20423600	691
20424100	691
20424200	691
20424900	691
20425000	691
20425100	691
20425200	691
20425300	691
20425400	691
20425500	691
20425600	691
20425700	691
20425800	691
20425900	691
20426000	691
20426100	691
20426200	691
20426300	691
20426400	691
20430100	692
20430200	692
20430300	692
20430400	692
20430500	692
20430600	692
20430700	692
20430800	692
20430900	692
20431000	692
20431100	692
20431200	692
20431300	692
20431400	692
20431500	692
20431600	692
20431700	692
20431800	692

EDP Number	Page No.
20431900	692
20432000	692
20480100	693
20480200	693
20480300	693
20480400	693
20480500	693
20480600	693
20480700	693
20480800	693
20480900	693
20481000	693
20481100	693
20481200	693
20481300	693
20481400	693
20481500	693
20481600	693
20481700	693
20481800	693
20481900	693
20482000	693
205000111	675
205001111	675
205002111	675
205002211	675
205003111	675
205004111	675
205004211	675
205005111	675
205006111	675
205006211	675
205006311	675
205007111	675
205008111	675
205009111	675
205094111	675
205094211	675
205095111	675
205096111	675
205096211	675
205096311	675
205097111	675
205098111	675
205099111	675
205200111	676
205200211	676
205201111	676
205201211	676
205202111	676
205202211	676
205202311	676
205202411	676
205203111	676
205203211	676
205204111	676
205204211	676
205204311	676

EDP Number	Page No.
205204411	676
205205111	676
205205211	676
205206111	676
205206211	676
205206311	676
205206411	676
205206511	676
205206611	676
205206711	676
205206811	676
205206911	676
205207111	676
205207211	676
205207311	676
205207411	676
205208111	676
205208211	676
205208311	676
205208411	676
205209111	676
205209211	676
205209311	676
205209411	676
205294111	676
205294211	676
205294311	676
205294411	676
205295111	676
205295211	676
205296111	676
205296211	676
205296311	676
205296411	676
205296511	676
205296611	676
205296711	676
205296811	676
205296911	676
205297111	676
205297211	676
205297311	676
205297411	676
205298111	676
205298211	676
205298311	676
205298411	676
205299111	676
205299211	676
205299311	676
205299411	676
2055000	480
20551001	602
20551002	602
20551003	602
20551004	602
20552501	602
20552502	602

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
20552503	602
20553121	602
20553122	602
20553123	602
20553751	602
20553752	602
20553753	602
20555001	602
20555002	602
20555003	602
20555004	602
20555005	602
20555006	602
20555007	602
20555008	602
20556251	602
20556252	602
20556253	602
20556254	602
20557501	602
20557502	602
20557503	602
20557504	602
2056000	454
20610116	1136
20610216	1136
20610316	1136
20610416	1136
20610516	1136
20610716	1136
20611116	1136
20611216	1136
20611316	1136
20611516	1136
20611716	1136
20612116	1136
20612216	1136
20612316	1136
20612416	1136
20612516	1136
20612716	1136
20613216	1136
20613316	1136
20613416	1136
20613516	1136
20613716	1136
20614316	1136
20614400	1136
20614416	1136
20614516	1136
20615216	1136
20615316	1136
20615516	1136
20615716	1136
20616316	1136
20616416	1136
20616516	1136
20616716	1136

EDP Number	Page No.
20616816	1136
20617316	1136
20642516	1138
20643516	1138
20643616	1138
20645016	1138
20645116	1138
20660116	1137
20660316	1137
20660516	1137
20660716	1137
20682516	1139
20683516	1139
20683616	1139
20685016	1139
20685116	1139
20801000	679
20806250	679
20807500	679
2103000	452
2103600	452
2103800	452
2103801	452
2104400	452
2104401	452
2105200	452
2106000	452
2141	478
2142	478
2143	478
215-0394	150
215-0433	150
215-0465	150
215-0469	150
215-0472	150
215-0512	150
215-0520	150
215-0550	150
215-0551	150
215-0591	150
215-0595	150
215-0625	150
215-0630	150
215-0635	150
215-0669	150
215-0670	150
215-0700	150
215-0709	150
215-0730	150
215-0748	150
215-0760	150
215-0781	150
215-0785	150
215-0787	150
215-0810	150
215-0820	150
215-0827	150
215-0860	150

EDP Number	Page No.
215-0866	150
215-0890	150
215-0906	150
215-0935	150
215-0938	150
215-0945	150
215-0960	150
215-0980	150
215-0984	150
215-0995	150
215-1015	150
215-1024	150
215-1040	150
215-1063	150
215-1065	150
215-1094	150
215-1100	150
215-1102	150
215-1110	150
215-1130	150
215-1142	150
215-1160	150
215-1181	151
215-1200	151
215-1220	151
215-1250	151
215-1260	151
215-1285	151
215-1299	151
215-1339	151
215-1360	151
215-1378	151
215-1405	151
215-1406	151
215-1417	151
215-1440	151
215-1457	151
215-1470	151
215-1495	151
215-1496	151
215-1520	151
215-1535	151
215-1540	151
215-1562	151
215-1570	151
215-1575	151
215-1590	151
215-1610	151
215-1614	151
215-1654	151
215-1660	151
215-1693	151
215-1695	151
215-1719	151
215-1730	151
215-1732	151
215-1770	151
215-1772	151

EDP Number	Page No.
215-1800	151
215-1811	151
215-1820	151
215-1850	151
215-1875	151
215-1890	151
215-1910	151
215-1929	151
215-1935	151
215-1960	151
215-1968	152
215-1990	152
215-2008	152
215-2010	152
215-2031	152
215-2040	152
215-2047	152
215-2055	152
215-2087	152
215-2090	152
215-2126	152
215-2130	152
215-2165	152
215-2188	152
215-2205	152
215-2210	152
215-2244	152
215-2280	152
215-2283	152
215-2323	152
215-2340	152
215-2344	152
215-2362	152
215-2380	152
215-2402	152
215-2420	152
215-2441	152
215-2460	152
215-2480	152
215-2500	152
215-2520	152
215-2559	152
215-2570	152
215-2598	152
215-2610	152
215-2638	152
215-2656	152
215-2660	152
215-2677	152
215-2717	152
215-2720	152
215-2756	152
215-2770	152
215-2795	152
215-2810	152
215-2812	152
215-2835	152
215-2874	152

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
215-2900	152
215-2913	152
215-2950	153
215-2953	153
215-2969	153
215-2992	153
215-3020	153
215-3031	153
215-3071	153
215-3110	153
215-3125	153
215-3150	153
215-3160	153
215-3189	153
215-3228	153
215-3230	153
215-3268	153
215-3281	153
215-3307	153
215-3320	153
215-3346	153
215-3386	153
215-3390	153
215-3425	153
215-3438	153
215-3465	153
215-3480	153
215-3504	153
215-3543	153
215-3580	153
215-3583	153
215-3594	153
215-3622	153
215-3661	153
215-3680	153
215-3701	153
215-3740	153
215-3750	153
215-3770	153
215-3780	153
215-3819	153
215-3858	153
215-3860	153
215-3898	153
215-3906	153
215-3937	153
215-3970	153
215-3976	153
215-4016	154
215-4040	154
215-4055	154
215-4062	154
215-4094	154
215-4130	154
215-4134	154
215-4173	154
215-4213	154
215-4219	154

EDP Number	Page No.
215-4252	154
215-4291	154
215-4331	154
215-4370	154
215-4375	154
215-4409	154
215-4449	154
215-4488	154
215-4528	154
215-4531	154
215-4567	154
215-4606	154
215-4646	154
215-4685	154
215-4688	154
215-4724	154
215-4844	154
215-5000	154
220-0465	155
220-0469	155
220-0520	155
220-0550	155
220-0591	155
220-0595	155
220-0625	155
220-0635	155
220-0670	155
220-0700	155
220-0730	155
220-0760	155
220-0781	155
220-0785	155
220-0787	155
220-0810	155
220-0820	155
220-0860	155
220-0890	155
220-0935	155
220-0938	155
220-0960	155
220-0980	155
220-0984	155
220-0995	155
220-1015	155
220-1040	155
220-1065	155
220-1094	155
220-1100	155
220-1110	155
220-1130	155
220-1160	155
220-1181	155
220-1200	155
220-1250	155
220-1285	155
220-1360	155
220-1378	155
220-1405	155

EDP Number	Page No.
220-1406	156
220-1440	156
220-1470	156
220-1495	156
220-1520	156
220-1540	156
220-1562	156
220-1570	156
220-1575	156
220-1590	156
220-1610	156
220-1660	156
220-1695	156
220-1719	156
220-1730	156
220-1770	156
220-1772	156
220-1800	156
220-1820	156
220-1850	156
220-1875	156
220-1890	156
220-1910	156
220-1935	156
220-1960	156
220-1968	156
220-1990	156
220-2010	156
220-2031	156
220-2040	156
220-2055	156
220-2090	156
220-2130	156
220-2165	156
220-2188	156
220-2210	156
220-2280	156
220-2340	156
220-2344	156
220-2362	156
220-2380	156
220-2420	156
220-2460	156
220-2500	156
220-2559	156
220-2570	156
220-2610	156
220-2656	156
220-2660	156
220-2720	156
220-2756	157
220-2770	157
220-2810	157
220-2812	157
220-2900	157
220-2950	157
220-2953	157
220-2969	157

EDP Number	Page No.
220-3020	157
220-3125	157
220-3150	157
220-3160	157
220-3230	157
220-3281	157
220-3320	157
220-3346	157
220-3390	157
220-3438	157
220-3480	157
220-3543	157
220-3580	157
220-3594	157
220-3680	157
220-3740	157
220-3750	157
220-3770	157
220-3860	157
220-3906	157
220-3937	157
220-3970	157
220-4040	157
220-4062	157
220-4130	157
220-4134	157
220-4219	157
220-4331	157
220-4375	157
220-4528	157
220-4531	157
220-4688	157
220-4724	157
220-4844	157
220-5000	157
2211401	380
2212401	380
2213401	380
2217801	380
2218801	380
2230001	380
2230401	380
2230801	380
2231201	380
2231601	380
2231801	380
2232001	380
2232201	380
2232401	380
2232601	380
2233201	380
2233401	380
2233601	380
2233801	380
2239201	380
2239601	380
2244001	380
2244401	380

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EDP Numerical Index

EDP Number	Page No.
2245001	380
2245601	380
2246201	380
2246801	380
2247201	380
2247601	380
2247701	380
2247901	380
2248001	380
2248201	380
2248301	380
2248501	380
2248601	380
2248701	380
2248801	380
2248901	380
2249001	380
2249101	380
22605	478
22606	478
22611	478
22612	478
22617	478
22618	478
22621	478
22622	478
22627	478
22628	478
22633	478
22634	478
22637	478
22638	478
22643	478
22644	478
22800	492
22801	492
22802	492
22803	492
22804	492
22806	492
22807	492
22808	492
22810	492
22814	492
22817	492
22820	492
22830	492
22831	492
22833	492
22834	492
22835	492
22837	492
22839	492
22840	492
22841	492
2290401	381
2290601	381
2290801	381

EDP Number	Page No.
2291001	381
2291401	381
2291701	381
2291801	381
2292101	381
2292201	381
2292301	381
2292501	381
2292601	381
2292801	381
22929	493
2292901	381
2293001	381
2293201	381
22933	493
2293401	381
2293601	381
22941	493
22945	493
22949	493
22953	493
232	478
233	478
2330005	382
2330405	382
2330805	382
233-1181	158
2331205	382
233-1250	158
233-1406	158
233-1562	158
2331605	382
233-1719	158
2331805	382
233-1875	158
2332005	382
233-2031	158
233-2188	158
2332205	382
233-2344	158
233-2362	158
2332405	382
233-2500	158
2332605	382
233-2656	158
233-2812	158
233-2969	158
2333005	382
233-3125	158
233-3150	158
2333205	382
233-3281	158
2333405	382
233-3438	158
233-3594	158
2333605	382
233-3750	158
2333805	382

EDP Number	Page No.
233-3906	158
233-3937	158
2334005	382
233-4062	158
2334205	382
233-4219	158
233-4375	158
2334405	382
233-4531	158
233-4688	158
233-4724	158
233-4844	158
233-5000	158
233-5312	158
233-5512	158
233-5625	158
233-6250	158
233-6299	158
233-7500	158
235-0010	162
235-0020	162
235-0030	162
235-0040	162
235-0050	162
235-0060	162
2391005	382
2391405	382
2391705	382
2391805	382
2392105	382
2392205	382
2392305	382
2392505	382
2392605	382
2392805	382
2392905	382
2393005	382
2393205	382
2393405	382
2393605	382
24000	492
24001	492
24002	492
24003	492
24004	492
24006	492
24007	492
24008	492
24010	492
2401103	465
2401203	465
24014	492
2401503	465
2401603	465
24017	492
2401903	465
24020	492
2402303	465

EDP Number	Page No.
2402403	465
2402703	465
2402803	465
24030	492
24031	492
2403203	465
24033	492
24034	492
24035	492
2403603	465
24037	492
24039	492
24040	492
24041	492
2404303	465
2404403	465
24045	492
24046	492
24047	492
24048	492
24051	492
24052	492
24053	492
24054	492
24055	492
24056	492
24059	492
24060	492
24061	492
24062	492
2406303	465
2406403	465
24065	492
24066	492
24067	492
24068	492
24071	492
24072	492
24073	492
24074	492
2407503	465
2407603	465
24077	492
24078	492
2407903	465
2408003	465
2410203	466
2410303	466
2410603	466
2410803	466
2411103	466
2411203	466
2411603	466
2411703	466
2412103	466
2492800	465
2492900	465
2493000	465

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
2493100	465
2493203	465
2493303	465
2493403	465
2493503	465
2493603	465
2493703	465
2493803	465
2493903	465
2494003	465
2494103	465
2494203	465
2494303	465
2494403	465
2494503	465
2494603	465
2494703	465
2494803	465
2494903	466
2495003	466
2495103	466
2495203	466
2495303	466
2495403	466
2495503	466
2511401	426
2512401	426
2513401	426
2517801	426
2518801	426
2530001	426
2530401	426
2530801	426
2531201	426
2531601	426
2531801	426
2532001	426
2532201	426
2532401	426
2532601	426
2533201	426
2533401	426
2533601	426
2533801	426
257-0980	1134
257-1094	1134
257-1250	1134
257-1280	1134
257-1285	1134
257-1286	1134
257-1299	1134
257-1406	1134
257-1440	1134
257-1562	1134
257-1570	1134
257-1610	1134
257-1616	1134
257-1630	1134

EDP Number	Page No.
257-1719	1134
257-1870	1134
257-1875	1134
257-1900	1134
257-1906	1134
257-1910	1134
257-1916	1134
257-1920	1134
257-1930	1134
257-1935	1134
257-1940	1134
257-2010	1134
257-2031	1134
257-2040	1134
257-2055	1134
257-2180	1134
257-2186	1134
257-2188	1134
257-2210	1134
257-2280	1134
257-2344	1134
257-2500	1134
257-2506	1134
257-2510	1134
257-2516	1134
257-2520	1134
257-2530	1134
257-2656	1134
257-2812	1134
257-2969	1134
257-3120	1134
257-3125	1134
257-3135	1134
257-3280	1134
257-3438	1134
257-3500	1134
257-3594	1134
257-3750	1135
257-3756	1135
257-3906	1135
257-4066	1135
257-4376	1135
257-5006	1135
2590401	427
2590601	427
2590801	427
2591001	427
2591401	427
2591701	427
2591801	427
2592101	427
2592201	427
2592301	427
2592501	427
2592601	427
2592801	427
2592901	427
2593001	427

EDP Number	Page No.
2593201	427
2593401	427
2593601	427
2630005	428
2630405	428
2630805	428
2631205	428
2631605	428
2631805	428
2632005	428
2632205	428
2632405	428
2632605	428
2633005	428
2633205	428
2633405	428
2633605	428
2633805	428
2634005	428
2634205	428
2634405	428
26500316	1141
26500616	1141
26500716	1141
26501316	1141
26501516	1141
26501716	1141
26800316	1140
26800516	1140
26800716	1140
26805316	1140
26805516	1140
26805716	1140
26806316	1140
26809316	1140
26809416	1140
26809516	1140
26809616	1140
26809716	1140
2691005	429
2691405	429
2691705	429
2691805	429
2692105	429
2692205	429
2692305	429
2692505	429
2692605	429
2692805	429
2692905	429
2693005	429
2693205	429
2693405	429
2693605	429
2700100	527
2700200	527
2700300	527
2700400	527

EDP Number	Page No.
2700500	527
2700600	527
2700700	527
2700800	527
2701000	527
2701200	527
2701400	527
2701500	527
2702400	527
2702500	527
2702800	527
2702900	527
2703000	527
2703100	527
2703200	527
2703300	527
2703400	527
2703500	528
2703600	528
2703700	528
2703800	528
2704100	527
2704300	527
2704500	527
2704600	527
2704800	528
2704900	528
2705000	528
2705100	528
2705200	528
2705300	528
2706100	527
2706300	527
2706500	527
2706600	527
2706800	528
2706900	528
2707000	528
2707100	528
2707200	528
2707300	528
2707400	528
2707500	528
2707600	528
2707700	528
2710000	527
2710100	527
2710400	527
2710500	527
2710700	528
2710800	528
2710900	528
2711000	528
2711100	528
2711200	528
2711300	528
2711400	528
2711500	528

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
2711600	528
2711700	528
2711800	528
2712000	528
2712100	528
2712200	528
2712300	528
2713400	528
2713800	528
2713900	528
2714000	528
2714100	528
2714200	528
2714300	528
2714400	528
2715000	528
2715100	528
2715200	528
2715300	528
2715400	528
2715500	528
2715600	528
2715700	528
2715800	528
2715900	528
2716000	528
2723000	527
2723300	527
2723400	527
2723500	527
2723600	527
2723700	527
2724000	527
2724100	527
2724200	527
2724400	527
2724600	527
2724700	527
2726000	527
2726200	527
2726300	527
2726400	527
2726500	527
2726600	527
2726700	527
2726900	527
2727000	527
2727100	527
2727200	527
2727300	527
2727400	527
2727600	527
2727700	527
2727800	527
2728000	527
2728200	527
2728300	527
2728400	527

EDP Number	Page No.
2728800	527
2729100	527
2729400	527
2729600	527
2729700	527
2734000	529
2734100	529
2734200	529
2734300	529
2734400	529
2734500	529
2734600	529
2805600	439
2805601	439
2805608	439
2806000	439
2806001	439
2806008	439
2806400	439
2806401	439
2806408	439
2807000	439
2807001	439
2807008	439
2807400	439
2807401	439
2807408	439
2807600	439
2807601	439
2807608	439
2807800	439
2807801	439
2807808	439
2808000	439
2808001	439
2808008	439
2808800	439
2808801	439
2808808	439
2809000	439
2809001	439
2809008	439
2809200	439
2809201	439
2809208	439
2809400	439
2809401	439
2809408	439
2809600	440
2809601	440
2809608	440
2811400	439
2811401	439
2811408	439
2812400	439
2812401	439
2812408	439
2812500	439

EDP Number	Page No.
2812501	439
2812508	439
2812800	439
2812801	439
2812808	439
2812900	439
2812901	439
2812908	439
2813400	439
2813401	439
2813408	439
2813800	439
2813801	439
2813808	439
2813900	439
2813901	439
2813908	439
2816300	439
2816301	439
2816308	439
2816400	439
2816401	439
2816408	439
2816500	439
2816501	439
2816508	439
2817400	439
2817401	439
2817408	439
2817500	439
2817501	439
2817508	439
2817600	439
2817601	439
2817608	439
2817700	439
2817701	439
2817708	439
2817800	439
2817801	439
2817808	439
2817900	439
2817901	439
2817908	439
2818000	439
2818001	439
2818008	439
2818100	439
2818101	439
2818108	439
2818400	439
2818401	439
2818408	439
2818800	439
2818801	439
2818808	439
2818900	439
2818901	439

EDP Number	Page No.
2818908	439
2819000	439
2819001	439
2819008	439
2819100	439
2819101	439
2819108	439
2823400	439
2823401	439
2823408	439
2826400	440
2826401	440
2826408	440
2826800	440
2826801	440
2826808	440
2827600	440
2827601	440
2827608	440
2830000	439
2830001	439
2830008	439
2830400	440
2830401	440
2830408	440
2830800	440
2830801	440
2830808	440
2831200	440
2831201	440
2831208	440
2831600	440
2831601	440
2831608	440
2831800	440
2831801	440
2831808	440
2832000	440
2832001	440
2832008	440
2832200	440
2832201	440
2832208	440
2832400	440
2832401	440
2832408	440
2832600	440
2832601	440
2832608	440
2833200	440
2833201	440
2833208	440
2833400	441
2833401	441
2833408	441
2833600	441
2833601	441
2833608	441

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
2833800	441
2833801	441
2833808	441
2835400	440
2835401	440
2835408	440
2836200	440
2836201	440
2836208	440
2836800	440
2836801	440
2836808	440
2839200	441
2839201	441
2839208	441
2839600	441
2839601	441
2839608	441
2840000	439
2840001	439
2840008	439
2840400	440
2840401	440
2840408	440
2840500	440
2840501	440
2840508	440
2840600	440
2840601	440
2840608	440
2840700	440
2840701	440
2840708	440
2840800	440
2840801	440
2840808	440
2841200	440
2841201	440
2841208	440
2841300	440
2841301	440
2841308	440
2841400	440
2841401	440
2841408	440
2841500	440
2841501	440
2841508	440
2841600	440
2841601	440
2841608	440
2841700	440
2841701	440
2841708	440
2841800	440
2841801	440
2841808	440
2841900	440

EDP Number	Page No.
2841901	440
2841908	440
2842000	440
2842001	440
2842008	440
2842100	440
2842101	440
2842108	440
2842200	440
2842201	440
2842208	440
2842300	440
2842301	440
2842308	440
2842400	440
2842401	440
2842408	440
2842500	440
2842501	440
2842508	440
2842600	440
2842601	440
2842608	440
2842700	440
2842701	440
2842708	440
2842800	440
2842801	440
2842808	440
2842900	440
2842901	440
2842908	440
2843000	440
2843001	440
2843008	440
28431000	680
28431500	680
2843200	440
28432000	680
2843201	440
2843208	440
28432500	680
28433000	680
2843400	441
2843401	441
2843408	441
28434500	680
28435000	680
2843600	441
2843601	441
2843608	441
2843800	441
2843801	441
2843808	441
2844000	441
28440000	683
2844001	441
2844008	441

EDP Number	Page No.
28440500	683
28441500	683
2844400	441
2844401	441
2844408	441
2845001	441
2845601	441
2846201	441
2846801	441
2849801	441
2850201	441
2850401	441
2850801	441
2851001	441
2851401	441
2851601	441
2852001	441
2854800	440
2854801	440
2854808	440
2855000	440
2855001	440
2855008	440
2855600	440
2855601	440
2855608	440
2855800	440
2855801	440
2855808	440
2856400	440
2856401	440
2856408	440
2856600	440
2856601	440
2856608	440
2856800	440
2856801	440
2856808	440
2857400	440
2857401	440
2857408	440
2857600	440
2857601	440
2857608	440
2857800	440
2857801	440
2857808	440
2858000	441
2858001	441
2858008	441
2864200	346
2864205	346
2864208	346
2864400	346
2864405	346
2864408	346
2864600	346
2864605	346

EDP Number	Page No.
2864608	346
2864800	346
2864805	346
2864808	346
2865000	346
2865005	346
2865008	346
2865200	346
2865205	346
2865208	346
2865400	346
2865405	346
2865408	346
2865600	346
2865605	346
2865608	346
2865800	346
2865805	346
2865808	346
2866000	346
2866005	346
2866008	346
2866200	346
2866205	346
2866208	346
2866400	346
2866405	346
2866408	346
2866600	346
2866605	346
2866608	346
2866800	346
2866805	346
2866808	346
2867000	346
2867005	346
2867008	346
2867200	346
2867205	346
2867208	346
2867400	346
2867405	346
2867408	346
2867600	346
2867605	346
2867608	346
2868100	346
2868105	346
2868108	346
2868300	346
2868305	346
2868308	346
2868500	346
2868505	346
2868508	346
2868700	346
2868705	346
2868708	346

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
2868900	346
2868905	346
2868908	346
2869100	346
2869105	346
2869108	346
2869300	346
2869305	346
2869308	346
28731000	681
28731100	681
28731200	681
28731300	681
28731400	681
28731500	681
28731600	681
28731700	681
28731800	681
28732000	681
28732200	681
28732300	681
28732400	681
28732500	681
28732900	681
28733100	681
28733200	681
28733300	681
28733400	681
28733500	681
28733600	681
28733700	681
28735200	681
28735400	681
28735800	681
28735900	681
28740500	684
28741000	684
28741500	684
28742000	684
28744000	684
28744500	684
2880000	443
2880001	443
2880005	443
2880200	443
2880201	443
2880205	443
2880300	443
2880301	443
2880305	443
2880400	443
2880401	443
2880405	443
2880500	443
2880501	443
2880505	443
2880600	443
2880601	443

EDP Number	Page No.
2880605	443
2880700	443
2880701	443
2880705	443
2880800	443
2880801	443
2880805	443
2880900	443
2880901	443
2880905	443
2881000	443
2881001	443
2881005	443
2881100	443
2881101	443
2881105	443
2881200	443
2881201	443
2881205	443
2881300	443
2881301	443
2881305	443
2884100	443
2884101	443
2884105	443
2884200	443
2884201	443
2884205	443
2884300	443
2884301	443
2884305	443
2884400	443
2884401	443
2884405	443
2884500	443
2884501	443
2884505	443
2884600	443
2884601	443
2884605	443
2885000	443
2885001	443
2885005	443
2885200	443
2885201	443
2885205	443
2885300	443
2885301	443
2885305	443
2885400	443
2885401	443
2885405	443
2885500	443
2885501	443
2885505	443
2885600	443
2885601	443
2885605	443

EDP Number	Page No.
2885700	443
2885701	443
2885705	443
2885800	443
2885801	443
2885805	443
2885900	443
2885901	443
2885905	443
2886000	443
2886001	443
2886005	443
2886100	443
2886101	443
2886105	443
2886200	443
2886201	443
2886205	443
2886300	443
2886301	443
2886305	443
2886400	443
2886401	443
2886405	443
2886500	443
2886501	443
2886505	443
2886600	443
2886601	443
2886605	443
2886700	443
2886701	443
2886705	443
2886800	443
2886801	443
2886805	443
2886900	443
2886901	443
2886905	443
2887000	443
2887001	443
2887005	443
2888000	443
2888001	443
2888005	443
2888100	443
2888101	443
2888105	443
2888200	443
2888201	443
2888205	443
2888300	443
2888301	443
2888305	443
2888400	443
2888401	443
2888405	443
2888500	443

EDP Number	Page No.
2888501	443
2888505	443
2888600	443
2888601	443
2888605	443
2890400	442
2890401	442
2890408	442
2890500	442
2890501	442
2890508	442
2890600	442
2890601	442
2890608	442
2890800	442
2890801	442
2890808	442
2891000	442
2891001	442
2891008	442
2891100	442
2891101	442
2891108	442
2891300	442
2891301	442
2891308	442
2891400	442
2891401	442
2891408	442
2891600	442
2891601	442
2891608	442
2891700	442
2891701	442
2891708	442
2891800	442
2891801	442
2891808	442
2892100	442
2892101	442
2892108	442
2892200	442
2892201	442
2892208	442
2892300	442
2892301	442
2892308	442
2892501	442
2892508	442
2892601	442
2892608	442
2892801	442
2892808	442
2892901	442
2892908	442
2893001	442
2893008	442
2893101	442

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
2893108	442
2893201	442
2893208	442
2893301	442
2893308	442
2893401	442
2893408	442
2893501	442
2893508	442
2893601	442
2893608	442
2893701	442
2893708	442
2893801	442
2893901	442
2893908	442
2894001	442
2894101	442
2894108	442
2894201	442
2894301	442
2894308	442
2894401	442
2894501	442
2894508	442
2894601	442
2894701	442
2894708	442
2894801	442
2894901	442
2894908	442
2895001	442
2895101	442
2895108	442
2895201	442
2895208	442
2895301	442
2895501	442
2895508	442
2895701	442
2895708	442
2905600	395
2905601	395
2905608	395
2906000	395
2906001	395
2906008	395
2906400	395
2906401	395
2906408	395
2907000	395
2907001	395
2907008	395
2907200	395
2907201	395
2907208	395
2907400	395
2907401	395

EDP Number	Page No.
2907408	395
2907800	395
2907801	395
2907808	395
2908800	395
2908801	395
2908808	395
2911400	395
2911401	395
2911408	395
2912400	395
2912401	395
2912408	395
2912800	395
2912801	395
2912808	395
2913400	395
2913401	395
2913408	395
2913800	395
2913801	395
2913808	395
2916500	395
2916501	395
2916508	395
2916600	395
2916601	395
2916608	395
2916800	395
2916801	395
2916808	395
2917400	395
2917401	395
2917408	395
2917500	395
2917501	395
2917508	395
2917700	395
2917701	395
2917708	395
2917800	395
2917801	395
2917808	395
2918000	395
2918001	395
2918008	395
2918100	395
2918101	395
2918108	395
2918400	395
2918401	395
2918408	395
2918800	395
2918801	395
2918808	395
2919000	395
2919001	395
2919008	395

EDP Number	Page No.
2919100	395
2919101	395
2919108	395
292	478
2923400	395
2923401	395
2923408	395
2923600	395
2923601	395
2923608	395
2923800	395
2923801	395
2923808	395
2926400	396
2926401	396
2926408	396
2926800	396
2926801	396
2926808	396
2927600	396
2927601	396
2927608	396
2928000	395
2928001	395
2928008	395
293	478
2930000	395
2930001	395
2930008	395
2930300	396
2930301	396
2930308	396
2930400	396
2930401	396
2930408	396
2930600	396
2930601	396
2930608	396
2930800	396
2930801	396
2930808	396
2931200	396
2931201	396
2931208	396
2931500	396
2931501	396
2931508	396
2931600	396
2931601	396
2931608	396
2931800	396
2931801	396
2931808	396
2932000	396
2932001	396
2932008	396
2932200	396
2932201	396

EDP Number	Page No.
2932208	396
2932400	396
2932401	396
2932408	396
2932600	396
2932601	396
2932608	396
2933200	396
2933201	396
2933208	396
2933400	396
2933401	396
2933408	396
2933600	396
2933601	396
2933608	396
2933800	396
2933801	396
2933808	396
2935400	396
2935401	396
2935408	396
2936200	396
2936201	396
2936208	396
2936800	396
2936801	396
2936808	396
2939200	397
2939201	397
2939208	397
2939600	397
2939601	397
2939608	397
2940000	395
2940001	395
2940008	395
2940200	395
2940201	395
2940208	395
2940300	396
2940301	396
2940308	396
2940400	396
2940401	396
2940408	396
2940600	396
2940601	396
2940608	396
2940700	396
2940701	396
2940708	396
2940800	396
2940801	396
2940808	396
2941000	396
2941001	396
2941008	396

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
2941100	396
2941101	396
2941108	396
2941200	396
2941201	396
2941208	396
2941300	396
2941301	396
2941308	396
2941400	396
2941401	396
2941408	396
2941500	396
2941501	396
2941508	396
2941600	396
2941601	396
2941608	396
2941700	396
2941701	396
2941708	396
2941800	396
2941801	396
2941808	396
2941900	396
2941901	396
2941908	396
2942000	396
2942001	396
2942008	396
2942100	396
2942101	396
2942108	396
2942200	396
2942201	396
2942208	396
2942300	396
2942301	396
2942308	396
2942400	396
2942401	396
2942408	396
2942500	396
2942501	396
2942508	396
2942600	396
2942601	396
2942608	396
2942700	396
2942701	396
2942708	396
2942800	396
2942801	396
2942808	396
2942900	396
2942901	396
2942908	396
2943000	396

EDP Number	Page No.
2943001	396
2943008	396
2943100	396
2943101	396
2943108	396
2943200	396
2943201	396
2943208	396
2943300	396
2943301	396
2943308	396
2943600	396
2943601	396
2943608	396
2943800	396
2943801	396
2943808	396
2944000	397
2944001	397
2944008	397
2944400	397
2944401	397
2944408	397
2945001	397
2945601	397
2946201	397
2946801	397
2947201	397
2947601	397
2947701	397
2947901	397
2948001	397
2948201	397
2948301	397
2948501	397
2948600	396
2948601	396
2948608	396
2948800	396
2948801	396
2948808	396
2949000	396
2949001	396
2949008	396
2951300	393
2951400	393
2952500	393
2952600	393
2953100	393
2953200	393
2953800	393
2954300	393
2954400	393
2954600	393
2955000	393
2955200	393
2955600	393
2956200	393

EDP Number	Page No.
2956400	393
2956800	393
2956900	393
2957400	393
2957600	393
2958000	393
2963300	393
2963400	393
2963500	393
2963600	393
2963800	393
2964000	393
2964100	393
2984500	399
2984501	399
2984505	399
2984600	399
2984601	399
2984605	399
2985000	399
2985001	399
2985005	399
2985200	399
2985201	399
2985205	399
2985300	399
2985301	399
2985305	399
2985400	399
2985401	399
2985405	399
2985500	399
2985501	399
2985505	399
2985600	399
2985601	399
2985605	399
2985700	399
2985701	399
2985705	399
2985800	399
2985801	399
2985805	399
2985900	399
2985901	399
2985905	399
2986000	399
2986001	399
2986005	399
2986100	399
2986101	399
2986105	399
2986200	399
2986201	399
2986205	399
2986300	399
2986301	399
2986305	399

EDP Number	Page No.
2986400	399
2986401	399
2986405	399
2986500	399
2986501	399
2986505	399
2986600	399
2986601	399
2986605	399
2986700	399
2986701	399
2986705	399
2986800	399
2986801	399
2986805	399
2986900	399
2986901	399
2986905	399
2987000	399
2987001	399
2987005	399
2988000	399
2988001	399
2988005	399
2988100	399
2988101	399
2988105	399
2988200	399
2988201	399
2988205	399
2988300	399
2988301	399
2988305	399
2988400	399
2988401	399
2988405	399
2988500	399
2988501	399
2988505	399
2988600	399
2988601	399
2988605	399
2990400	398
2990401	398
2990408	398
2990500	398
2990501	398
2990508	398
2990600	398
2990601	398
2990608	398
2990800	398
2990801	398
2990808	398
2991000	398
2991001	398
2991008	398
2991100	398

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
2991101	398
2991108	398
2991300	398
2991301	398
2991308	398
2991400	398
2991401	398
2991408	398
2991600	398
2991601	398
2991608	398
2991700	398
2991701	398
2991708	398
2991800	398
2991801	398
2991808	398
2992100	398
2992101	398
2992108	398
2992200	398
2992201	398
2992208	398
2992300	398
2992301	398
2992308	398
2992501	398
2992601	398
2992801	398
2992901	398
2993001	398
2993101	398
2993201	398
2993301	398
2993401	398
2993501	398
2993601	398
2993701	398
2993801	398
2993901	398
2994001	398
2994101	398
2994201	398
2994301	398
2994401	398
2994501	398
2994601	398
2994701	398
2994801	398
2994901	398
2995001	398
2995101	398
2995201	398
2995301	398
2995501	398
2995701	398
3000100	447
300-0315	163

EDP Number	Page No.
300-0354	163
300-0394	163
300-0433	163
300-0465	163
300-0469	163
300-0472	163
300-0512	163
300-0520	163
300-0550	163
300-0551	163
300-0591	163
300-0595	163
300-0625	163
300-0630	163
300-0635	163
300-0669	163
300-0670	163
300-0700	163
300-0709	163
300-0730	163
300-0748	163
300-0760	163
300-0781	163
300-0785	163
300-0787	163
300-0810	163
300-0820	163
300-0827	163
300-0860	163
300-0866	163
300-0890	163
300-0906	163
300-0935	163
300-0938	163
300-0945	163
300-0960	163
300-0980	163
300-0984	163
300-0995	163
300-1015	163
300-1024	164
300-1040	164
300-1063	164
300-1065	164
300-1094	164
300-1100	164
300-1102	164
300-1110	164
300-1130	164
300-1142	164
300-1160	164
300-1181	164
300-1200	164
300-1220	164
300-1250	164
300-1260	164
300-1285	164
300-1299	164

EDP Number	Page No.
300-1339	164
300-1360	164
300-1378	164
300-1405	164
300-1406	164
300-1417	164
300-1440	164
300-1457	164
300-1470	164
300-1495	164
300-1496	164
300-1520	164
300-1535	164
300-1540	164
300-1562	164
300-1570	164
300-1575	164
300-1590	164
300-1610	164
300-1614	164
300-1654	164
300-1660	164
300-1693	164
300-1695	164
300-1719	164
300-1730	164
300-1732	164
300-1770	164
300-1772	164
300-1800	164
300-1811	164
300-1820	164
300-1850	165
300-1875	165
300-1890	165
300-1910	165
300-1929	165
300-1935	165
300-1960	165
300-1969	165
300-1990	165
300-2008	165
300-2010	165
300-2031	165
300-2040	165
300-2047	165
300-2055	165
300-2087	165
300-2090	165
300-2126	165
300-2130	165
300-2165	165
300-2188	165
300-2205	165
300-2210	165
300-2244	165
300-2280	165
300-2283	165

EDP Number	Page No.
300-2323	165
300-2340	165
300-2344	165
300-2362	165
300-2380	165
300-2402	165
300-2420	165
300-2441	165
300-2460	165
300-2480	165
300-2500	165
300-2520	165
300-2559	165
300-2570	165
300-2598	165
300-2610	165
300-2638	165
300-2656	165
300-2660	165
300-2677	165
300-2717	166
300-2720	166
300-2756	166
300-2770	166
300-2795	166
300-2810	166
300-2812	166
300-2835	166
300-2874	166
300-2900	166
300-2913	166
300-2950	166
300-2953	166
300-2969	166
300-2992	166
300-3020	166
300-3031	166
300-3071	166
3003100	447
300-3110	166
300-3125	166
300-3150	166
300-3160	166
300-3189	166
300-3228	166
300-3230	166
300-3268	166
300-3281	166
300-3307	166
300-3320	166
300-3346	166
300-3386	166
300-3390	166
300-3425	166
300-3438	166
300-3465	166
300-3480	166
300-3504	166

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
300-3543	166
300-3580	166
300-3583	166
300-3594	166
300-3622	166
300-3661	166
300-3680	166
300-3701	166
300-3740	166
300-3750	166
300-3770	166
300-3780	166
300-3819	166
300-3858	167
300-3860	167
300-3898	167
300-3906	167
300-3937	167
300-3970	167
300-3976	167
300-4016	167
300-4040	167
300-4055	167
300-4062	167
300-4094	167
300-4130	167
300-4134	167
300-4173	167
300-4213	167
300-4219	167
300-4252	167
300-4291	167
300-4331	167
300-4370	167
300-4375	167
300-4409	167
300-4449	167
300-4488	167
300-4528	167
300-4531	167
300-4567	167
300-4606	167
300-4646	167
300-4685	167
300-4688	167
300-4724	167
300-4764	167
300-4803	167
300-4843	167
300-4844	167
300-4882	167
300-4921	167
300-4961	167
300-5000	167
300-5079	167
300-5118	167
30100101	511
30100108	511

EDP Number	Page No.
30100201	511
30100208	511
30100301	511
30100308	511
30100401	511
30100408	511
30100501	511
30100508	511
30100601	511
30100608	511
30100701	511
30100708	511
30100801	511
30100808	511
30100901	511
30100908	511
30101101	511
30101108	511
30101201	511
30101208	511
30101301	511
30101308	511
30101401	511
30101408	511
30101501	511
30101508	511
30101601	511
30101608	511
30101701	511
30101708	511
30101801	511
30101808	511
30101901	511
30101908	511
30102101	511
30102108	511
30102201	511
30102208	511
30102301	511
30102308	511
30102401	511
30102408	511
30102501	511
30102508	511
30102601	511
30102608	511
30102701	511
30102708	511
30102801	511
30102808	511
30102901	511
30102908	511
30103101	511
30103108	511
30103201	511
30103208	511
30103301	511
30103308	511

EDP Number	Page No.
30103401	511
30103408	511
30103501	511
30103508	511
30103601	511
30103608	511
30103701	511
30103708	511
30103801	511
30103808	511
30103901	511
30103908	511
30104101	511
30104108	511
30104201	511
30104208	511
30104301	511
30104308	511
30104401	511
30104408	511
30104501	511
30104508	511
30104601	511
30104608	511
30104701	511
30104708	511
3017406	677
3017408	677
3017410	677
3017412	677
3017456	677
3017458	677
3017460	677
3017462	677
30200101	501
30200108	501
30200201	501
30200208	501
30200301	501
30200308	501
30200401	501
30200408	501
30200501	501
30200508	501
30200701	501
30200708	501
30200801	501
30200808	501
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30201008	501
30201101	501
30201108	501
30201201	501
30201208	501
30201301	501
30201308	501
30201401	501
30201408	501

EDP Number	Page No.
30201501	501
30201508	501
30201601	501
30201608	501
30201701	501
30201708	501
30201801	501
30201808	501
30201901	501
30201908	501
30202101	501
30202108	501
30202201	501
30202208	501
30202301	501
30202308	501
30202401	501
30202408	501
30202501	501
30202508	501
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30202608	501
30202701	501
30202708	501
30202801	501
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30202901	501
30202908	501
30203101	501
30203108	501
30203201	501
30203208	501
30203301	501
30203308	501
30203401	501
30203408	501
30203501	501
30203508	501
30203601	502
30203608	502
30203701	502
30203708	502
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30203808	502
30203901	502
30203908	502
30204101	502
30204108	502
30204201	502
30204208	502
30204301	502
30204308	502
30204401	502
30204408	502
30204501	502
30204508	502
30204601	502
30204608	502

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
30204701	502
30204708	502
30204801	502
30204808	502
30204901	502
30204908	502
30205101	502
30205108	502
30205201	502
30205208	502
30205301	502
30205308	502
30205401	502
30205408	502
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30205608	502
30205701	502
30205708	502
30205901	502
30205908	502
30206201	502
30206208	502
30206301	502
30206308	502
30206401	502
30206408	502
30206501	502
30206508	502
30206601	502
30206608	502
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30206708	502
30206801	502
30206808	502
30206901	502
30206908	502
3041010	646
3041015	646
3041020	646
3041025	646
3041030	646
3041035	646
3041040	646
3041045	646
3041050	646
3041055	646
3041060	646
3041080	646
3041100	646
3041120	646
3041410	644
3041415	644
3041420	644
3041430	644
3041440	644
3041441	644

EDP Number	Page No.
3041450	644
3041460	644
3041480	644
3041500	644
3041520	644
3049921	653
3049922	653
3049923	653
3049932	653
3049933	653
3049934	653
3049952	653
3049953	653
3049954	653
3049955	653
3049962	653
3049963	653
3049964	653
3049965	653
3049966	653
3049967	653
3049968	653
3049969	654
3050100	653
3050101	653
3050201	653
3050202	653
3050203	653
3050204	653
3050205	653
3050206	653
3050301	653
3050302	653
3050303	653
3050304	653
3050305	653
3050306	653
3050307	653
3050308	653
3050309	653
3050310	653
3050401	653
3050402	653
3050403	653
3050404	653
3050405	653
3050406	653
3050407	653
3050408	653
3050409	653
3050410	653
3050411	653
3050412	653
3050500	653
3050501	653
3050502	653
3050503	653
3050504	653

EDP Number	Page No.
3050505	653
3050506	653
3050507	653
3050508	653
3050509	653
3050510	653
3050601	653
3050602	653
3050603	653
3050604	653
3050605	653
3050606	653
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3050608	653
3050609	654
3050610	654
3050611	654
3050612	654
3050802	654
3050803	654
3050804	654
3050805	654
3050806	654
3050807	654
3050808	654
3050810	654
3050812	654
3051002	654
3051003	654
3051004	654
3051005	654
3051006	654
3051007	654
3051008	654
3051009	654
3051010	654
3051012	654
3051014	654
3051016	654
3051018	654
3051020	654
3051022	654
3051202	654
3051204	654
3051206	654
3051208	654
3051210	654
3051212	654
3051214	654
3051216	654
3051218	654
3051220	654
3051503	654
3051504	654
3051506	654
3051508	654
3051510	654
3051512	654

EDP Number	Page No.
3051514	654
3051516	654
3051518	654
3051520	654
3051522	654
3051530	654
3051608	654
3051612	654
3051616	654
3051620	654
3052004	654
3052006	654
3052008	654
3052010	654
3052012	654
3052014	654
3052016	654
3052018	654
3052020	654
3052022	654
3052025	654
3052030	654
3052035	654
3052040	654
3052510	654
3052515	654
3052520	654
3052525	654
3052530	654
3052535	654
3053006	654
3053008	654
3053010	654
3053012	654
3053014	654
3053015	654
3053016	654
3053020	654
3053025	654
3053030	654
3053035	654
3053040	654
3053515	654
3053520	654
3053525	654
3053530	654
3053535	654
3053540	654
3053545	654
3054008	654
3054010	654
3054012	654
3054015	654
3054016	654
3054020	654
3054025	654
3054030	654
3054035	655

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
3054040	655
3054045	655
3054050	655
3055010	655
3055015	655
3055020	655
3055025	655
3055030	655
3055035	655
3055040	655
3055045	655
3055050	655
3056012	655
3056020	655
3056025	655
3056030	655
3056035	655
3056040	655
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3056050	655
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3090202	603
3090204	603
3090206	603
3090208	603
3090210	603
3090212	603
3090216	603
3090220	603
3090222	603
3090226	603
3090230	603
3090312	603
3090316	603
3090320	603
3090322	603
3090330	603
3090512	609
3090516	609
3090520	609
3090522	609
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3090530	609
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3095142	605
3095143	605
3095144	605
3095145	605
3095146	605
3095147	605
3095155	605
3095157	605
3095191	605
3095211	605
3095212	605
3095213	605
3095214	605
3095215	605
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3095223	605
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3095342	606
3095343	606
3095344	606
3095345	606
3095346	606
3095356	606
3095365	606
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3095421	606
3095441	606
3095442	606
3095443	606
3095444	606
3095445	606
3095453	606
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3095651	606
3095653	606
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3095851	606
3095853	606
3095862	606
3096041	607
3096042	607
3096043	607
3096044	607
3096045	607
3096046	607
3096051	607
3096053	607
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3096064	607
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3096242	607
3096243	607
3096244	607
3096254	607
3097223	611
3097224	611
3097225	611
3097226	611
3097227	611
3097241	611
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3097342	611
3097343	611
3097344	612
3097345	612
3097346	612
3097356	612
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3097421	612
3097422	612
3097423	612
3097424	612
3097425	612
3097426	612
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3097442	612
3097443	612
3097444	612
3097453	612
3097454	612
3097461	612
3097462	612
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3097642	612
3097643	612
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3097842	612
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3098043	612
3098044	612
3098045	612
3098046	612
3098051	612
3098053	612
3098061	612
3098064	613
3098224	613
3098241	613
3098242	613
3098243	613
3098244	613
3098254	613
3100403	650
3100404	650

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
3100405	650
3100406	650
3100407	650
3100408	650
3100501	650
3100502	650
3100503	650
3100504	650
3100505	650
3100506	650
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3101011	650
3101012	650
3101013	650
3101014	650
3101015	650
3101016	650
3101017	650
3101018	650
3101019	650
3101020	650
3101021	650
3101022	650
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3101502	650
3101503	650
3101504	650
3101505	650
3101506	650
3101507	650
3101508	650
3101509	650
3101510	650
3102001	650
3102002	650

EDP Number	Page No.
3102003	650
3102004	650
3102005	650
3102006	650
3102007	650
3102008	650
3102009	650
3102010	650
3102011	650
3102012	650
3102013	650
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3103011	652
3103012	652
3103013	652
3103014	652
3103015	652
3103016	652
3103017	652
3103018	652
3103019	652
3105010	616
3105020	616
3105030	616
3105040	616
3105050	616
3105060	616
3105080	616
3105100	616
3105120	616
3105140	616
3105150	616

EDP Number	Page No.
3105160	616
3105200	616
3105250	616
3105300	616
3105400	616
3106100	616
3106150	616
3106200	616
3106250	616
3106301	616
3106350	616
3106400	616
3106500	616
3106502	616
3106600	616
3106601	616
3106610	616
3106620	616
3106621	616
3106630	616
3106640	616
3106641	616
3106650	616
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3106661	616
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3110103	620
3110105	620
3110108	484
3110203	620
3110205	620
3110207	620
3110208	484
3110210	620
3110212	620
3110215	620
3110217	620
3110220	620
3110225	620
3110230	620
3110305	620
3110306	620
3110307	620
3110308	484
3110310	620
3110312	620
3110315	620
3110317	620
3110320	620
3110322	620
3110325	620
3110327	620
3110330	620
3110335	620
3110340	620

EDP Number	Page No.
3110345	620
3110350	620
3110405	620
3110407	620
3110408	484
3110410	620
3110415	620
3110420	620
3110425	620
3110430	620
3110435	620
3110440	620
3110445	620
3110450	620
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3110460	620
3110508	484
3110510	620
3110515	620
3110520	620
3110525	620
3110530	620
3110535	620
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3110580	620
3110590	620
3110600	620
3110608	484
3110610	620
3110615	620
3110620	620
3110625	620
3110630	620
3110635	620
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3110665	620
3110670	620
3110675	620
3110680	620
3110685	620
3110690	620
3110695	620
3110700	620
3110708	484
3110711	620
3110712	620
3110808	484
3110820	620
3110830	620

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
3110840	620
3110850	620
3110860	620
3110870	620
3110880	620
3110890	620
3110900	620
3110908	484
3110912	620
3111008	484
3111025	620
3111030	620
3111040	620
3111050	620
3111060	620
3111070	620
3111080	620
3111090	620
3111100	620
3111108	484
3111112	620
3111114	620
3111116	620
3111118	620
3111120	620
3111208	484
3111240	620
3111260	621
3111280	621
3111300	621
3111308	484
3111312	621
3111314	621
3111316	621
3111318	621
3111320	621
3111324	621
3111408	484
3111480	621
3111508	484
3111512	621
3111516	621
3111530	621
3111540	621
3111560	621
3111580	621
3111600	621
3111612	621
3111614	621
3111616	621
3111618	621
3111620	621
3111622	621
3111630	621
3111640	621
3111680	621
3111712	621
3111716	621

EDP Number	Page No.
3111720	621
3111880	621
3111912	621
3111916	621
3111920	621
3112030	621
3112040	621
3112060	621
3112080	621
3112100	621
3112112	621
3112114	621
3112116	621
3112118	621
3112120	621
3112122	621
3112125	621
3112130	621
3112135	621
3112140	621
3112560	621
3112600	621
3112615	621
3112620	621
3112625	621
3112630	621
3112635	621
3123060	621
3123080	621
3123100	621
3123112	621
3123114	621
3123115	621
3123116	621
3123120	621
3123125	621
3123130	621
3123135	621
3123140	621
3123600	621
3123615	621
3123620	621
3123625	621
3123630	621
3123635	621
3123640	621
3123645	621
3124080	621
3124100	621
3124112	621
3124114	621
3124115	621
3124116	621
3124120	621
3124125	621
3124130	621
3124135	621
3124140	621

EDP Number	Page No.
3124145	621
3124150	621
3125100	621
3125115	621
3125120	621
3125125	621
3125130	621
3125135	621
3125140	622
3125145	622
3125150	622
3126100	622
3126120	622
3126125	622
3126130	622
3126135	622
3126140	622
3126145	622
3126150	622
3130510	624
3130515	624
3130520	624
3130525	624
3130530	624
3130535	624
3130540	624
3130545	624
3130550	624
3130560	624
3130570	624
3130580	624
3130590	624
3130600	624
3130620	624
3131201	626
3131202	626
3131203	626
3131204	626
3131205	626
3131206	626
3131207	626
3131208	626
3131302	626
3131303	626
3131304	626
3131305	626
3131306	626
3131308	626
3131310	626
3131312	626
3131318	626
3131403	626
3131404	626
3131406	626
3131408	626
3131410	626
3131412	626
3131414	626

EDP Number	Page No.
3131416	626
3131418	626
3131420	626
3131424	626
3131501	626
3131502	626
3131503	626
3131504	626
3131505	626
3131506	626
3131507	626
3131508	626
3131509	626
3131510	626
3131512	626
3131515	626
3131602	626
3131603	626
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3131608	626
3131610	626
3131612	626
3131615	626
3131618	626
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3131704	626
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3131804	626
3131806	626
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3131812	626
3131814	626
3131816	626
3131820	626
3131824	626
3131904	626
3131906	626
3131908	626
3131910	626
3131915	626
3132003	626
3132004	626
3132005	626
3132006	626
3132007	626
3132008	626
3132009	626
3132010	626
3132012	626
3132014	627
3132016	627
3132018	627

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
3132020	627
3132022	627
3132025	627
3132030	627
3132204	627
3132206	627
3132208	627
3132210	627
3132212	627
3132214	627
3132216	627
3132220	627
3132406	627
3132408	627
3132410	627
3132412	627
3132414	627
3132416	627
3132422	627
3132504	627
3132506	627
3132508	627
3132510	627
3132512	627
3132514	627
3132516	627
3132518	627
3132520	627
3132525	627
3132530	627
3132538	627
3132540	627
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3132608	627
3132610	627
3132612	627
3132614	627
3132616	627
3132618	627
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3132810	627
3132812	627
3132814	627
3132816	627
3132818	627
3132820	627
3132825	627
3133006	627
3133008	627
3133010	627
3133012	627
3133014	627
3133016	627
3133018	627
3133020	627

EDP Number	Page No.
3133025	627
3133030	627
3133035	627
3133040	627
3133050	627
3133060	627
3133508	627
3133510	627
3133512	627
3133514	627
3133516	627
3133518	627
3133520	627
3133525	627
3133530	627
3133540	627
3133550	627
3134008	627
3134010	627
3134012	627
3134014	627
3134016	627
3134018	627
3134020	627
3134025	627
3134030	627
3134035	627
3134040	627
3134050	627
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3135016	627
3135020	627
3135025	627
3135030	627
3135035	627
3135040	627
3135045	627
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3136020	627
3136025	627
3136030	627
3136035	627
3136040	627
3136050	627
3136060	627
31400101	509
31400108	509
31400201	509
31400208	509
31400301	509
31400308	509
31400401	509
31400408	509
31400501	509
31400508	509
31400601	509

EDP Number	Page No.
31400608	509
31400701	509
31400708	509
31400801	509
31400808	509
31400901	509
31400908	509
31401001	509
31401008	509
31401101	509
31401108	509
31401201	509
31401208	509
31401301	509
31401308	509
31401401	509
31401408	509
31401501	509
31401508	509
31401601	509
31401608	509
31401701	509
31401708	509
31401801	509
31401808	509
31401901	509
31401908	509
31402001	509
31402008	509
31402101	509
31402108	509
31402201	509
31402208	509
31402301	509
31402308	509
31402401	509
31402408	509
31402501	509
31402508	509
31402601	509
31402608	509
31402701	509
31402708	509
31402801	509
31402808	509
31402901	509
31402908	509
31403001	509
31403008	509
31403101	509
31403108	509
31403201	509
31403208	509
31403301	509
31403308	509
31403401	509
31403408	509
31403501	509

EDP Number	Page No.
31403508	509
31403601	509
31403608	509
31403701	509
31403708	509
31403801	509
31403808	509
31403901	509
31403908	509
31404001	509
31404008	509
31404101	509
31404108	509
31404201	509
31404208	509
31404301	509
31404308	509
3141203	481
3141303	481
3141803	481
3141903	481
31420108	508
31420208	508
31420308	508
31420408	508
31420508	508
31420608	508
31420708	508
31420808	508
31420908	508
31421008	508
3142203	481
3142303	481
3142803	481
3142903	481
31440108	507
31440208	507
31440308	507
31440408	507
31440508	507
31440608	507
31440708	507
31440808	507
31440908	507
31441008	507
3144203	481
3144303	481
3144803	481
3144903	481
3145203	481
3145303	481
3145803	481
3145903	481
3146203	481
3146303	481
3146403	481
3146503	481
3146603	481

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
3146703	481
3146803	481
3146903	481
3147203	481
3147303	481
3147803	481
3147903	481
31500101	499
31500108	499
31500201	499
31500208	499
31500301	499
31500308	499
31500401	499
31500408	499
31500501	499
31500508	499
31500601	499
31500608	499
31500701	499
31500708	499
31500801	499
31500808	499
31500901	499
31500908	499
31501001	499
31501008	499
31501101	499
31501108	499
31501201	499
31501208	499
31501301	499
31501308	499
31501401	499
31501408	499
31501501	499
31501508	499
31501601	499
31501608	499
31501701	499
31501708	499
31501801	499
31501808	499
31501901	499
31501908	499
31502001	499
31502008	499
31502101	499
31502108	499
31502201	499
31502208	499
31502301	499
31502308	499
31502401	499
31502408	499
31502501	499
31502508	499
31502601	499

EDP Number	Page No.
31502608	499
31502701	499
31502708	499
31502801	499
31502808	499
31502901	499
31502908	499
31503001	499
31503008	499
31503101	499
31503108	499
31503201	499
31503208	499
31503301	499
31503308	499
31503401	499
31503408	499
31503501	499
31503508	499
31503601	499
31503608	499
31503701	499
31503708	499
31503801	499
31503808	499
31503901	499
31503908	499
31504001	499
31504008	499
31504101	499
31504108	499
31504201	499
31504208	499
31504301	499
31504308	499
31520108	498
31520208	498
31520308	498
31520408	498
31520508	498
31520608	498
31520708	498
31520808	498
31520908	498
31521008	498
31540108	497
31540208	497
31540308	497
31540408	497
31540508	497
31540608	497
31540708	497
31540808	497
31540908	497
31541008	497
3170011	631
3170012	631
3170013	631

EDP Number	Page No.
3170014	631
3170015	631
3170021	631
3170022	631
3170023	631
3170031	631
3170032	631
3170041	631
3170042	631
3170051	631
3170052	631
3170053	631
3170054	631
3170055	631
3170061	631
3170062	631
3170063	631
3170071	631
3170072	631
3170073	632
3170074	632
3170081	632
3170082	632
3170083	632
3170084	632
3170085	632
3170091	632
3170092	632
3170093	632
3170094	632
3170095	632
3170096	632
3170097	632
3170101	632
3170102	632
3170103	632
3170104	632
3170105	632
3170106	632
3170111	632
3170112	632
3170113	632
3170114	632
3170121	632
3170122	632
3170123	632
3170131	632
3170132	632
3170133	632
3170134	632
3170135	632
3170136	632
3170137	632
3170138	632
3170139	632
3170140	632
3170141	632
3170142	632

EDP Number	Page No.
3170143	632
3170144	632
3170145	632
3170146	632
3170147	632
3170148	632
3170149	632
3170150	632
3170151	632
3170152	632
3170153	632
3170154	633
3170155	633
3170156	633
3170157	633
3170158	633
3170161	633
3170171	633
3170172	633
3170181	633
3170182	633
3170191	633
3170192	633
3170211	633
3170212	633
3170213	633
3170214	633
3170215	633
3170216	633
3170217	633
3170218	633
3170221	633
3170222	633
3170223	633
3170224	633
3170225	633
3170226	634
3170227	634
3170230	634
3170231	634
3170232	634
3170233	634
3170234	634
3170235	634
3170236	634
3170241	634
3170271	634
3170272	634
3170273	634
3170274	634
3170275	634
3170276	634
3170277	634
3170278	634
3170279	634
3170281	634
3170282	634
3170283	634

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
3170284	634
3170285	634
3170286	634
3170287	634
3170288	634
3170289	634
3170291	634
3170292	634
3170293	634
3170294	634
3170295	634
3170296	634
3170301	634
3170321	634
3170322	634
3170323	634
3170324	634
3170325	634
3170326	634
3170327	634
3170328	634
3170329	634
3170330	634
3170331	634
3170332	634
3170333	634
3170334	635
3170335	635
3170336	635
3170337	635
3170338	635
3170341	635
3170342	635
3170343	635
3170344	635
3170345	635
3170346	635
3170347	635
3170351	635
3170371	635
3170372	635
3170373	635
3170374	635
3170375	635
3170381	635
3170391	635
3170401	635
3170402	635
3170403	635
3170411	635
3170412	635
3170421	636
3170431	636
3170432	636
3170433	636
3170434	636
3170435	636
3170436	636

EDP Number	Page No.
3170441	636
3170451	636
3172004	641
3172006	641
3172008	641
3172010	641
3172012	641
3172016	641
3172206	641
3172208	641
3172210	641
3172212	641
3172216	641
3172406	641
3172408	641
3172410	641
3172412	641
3172414	641
3172416	641
3172422	641
3172506	641
3172508	641
3172510	641
3172512	641
3172514	641
3172516	641
3172518	641
3172520	641
3172606	641
3172608	641
3172610	641
3172612	641
3172614	641
3172616	641
3172618	641
3172620	641
3172625	641
3172806	641
3172808	641
3172810	641
3172812	641
3172814	641
3172816	641
3172818	642
3172820	642
3172825	642
3173006	642
3173008	642
3173010	642
3173012	642
3173014	642
3173016	642
3173018	642
3173020	642
3173025	642
3173030	642
3173508	642
3173512	642

EDP Number	Page No.
3173516	642
3173520	642
3173525	642
3174008	642
3174012	642
3174016	642
3174020	642
3174025	642
3174030	642
3181801	629
3181802	629
3181803	629
3181804	629
3181805	629
3181806	629
3181807	629
3181808	629
3181809	629
3181810	629
3181811	629
3181812	629
3181813	629
3181814	629
3181815	629
3181816	629
3181817	629
3181818	629
3181819	629
3181820	629
3181821	629
3181822	629
3181823	629
3181824	629
3181825	629
3181826	629
3181827	629
3181828	629
3181829	629
3181830	629
3181831	629
3181832	629
3181833	629
3181834	629
3181835	629
3181836	629
3181837	629
3181838	629
3181839	629
3181840	629
3181841	629
3181842	629
3181843	629
3181844	629
3181845	629
3181846	629
3181847	629
3181848	629
3181849	629

EDP Number	Page No.
3181850	629
3181851	629
3181852	629
3181853	629
3181854	629
3181855	629
3181856	629
3181857	629
3181858	629
3181859	629
3181860	629
3182001	630
3182002	630
3182003	630
3182004	630
3182005	630
3182006	630
3182007	630
3182008	630
3182009	630
3182010	630
3182011	630
3182012	630
3182013	630
3182014	630
3182015	630
3182016	630
3182017	630
3182018	630
3182019	630
3182020	630
3182021	630
3182022	630
3182023	630
3182024	630
3182025	630
3182026	630
3182027	630
3182028	630
3182029	630
3182030	630
3182031	630
3182032	630
3182033	630
3182034	630
3182035	630
3182036	630
3182037	630
3182038	630
3182039	630
3182040	630
3182041	630
3182042	630
3182043	630
3182044	630
3182045	630
3182046	630
3182047	630

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
3182048	630
3182049	630
3182050	630
3182051	630
3182052	630
3182053	630
3182054	630
3182055	630
3182056	630
3182057	630
3182058	630
3182059	630
3182060	630
3182065	630
3182070	630
3182075	630
3182080	630
3182085	630
3182090	630
3182095	630
3182100	630
3182110	630
3182120	630
3182160	630
3182180	630
3182200	630
3182401	637
3182402	637
3182403	637
3182404	637
3182405	637
3182406	637
3182407	637
3182408	637
3182409	637
3182410	637
3182411	637
3182412	637
3182413	637
3182414	637
3182415	637
3182416	637
3182417	637
3182418	637
3182419	637
3182420	637
3182421	637
3182422	637
3182423	637
3182424	637
3182425	637
3182426	637
3182427	637
3182428	637
3182429	637
3182430	637
3182431	637
3182432	637

EDP Number	Page No.
3182433	637
3182434	637
3182435	637
3182436	637
3182437	637
3182438	637
3182439	637
3182440	637
3182441	637
3182442	637
3182443	637
3182444	637
3182445	637
3182446	637
3182447	637
3182448	637
3182449	637
3182450	637
3182451	637
3182452	637
3182453	637
3182454	637
3182455	637
3182456	637
3182457	637
3182458	637
3182459	637
3182460	637
3182465	637
3182470	637
3182475	637
3182480	637
3182485	637
3182490	637
3182495	637
3182500	637
3182510	637
3182520	637
3182560	637
3182580	637
3182600	637
3182602	638
3182603	638
3182604	638
3182605	638
3182606	638
3182607	638
3182608	638
3182609	638
3182610	638
3182611	638
3182612	638
3182613	638
3182614	638
3182615	638
3182616	638
3182617	638
3182618	638

EDP Number	Page No.
3182619	638
3182620	638
3182621	638
3182622	638
3182623	638
3182624	638
3182625	638
3182626	638
3182627	638
3182628	638
3182629	638
3182630	638
3182631	638
3182632	638
3182633	638
3182634	638
3182635	638
3182636	638
3182637	638
3182638	638
3182639	638
3182640	638
3182641	638
3182642	638
3182643	638
3182644	638
3182645	638
3182646	638
3182647	638
3182648	638
3182649	638
3182650	638
3182651	638
3182652	638
3182653	638
3182654	638
3182655	638
3182656	638
3182657	638
3182658	638
3182659	638
3182660	638
3182680	638
3182700	638
3182720	638
3190000	489
3190100	489
3190200	489
3190300	489
3190400	489
3190500	489
3190600	489
3190700	489
3190800	608
3190801	608
3190802	608
3190803	608
3190900	489

EDP Number	Page No.
3191000	489
3191006	608
3191007	608
3191008	608
3191009	608
3191010	608
3191011	608
3191012	608
3191013	608
3191014	608
3191015	608
3191018	608
3191019	608
3191100	489
3191200	489
3191300	489
3191400	489
3191500	489
3191501	608
3191503	608
3191505	608
3191506	608
3191507	608
3191508	608
3192001	608
3192002	608
3192003	608
3192004	608
3192013	608
3192015	608
3192019	608
3192020	608
3192021	608
3192022	608
3193008	608
3194901	604
3194902	604
3194903	604
3194904	604
3194906	604
3195004	604
3195006	604
3195008	604
3195010	604
3195012	604
3195014	604
3195016	604
3195106	604
3195108	604
3195110	604
3195112	604
3195116	604
3195206	604
3195208	604
3195210	604
3195212	604
3195214	604
3195216	604

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
3195218	604
3195220	604
3195222	604
3195312	604
3195316	604
3195320	604
3195325	604
3195416	604
3195420	604
3195425	604
3195520	604
3195530	604
3291216	486
3291316	486
3291416	486
3291516	486
3291616	486
3291716	486
3291816	486
3297016	486
3297116	486
3297216	486
3297316	486
3297416	486
3297516	486
3297616	486
3297716	486
3297816	486
3297916	486
3298016	486
3298116	486
3298216	486
3298316	486
3298416	486
3298516	486
3298616	486
3298716	486
3298816	486
3298916	486
3299016	486
3299116	486
3299216	486
3300020	117
3300021	117
3300022	117
3300023	117
3300024	117
3300025	117
3300026	117
3300027	117
3300028	117
3300029	117
3300030	117
3300031	117
3300032	117
3300033	117
3300034	117
3300035	117
3300036	117
3300037	117
3300038	117
3300039	117
3300040	117
3300041	117
3300042	117
3300043	117
3300044	117
3300045	117
3300046	117
3300047	117
3300048	117
3300049	117
3300050	117
3300051	117
3300052	117
3300053	117
3300054	117
3300055	117
3300056	117
3300057	117
3300058	117
3300059	117
3300060	118
3300061	118
3300062	118
3300063	118
3300064	118
3300065	118
3300066	118
3300067	118
3300068	118
3300069	118
3300070	118
3300071	118
3300072	118
3300073	118
3300074	118
3300075	118
3300076	118
3300077	118
3300078	118
3300079	118
3300080	118
3300081	118
3300082	118
3300083	118
3300084	118
3300085	118
3300086	118
3300087	118
3300088	118
3300089	118
3300090	118
3300091	118
3300092	118
3300093	118
3300094	118
3300095	118
3300096	118
3300097	118
3300098	118
3300099	118
3300100	118
3300101	118
3300102	118
3300103	118
3300104	118
3300105	118
3300106	118
3300107	118
3300108	118
3300109	118
3300110	119
3300111	119
3300112	119
3300113	119
3300114	119
3300115	119
3300116	119
3300117	119
3300118	119
3300119	119
3300120	119
3300121	119
3300122	119
3300123	119
3300124	119
3300125	119
3300126	119
3300127	119
3300128	119
3300129	119
3300130	119
3300131	119
3300132	119
3300133	119
3300134	119
3300135	119
3300136	119
3300137	119
3300138	119
3300139	119
3300140	119
3300141	119
3300142	119
3300143	119
3300144	119
3300145	119
3300146	119
3300147	119
3300148	119
3300149	119
3300150	119
3300151	119
3300152	119
3300153	119
3300154	119
3300155	119
3300156	120
3300157	120
3300158	120
3300159	120
3300160	120
3300161	120
3300162	120
3300163	120
3300164	120
3300165	120
3300166	120
3300167	120
3300168	120
3300169	120
3300170	120
3300171	120
3300172	120
3300173	120
3300174	120
3300175	120
3300176	120
3300177	120
3300178	120
3300179	120
3300180	120
3300181	120
3300182	120
3300183	120
3300184	120
3300185	120
3300186	120
3300187	120
3300188	120
3300189	120
3300190	120
3300191	120
3300192	120
3300193	120
3300194	120
3300195	120
3300196	120
3300197	120
3300198	120
3300199	120
3300200	120
3300205	120
3300210	121
3300215	121
3300220	121
3300225	121
3300230	121
3300235	121
3300240	121
3300245	121

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
3300250	121
3300255	122
3300260	122
3300265	122
3300270	122
3300275	122
3300280	122
3300285	122
3300290	122
3300295	122
3300300	122
3300305	123
3300310	123
3300315	123
3300320	123
3300325	123
3300330	123
3300335	123
3300340	123
3300345	123
3300350	124
3300355	124
3300360	124
3300365	124
3300370	124
3300375	124
3300380	124
3300385	124
3300390	124
3300395	124
3300400	125
3300405	125
3300410	125
3300415	125
3300420	125
3300425	125
3300430	125
3300435	125
3300440	125
3300445	125
3300450	125
3300455	125
3300460	125
3300465	125
3300470	125
3300475	125
3300480	125
3300485	125
3300490	125
3300495	125
3300500	125
3310100	524
3310101	524
3310108	524
3310500	524
3310501	524
3310508	524
3310900	524

EDP Number	Page No.
3310901	524
3310908	524
3312500	524
3312501	524
3312508	524
3312900	524
3312901	524
3312908	524
3316330	58
3316340	58
3316349	58
3316350	58
3316360	58
3316370	58
3316380	58
3316390	58
3316400	58
3316410	58
3316415	58
3316420	58
3316430	58
3316440	58
3316450	58
3316460	58
3316470	58
3316480	58
3316490	58
3316500	58
3316510	58
3316520	58
3316530	58
3316540	58
3316550	58
3316556	58
3316560	58
3316570	58
3316580	58
3316590	58
3316600	58
3316650	58
3316680	58
3316700	58
3316750	58
3316780	58
3316800	59
3316850	59
3316858	59
3316870	59
3316880	59
3316900	59
3316950	59
3316980	59
3316997	59
3317000	59
3317030	59
3317050	59
3317080	59
3317100	59

EDP Number	Page No.
3317150	59
3317156	59
3317180	59
3317200	59
3318200	71
3318210	71
3318220	71
3318230	71
3318240	71
3318250	71
3318260	71
3318270	71
3318280	71
3318290	71
3318300	71
3318310	71
3318320	71
3318330	71
3318340	71
3318350	71
3318360	71
3318370	71
3318380	71
3318390	71
3318400	71
3318410	71
3318420	71
3318430	71
3318440	71
3318450	71
3318460	71
3318470	71
3318480	71
3318490	71
3318500	71
3318510	71
3318520	71
3318530	71
3318540	71
3318550	71
3318560	71
3318570	71
3318580	71
3318590	71
3318600	71
3318610	71
3318620	72
3318630	72
3318640	72
3318650	72
3318660	72
3318670	72
3318680	72
3318690	72
3318700	72
3318710	72
3318720	72
3318730	72

EDP Number	Page No.
3318740	72
3318750	72
3318760	72
3318770	72
3318780	72
3318790	72
3318800	72
3318810	72
3318820	72
3318830	72
3318840	72
3318850	72
3318860	72
3318870	72
3318880	72
3318890	72
3318900	72
3318910	72
3318920	72
3318930	72
3318940	72
3318950	72
3318960	72
3318970	72
3318980	72
3318990	72
3319000	72
3319010	72
3319020	72
3319030	72
3319040	72
3319050	72
3319060	72
3319070	72
3319080	72
3319090	72
3319100	72
3319110	72
3319120	72
3319130	72
3319140	73
3319150	73
3319160	73
3319170	73
3319180	73
3319190	73
3319200	73
3320200	63
3320210	63
3320220	63
3320230	63
3320240	63
3320250	63
3320260	63
3320270	63
3320280	63
3320290	63
3320300	63

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
3320310	63
3320320	63
3320330	63
3320340	63
3320350	63
3320360	63
3320370	63
3320380	63
3320390	63
3320400	63
3320410	63
3320420	63
3320430	63
3320440	63
3320450	63
3320460	63
3320470	63
3320480	63
3320490	63
3320500	63
3320510	63
3320520	63
3320530	63
3320540	63
3320550	64
3320560	64
3320570	64
3320580	64
3320590	64
3320600	64
3320610	64
3320620	64
3320630	64
3320640	64
3320650	64
3320660	64
3320670	64
3320680	64
3320690	64
3320700	64
3320710	64
3320720	64
3320730	64
3320740	64
3320750	64
3320760	64
3320770	64
3320780	64
3320790	64
3320800	64
3320810	64
3320820	64
3320830	64
3320840	64
3320850	64
3320860	64
3320870	64
3320880	64

EDP Number	Page No.
3320890	64
3320900	64
3320910	64
3320920	64
3320930	64
3320940	64
3320950	65
3320960	65
3320970	65
3320980	65
3320990	65
3321000	65
3321010	65
3321020	65
3321030	65
3321040	65
3321050	65
3321060	65
3321070	65
3321080	65
3321090	65
3321100	65
3321110	65
3321120	65
3321130	65
3321140	65
3321150	65
3321160	65
3321170	65
3321180	65
3321190	65
3321200	65
3322200	67
3322210	67
3322220	67
3322230	67
3322240	67
3322250	67
3322260	67
3322270	67
3322280	67
3322290	67
3322300	67
3322310	67
3322320	67
3322330	67
3322340	67
3322350	67
3322360	67
3322370	67
3322380	67
3322390	67
3322400	67
3322410	67
3322420	67
3322430	67
3322440	67
3322450	67

EDP Number	Page No.
3322460	67
3322470	67
3322480	67
3322490	67
3322500	67
3322510	67
3322520	67
3322530	67
3322540	67
3322550	68
3322560	68
3322570	68
3322580	68
3322590	68
3322600	68
3322610	68
3322620	68
3322630	68
3322640	68
3322650	68
3322660	68
3322670	68
3322680	68
3322690	68
3322700	68
3322710	68
3322720	68
3322730	68
3322740	68
3322750	68
3322760	68
3322770	68
3322780	68
3322790	68
3322800	68
3322810	68
3322820	68
3322830	68
3322840	68
3322850	68
3322860	68
3322870	68
3322880	68
3322890	68
3322900	68
3322910	68
3322920	68
3322930	68
3322940	68
3322950	69
3322960	69
3322970	69
3322980	69
3322990	69
3323000	69
3323010	69
3323020	69
3323030	69

EDP Number	Page No.
3323040	69
3323050	69
3323060	69
3323070	69
3323080	69
3323090	69
3323100	69
3323110	69
3323120	69
3323130	69
3323140	69
3323150	69
3323160	69
3323170	69
3323180	69
3323190	69
3323200	69
3323210	69
3323220	69
3323230	69
3323240	69
3323250	69
3323260	69
3323270	69
3323280	69
3323290	69
3323300	69
3323310	69
3323320	69
3323330	69
3323340	69
3323350	69
3323400	70
3323450	70
3323500	70
3323550	70
3323600	70
3323650	70
3323700	70
3323750	70
3323800	70
3323850	70
3323900	70
3323950	70
3324000	70
3330200	60
3330210	60
3330220	60
3330230	60
3330240	60
3330250	60
3330260	60
3330270	60
3330280	60
3330290	60
3330300	60
3330310	60
3330320	60

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
3330330	60
3330340	60
3330350	60
3330360	60
3330370	60
3330380	60
3330390	60
3330400	60
3330410	60
3330420	60
3330430	60
3330440	60
3330450	60
3330460	60
3330470	60
3330480	60
3330490	60
3330500	60
3330510	60
3330520	60
3330530	60
3330540	60
3330550	60
3330560	60
3330570	60
3330580	60
3330590	60
3330600	60
3330610	60
3330620	60
3330630	60
3330640	60
3330650	60
3330660	61
3330670	61
3330680	61
3330690	61
3330700	61
3330710	61
3330720	61
3330730	61
3330740	61
3330750	61
3330760	61
3330770	61
3330780	61
3330790	61
3330800	61
3330810	61
3330820	61
3330830	61
3330840	61
3330850	61
3330860	61
3330870	61
3330880	61
3330890	61
3330900	61

EDP Number	Page No.
3330910	61
3330920	61
3330930	61
3330940	61
3330950	61
3330960	61
3330970	61
3330980	61
3330990	61
3331000	61
3331010	61
3331020	61
3331030	61
3331040	61
3331050	61
3331060	61
3331070	61
3331080	62
3331090	62
3331100	62
3331110	62
3331120	62
3331130	62
3331140	62
3331150	62
3331160	62
3331170	62
3331180	62
3331190	62
3331200	62
3331250	62
3331270	62
3331300	62
3331350	62
3331400	62
3331450	62
3331500	62
3331550	62
3331600	62
3331650	62
3331700	62
3331750	62
3331800	62
3331850	62
3331900	62
3331950	62
3332000	62
3350001083	354
3350001085	354
3350001123	354
3350001125	354
3350002562	353
3350004402	353
3350004403	353
3350006322	353
3350006323	353
3350008322	353
3350008323	353

EDP Number	Page No.
3350010243	353
3350010245	353
3350010322	353
3350010323	353
3350012133	353
3350012135	353
3350012203	353
3350012205	353
3350014203	353
3350014205	353
3350014283	353
3350014284	353
3350034103	353
3350034105	353
3350034163	354
3350034165	354
3350038163	353
3350038165	353
3350038243	353
3350038244	353
3350058113	353
3350058115	353
3350058183	353
3350058185	353
3350078093	354
3350078095	354
3350078143	354
3350078145	354
3350096183	353
3350096185	353
3350516183	353
3350516185	353
3350516243	353
3350516245	353
3350716143	353
3350716145	353
3350716203	353
3350716205	353
3360003053	355
3360004074	355
3360005084	355
3360006105	355
3360006755	355
3360008105	355
3360008255	355
3360010156	355
3360010255	355
3360012156	355
3360012756	355
3360014156	355
3360014207	355
3360016156	355
3360016207	355
3360018156	355
3360018257	355
3360020156	355
3360020258	355
3360022156	355

EDP Number	Page No.
3360022258	355
3360024156	355
3360024308	355
3360250453	355
3370000	480
3370001083	408
3370001085	408
3370001123	408
3370001125	408
3370002562	408
3370004402	408
3370004403	408
3370004482	408
3370006322	408
3370006323	408
3370008322	408
3370008323	408
3370010242	408
3370010243	408
3370010322	408
3370010323	408
3370012133	408
3370012135	408
3370012203	408
3370012205	408
3370014203	408
3370014205	408
3370014283	408
3370014284	408
3370034103	408
3370034105	408
3370034163	408
3370034165	408
3370038163	408
3370038165	408
3370038243	408
3370038245	408
3370058113	408
3370058115	408
3370058183	408
3370058185	408
3370078093	408
3370078095	408
3370078143	408
3370078145	408
3370516183	408
3370516185	408
3370516243	408
3370516245	408
3370716143	408
3370716145	408
3370716203	408
3370716205	408
3370916183	408
3370916185	408
3380000	480
3380003053	409
3380004074	409

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
3380005084	409
3380006105	409
3380006755	409
3380008105	409
3380008255	409
3380010156	409
3380010255	409
3380012156	409
3380012756	409
3380014156	409
3380014207	409
3380016156	409
3380016207	409
3380018156	409
3380018257	409
3380020156	409
3380020258	409
3380022156	409
3380022258	409
3380024156	409
3380024308	409
3380250453	409
34200101	512
34200108	512
34200201	512
34200208	512
34200301	512
34200308	512
34200401	512
34200408	512
34200501	512
34200508	512
34200601	512
34200608	512
34200701	512
34200708	512
34200801	512
34200808	512
34200901	512
34200908	512
34201001	512
34201008	512
34201101	512
34201108	512
34201201	512
34201208	512
34201301	512
34201308	512
34201401	512
34201408	512
34201501	512
34201508	512
34300101	503
34300108	503
34300201	503
34300208	503
34300301	503
34300308	503

EDP Number	Page No.
34300401	503
34300408	503
34300501	503
34300508	503
34300601	503
34300608	503
34300701	503
34300708	503
34300801	503
34300808	503
34300901	503
34300908	503
34301001	503
34301008	503
34301101	503
34301108	503
34301201	503
34301208	503
34301301	503
34301308	503
34301401	503
34301408	503
34301501	503
34301508	503
34400101	510
34400108	510
34400201	510
34400208	510
34400301	510
34400308	510
34400401	510
34400408	510
34400501	510
34400508	510
34400601	510
34400608	510
34400701	510
34400708	510
34400801	510
34400808	510
34400901	510
34400908	510
34401001	510
34401008	510
34401101	510
34401108	510
34401201	510
34401208	510
34401301	510
34401308	510
34401401	510
34401408	510
34401501	510
34401508	510
34500101	500
34500108	500
34500201	500
34500208	500

EDP Number	Page No.
34500301	500
34500308	500
34500401	500
34500408	500
34500501	500
34500508	500
34500601	500
34500608	500
34500701	500
34500708	500
34500801	500
34500808	500
34500901	500
34500908	500
34501001	500
34501008	500
34501101	500
34501108	500
34501201	500
34501208	500
34501301	500
34501308	500
34501401	500
34501408	500
34501501	500
34501508	500
352	478
353	478
3590116	487
3590216	487
3590316	487
3590416	487
3590516	487
3590616	487
3590716	487
36040111	618
36040211	618
36040311	618
36040411	618
36040511	618
36040611	618
36040711	618
36040811	618
36040911	618
36041011	618
36041111	618
36041211	618
36041311	618
36041411	618
36041511	618
36041611	618
36100111	615
36100211	615
36100311	615
36100411	615
36100511	615
36100611	615
36100711	615

EDP Number	Page No.
36100811	615
36100911	615
36200001	623
36200002	623
36200003	623
36200004	623
36200005	623
36200006	623
36200007	623
36200008	623
36200009	623
36200010	623
36200011	623
36200012	623
36200013	623
36200014	623
36200015	623
36200016	623
36210001	623
36210002	623
36210003	623
36210004	623
36210005	623
36210006	623
36210007	623
36210008	623
36210009	623
36210010	623
36210011	623
36210012	623
36210013	623
36210014	623
36210015	623
36210016	623
36700111	617
36700211	617
36700311	617
36700411	617
36700511	617
36700611	617
36700711	617
36700811	617
36700911	617
36701011	617
36701111	617
36701211	617
36701311	617
36701411	617
36701511	617
36701611	617
36701711	617
36701811	617
36701911	617
36702011	617
36702111	617
36702211	617
36702311	617
36702411	617

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
36702511	617
36702611	617
36702711	617
36702811	617
36702911	617
36900111	619
36900211	619
36900311	619
36900411	619
36900511	619
36900611	619
36900711	619
36900811	619
36900911	619
36901011	619
36901111	619
36901211	619
36901311	619
36901411	619
36901511	619
36901611	619
36901711	619
36901811	619
37110000	628
37110001	628
37110002	628
37110003	628
37110004	628
37110005	628
37110006	628
37110007	628
37110008	628
37110009	628
37110010	628
37110011	628
37110012	628
37420000	625
37420001	625
37420002	625
37420003	625
37420004	625
37420005	625
37420006	625
37420007	625
37420008	625
37420009	625
37420010	625
37420011	625
37420012	625
37420013	625
37420014	625
37420015	625
37420016	625
37420017	625
37420018	625
37420019	625
37420020	625
37420021	625

EDP Number	Page No.
37420022	625
37420023	625
37420024	625
37420025	625
37420026	625
37420027	625
37420028	625
37700000	639
37700001	639
37700002	639
37700003	639
37700004	639
37700005	639
37700006	639
37700007	639
37700008	639
37700009	639
37700010	639
37700011	639
37700012	639
37700013	639
37700014	639
37700015	639
37700016	639
37700017	639
37700018	639
37700019	639
37700020	639
37700021	639
37700022	639
37700023	639
37700024	639
37700025	639
37700026	639
37700027	639
37700028	639
37700029	639
37700030	639
37700031	639
37700032	639
37700033	639
37700034	639
37700035	639
37700036	639
37710000	640
37710001	640
37710002	640
37710003	640
37710004	640
37710005	640
37710006	640
37710007	640
37710008	640
37710009	640
37710010	640
37710011	640
37710012	640
37710013	640

EDP Number	Page No.
37710014	640
37710015	640
37710016	640
37710017	640
37710018	640
37710019	640
37710020	640
37710021	640
37710022	640
37710023	640
37710024	640
37710025	640
37710026	640
3900001	304
3900011	304
3900012	304
3900021	304
3900023	304
3900032	304
3900034	304
3900043	304
3900044	304
3900053	304
3900054	304
3900073	304
3900075	304
3900084	304
3900086	304
3900495	301
3900496	301
3900497	301
3900498	301
3900499	301
3900500	301
3900501	301
3900502	301
3900503	301
3900504	301
391	478
39150811	677
39151211	677
39151611	677
39152011	677
39152411	677
392	478
39200911	677
39201311	677
39201711	677
39202111	677
39202511	677
393	478
400-1000	727
400-2362	727
400-2500	727
400-3125	727
400-3150	727
400-3750	727
400-3937	727

EDP Number	Page No.
400-4724	727
400-5000	727
400-6250	727
400-6299	727
400-7500	727
400-7874	727
400-9843	727
402-0197	731
402-019711	731
402-0197-BN	749
402-0197-BN11	749
402-0312	729
402-031211	729
402-0312-BN	747
402-0312-BN11	747
402-0394	731
402-039411	731
402-0394-BN	749
402-0394-BN11	749
402-0469	729
402-046911	729
402-0469-BN	747
402-0469-BN11	747
402-0591	731
402-059111	731
402-0591-BN	749
402-0591-BN11	749
402-0625	729
402-062511	729
402-0625-BN	747
402-0625-BN11	747
402-0781	729
402-078111	729
402-0781-BN	747
402-0781-BN11	747
402-0787	731
402-078711	731
402-0787-BN	749
402-0787-BN11	749
402-0938	729
402-093811	729
402-0938-BN	747
402-0938-BN11	747
402-0939	729
402-0984	731
402-098411	731
402-0984-BN	749
402-0984-BN11	749
402-1000	730
402-100011	730
402-1000-BN	748
402-1000-BN11	748
402-1094	729
402-109411	729
402-1094-BN	747
402-1094-BN11	747
402-1181	731
402-118111	731

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
402-1181-BN	749
402-1181-BN11	749
402-1250	729
402-125011	729
402-1250-BN	747
402-1250-BN11	747
402-1378	731
402-137811	731
402-1378-BN	749
402-1378-BN11	749
402-1406	729
402-140611	729
402-1406-BN	747
402-1406-BN11	747
402-1562	729
402-156211	729
402-1562-BN	747
402-1562-BN11	747
402-1575	731
402-157511	731
402-1575-BN	749
402-1575-BN11	749
402-1719	729
402-171911	729
402-1719-BN	747
402-1719-BN11	747
402-1772	731
402-177211	731
402-1772-BN	749
402-1772-BN11	749
402-1875	729
402-187511	729
402-1875-BN	747
402-1875-BN11	747
402-1968	731
402-196811	731
402-1968-BN	749
402-1968-BN11	749
402-2031	729
402-203111	729
402-2031-BN	747
402-2031-BN11	747
402-2188	729
402-218811	729
402-2188-BN	747
402-2188-BN11	747
402-2344	729
402-234411	729
402-2344-BN	747
402-2344-BN11	747
402-2362	731
402-236211	731
402-2362-BN	749
402-2362-BN11	749
402-2500	729
402-250011	729
402-2500-BN	747
402-2500-BN11	747
402-2656	729
402-265611	729
402-2656-BN	747
402-2656-BN11	747
402-2756	731
402-275611	731
402-2756-BN	749
402-2756-BN11	749
402-2812	729
402-281211	729
402-2812-BN	747
402-2812-BN11	747
402-2969	729
402-296911	729
402-2969-BN	747
402-2969-BN11	747
402-3125	729
402-312511	729
402-3125-BN	747
402-3125-BN11	747
402-3150	731
402-315011	731
402-3150-BN	749
402-3150-BN11	749
402-3281	729
402-328111	729
402-3281-BN	747
402-3281-BN11	747
402-3438	729
402-343811	729
402-3438-BN	747
402-3438-BN11	747
402-3543	731
402-354311	731
402-3543-BN	749
402-3543-BN11	749
402-3594	729
402-359411	729
402-3594-BN	747
402-3594-BN11	747
402-3750	729
402-375008	729
402-375011	729
402-3750-BN	747
402-3750-BN11	747
402-3906	729
402-390611	729
402-3906-BN	747
402-3906-BN11	747
402-3937	731
402-393711	731
402-3937-BN	749
402-3937-BN11	749
402-4062	729
402-406211	729
402-4062-BN	747
402-4062-BN11	747
402-4219	729
402-421911	729
402-4219-BN	747
402-4219-BN11	747
402-4331	731
402-433111	731
402-4331-BN	749
402-4331-BN11	749
402-4375	729
402-437511	729
402-4375-BN	747
402-4375-BN11	747
402-4531	729
402-453111	729
402-4531-BN	747
402-4531-BN11	747
402-4688	729
402-468811	729
402-4688-BN	747
402-4688-BN11	747
402-4724	731
402-472411	731
402-4724-BN	749
402-4724-BN11	749
402-4844	729
402-484411	729
402-4844-BN	747
402-4844-BN11	747
402-5000	729
402-500011	729
402-5000-BN	747
402-5000-BN11	747
402-5512	731
402-551211	731
402-5512-BN	749
402-5512-BN11	749
402-5625	730
402-562508	730
402-562511	730
402-5625-BN	747
402-5625-BN11	747
402-6250	730
402-625011	730
402-6250-BN	748
402-6250-BN11	748
402-6299	731
402-629911	731
402-6299-BN	749
402-6299-BN11	749
402-6875	730
402-687511	730
402-6875-BN	748
402-6875-BN11	748
402-7087	731
402-708711	731
402-7087-BN	749
402-7087-BN11	749
402-7500	730
402-750011	730
402-7500-BN	748
402-7500-BN11	748
402-7874	731
402-787411	731
402-7874-BN	749
402-7874-BN11	749
402-8661	731
402-866111	731
402-8661-BN	749
402-8661-BN11	749
402-8750	730
402-875011	730
402-8750-BN	748
402-8750-BN11	748
402-9843	731
402-984311	731
402-9843-BN	749
402-9843-BN11	749
403-0394	731
403-039411	731
403-0394-BN	749
403-0394-BN11	749
403-0591	731
403-059111	731
403-0591-BN	749
403-0591-BN11	749
403-0625	729
403-062511	729
403-0625-BN	747
403-0625-BN11	747
403-0781	729
403-078111	729
403-0781-BN	747
403-0781-BN11	747
403-0787	731
403-078711	731
403-0787-BN	749
403-0787-BN11	749
403-0938	729
403-093811	729
403-0938-BN	747
403-0938-BN11	747
403-0939	729
403-0984	731
403-098411	731
403-0984-BN	749
403-0984-BN11	749
403-1000	730
403-100011	730
403-1000-BN	748
403-1000-BN11	748
403-1094	729
403-109411	729
403-1094-BN	747
403-1094-BN11	747
403-1181	731
403-118111	731
403-1181-BN	749

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
403-1181-BN11	749
403-1250	729
403-125011	729
403-1250-BN	747
403-1250-BN11	747
403-1378	731
403-137811	731
403-1378-BN	749
403-1378-BN11	749
403-1406	729
403-140611	729
403-1406-BN	747
403-1406-BN11	747
403-1562	729
403-156211	729
403-1562-BN	747
403-1562-BN11	747
403-1575	731
403-157511	731
403-1575-BN	749
403-1575-BN11	749
403-1719	729
403-171911	729
403-1719-BN	747
403-1719-BN11	747
403-1772	731
403-177211	731
403-1772-BN	749
403-1772-BN11	749
403-1875	729
403-187511	729
403-1875-BN	747
403-1875-BN11	747
403-1968	731
403-196811	731
403-1968-BN	749
403-1968-BN11	749
403-2031	729
403-203111	729
403-2031-BN	747
403-2031-BN11	747
403-2188	729
403-218811	729
403-2188-BN	747
403-2188-BN11	747
403-2344	729
403-234411	729
403-2344-BN	747
403-2344-BN11	747
403-2362	731
403-236211	731
403-2362-BN	749
403-2362-BN11	749
403-2500	729
403-250011	729
403-2500-BN	747
403-2500-BN11	747
403-2656	729
403-265611	729
403-2656-BN	747
403-2656-BN11	747
403-2756	731
403-275611	731
403-2756-BN	749
403-2756-BN11	749
403-2812	729
403-281211	729
403-2812-BN	747
403-2969	729
403-296911	729
403-2969-BN	747
403-2969-BN11	747
403-3125	729
403-312511	729
403-3125-BN	747
403-3125-BN11	747
403-3150	731
403-315011	731
403-3150-BN	749
403-3150-BN11	749
403-3543	731
403-354311	731
403-3543-BN	749
403-3543-BN11	749
403-3750	729
403-375011	729
403-3750-BN	747
403-3750-BN11	747
403-3937	731
403-393711	731
403-3937-BN	749
403-3937-BN11	749
403-4331	731
403-433111	731
403-4331-BN	749
403-4331-BN11	749
403-4375	729
403-437511	729
403-4375-BN	747
403-4375-BN11	747
403-4724	731
403-472411	731
403-4724-BN	749
403-4724-BN11	749
403-5000	729
403-500011	729
403-5000-BN	747
403-5000-BN11	747
403-5512	731
403-551211	731
403-5512-BN	749
403-5512-BN11	749
403-5625	730
403-562511	730
403-5625-BN	747
403-5625-BN11	747
403-6250	730
403-625011	730
403-6250-BN	748
403-6250-BN11	747
403-6299	731
403-629911	731
403-6299-BN	749
403-6299-BN11	749
403-6875	730
403-687511	730
403-6875-BN	748
403-6875-BN11	747
403-7087	731
403-708711	731
403-7087-BN	749
403-7087-BN11	749
403-7500	730
403-750011	730
403-7500-BN	748
403-7500-BN11	747
403-7874	731
403-787411	731
403-7874-BN	749
403-7874-BN11	749
403-8661	731
403-866111	731
403-8661-BN	749
403-8661-BN11	749
403-8750	730
403-875011	730
403-8750-BN	748
403-8750-BN11	747
403-9843	731
403-984311	731
403-9843-BN	749
403-9843-BN11	749
404-0312	729
404-031211	729
404-0312-BN	747
404-0312-BN11	747
404-0394	731
404-039411	731
404-0394-BN	749
404-0394-BN11	749
404-0469	729
404-046911	729
404-0469-BN	747
404-0469-BN11	747
404-0591	731
404-059111	731
404-0591-BN	749
404-0591-BN11	749
404-0625	729
404-062511	729
404-0625-BN	747
404-0625-BN11	747
404-0781	729
404-078111	729
404-0781-BN	747
404-0781-BN11	747
404-0787	731
404-078711	731
404-0787-BN	749
404-0787-BN11	749
404-0938	729
404-093811	729
404-0938-BN	747
404-0938-BN11	747
404-0939	729
404-093911	729
404-0984	731
404-098411	731
404-0984-BN	749
404-0984-BN11	749
404-1000	730
404-100011	730
404-1000-BN	748
404-1000-BN11	748
404-1094	729
404-109411	729
404-1094-BN	747
404-1094-BN11	747
404-1181	731
404-118111	731
404-1181-BN	749
404-1181-BN11	749
404-1250	729
404-125011	729
404-1250-BN	747
404-1250-BN11	747
404-1378	731
404-137811	731
404-1378-BN	749
404-1378-BN11	749
404-1406	729
404-140611	729
404-1406-BN	747
404-1406-BN11	747
404-1562	729
404-156211	729
404-1562-BN	747
404-1562-BN11	747
404-1575	731
404-157511	731
404-1575-BN	749
404-1575-BN11	749
404-1719	729
404-171911	729
404-1719-BN	747
404-1719-BN11	747
404-1772	731
404-177211	731
404-1772-BN	749
404-1772-BN11	749
404-1875	729
404-187511	729

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
404-1875-BN	747
404-1875-BN11	747
404-1968	731
404-196811	731
404-1968-BN	749
404-1968-BN11	749
404-2031	729
404-203111	729
404-2031-BN	747
404-2031-BN11	747
404-2188	729
404-218811	729
404-2188-BN	747
404-2188-BN11	747
404-2344	729
404-234411	729
404-2344-BN	747
404-2344-BN11	747
404-2362	731
404-236211	731
404-2362-BN	749
404-2362-BN11	749
404-2500	729
404-250011	729
404-2500-BN	747
404-2500-BN11	747
404-2656	729
404-265611	729
404-2656-BN	747
404-2656-BN11	747
404-2756	731
404-275611	731
404-2756-BN	749
404-2756-BN11	749
404-2812	729
404-281211	729
404-2812-BN	747
404-2812-BN11	747
404-2969	729
404-296911	729
404-2969-BN	747
404-2969-BN11	747
404-3125	729
404-312511	729
404-3125-BN	747
404-3125-BN11	747
404-3150	731
404-315011	731
404-3150-BN	749
404-3150-BN11	749
404-3281	729
404-328111	729
404-3281-BN	747
404-3281-BN11	747
404-3438	729
404-343811	729
404-3438-BN	747
404-3438-BN11	747
404-3543	731
404-354311	731
404-3543-BN	749
404-3543-BN11	749
404-3594	729
404-359411	729
404-3594-BN	747
404-3594-BN11	747
404-3750	729
404-375011	729
404-3750-BN	747
404-3750-BN11	747
404-3906	729
404-390611	729
404-3906-BN	747
404-3906-BN11	747
404-3937	731
404-393711	731
404-3937-BN	749
404-3937-BN11	749
404-4062	729
404-406211	729
404-4062-BN	747
404-4062-BN11	747
404-4219	729
404-421911	729
404-4219-BN	747
404-4219-BN11	747
404-4331	731
404-433111	731
404-4331-BN	749
404-4331-BN11	749
404-4375	729
404-437511	729
404-4375-BN	747
404-4375-BN11	747
404-4531	729
404-453111	729
404-4531-BN	747
404-4531-BN11	747
404-4688	729
404-468811	729
404-4688-BN	747
404-4688-BN11	747
404-4724	731
404-472411	731
404-4724-BN	749
404-4724-BN11	749
404-4844	729
404-484411	729
404-4844-BN	747
404-4844-BN11	747
404-5000	729
404-500011	729
404-5000-BN	747
404-5000-BN11	747
404-5512	731
404-551211	731
404-5512-BN	749
404-5512-BN11	749
404-5625	730
404-562511	730
404-5625-BN	747
404-5625-BN11	747
404-6250	730
404-625011	730
404-6250-BN	748
404-6250-BN11	748
404-6299	731
404-629911	731
404-6299-BN	749
404-6299-BN11	749
404-6875	730
404-687511	730
404-6875-BN	748
404-6875-BN11	748
404-7087	731
404-708711	731
404-7087-BN	749
404-7087-BN11	749
404-7500	730
404-750011	730
404-7500-BN	748
404-7500-BN11	748
404-7874	731
404-787411	731
404-7874-BN	749
404-7874-BN11	749
404-8661	731
404-866111	731
404-8661-BN	749
404-8661-BN11	749
404-8750	730
404-875011	730
404-8750-BN	748
404-8750-BN11	748
404-9843	731
404-984311	731
404-9843-BN	749
404-9843-BN11	749
408-1000	732
408-1250	732
408-1562	732
408-1875	732
408-2500	732
408-2812	732
408-3125	732
408-3750	732
408-4375	732
408-5000	732
408-5625	732
408-6250	732
408-6875	732
408-7500	732
409-0625	732
409-0781	732
409-0938	732
409-1000	732
409-1094	732
409-1250	732
409-1562	732
409-1875	732
409-2188	732
409-2500	732
409-2812	732
409-3125	732
409-3750	732
409-375011	732
409-4375	732
409-5000	732
409-5625	732
409-6250	732
409-6875	732
409-7500	732
409-8750	732
4100000411	302
4100000511	302
4100000611	302
4100000711	302
4100000811	302
4100000911	302
4100001011	302
4100001111	302
4100001211	302
4100001311	302
4100001411	302
4100001511	302
4100001611	302
4100001711	302
4100001811	302
4100001911	302
4100002011	302
4100002111	302
4100002211	302
4100002311	302
4100002411	302
4100002511	302
4100002611	303
4100002711	303
4100002811	302
4100002911	302
4100003011	302
4100003111	302
4100003211	302
4100003311	302
4100003411	302
4100003511	302
4100003611	302
4100003711	302
4100003811	302
4100003911	302
4100004011	302
4100004111	302
4100004211	302

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
4100004311	302
4100004411	302
4100004511	302
4100004611	302
4100004711	302
4100004811	302
4100004911	302
4100005011	303
4100005111	303
4105000111	305
4105000211	305
4105000311	305
4105000411	305
4105000511	305
4105000611	305
4105000711	305
4105000811	305
4105000911	305
4105001011	305
4105001111	305
4105001211	305
4105001311	305
4105001411	305
4105001511	305
4105001611	305
4105001711	305
4105001811	305
4105001911	305
4105002011	305
4105200	775
4105300	775
4105400	775
4105700	775
411	478
4110000111	304
4110000211	304
4110000311	304
4110000411	304
4110000511	304
4110000611	304
4110000711	304
4110000811	304
4110000911	304
4110001011	304
4110001111	304
4110001211	304
412	478
4120000115	300
4120000215	300
4120000315	300
4120000413	300
4120000513	300
4120000613	300
4120000713	300
4120000813	300
4120000913	300
4120001013	300
412-0312	734

EDP Number	Page No.
412-031208	734
412-031211	734
412-0312-BN	751
412-0312-BN11	751
412-0394	735
412-0394-BN	752
412-0394-BN11	752
412-0469	734
412-046911	734
412-0469-BN	751
412-0591	735
412-0591-BN	752
412-0625	734
412-062511	734
412-0625-BN	751
412-0625-BN11	751
412-0781	734
412-0781-BN	751
412-0787	735
412-0787-BN	752
412-0938	734
412-093808	734
412-0938-BN	751
412-0984	735
412-0984-BN	752
412-1094	734
412-1094-BN	751
412-1181	735
412-1181-BN	752
412-1250	734
412-125011	734
412-1250-BN	751
412-1250-BN11	751
412-1378	735
412-1378-BN	752
412-1406	734
412-1406-BN	751
412-1562	734
412-156208	734
412-1562-BN	751
412-1562-BN11	751
412-1575	735
412-1575-BN	752
412-1575-BN11	752
412-1772	735
412-1772-BN	752
412-1875	734
412-187508	734
412-187511	734
412-1875-BN	751
412-1875-BN11	751
412-1968	735
412-1968-BN	752
412-2188	734
412-2188-BN	751
412-2362	735
412-2362-BN	752
412-2500	734

EDP Number	Page No.
412-250011	734
412-2500-BN	751
412-2500-BN11	751
412-2756	735
412-2756-BN	752
412-3125	734
412-312511	734
412-3125-BN	751
412-3150	735
412-3150-BN	752
412-3543	735
412-3543-BN	752
412-3750	734
412-375011	734
412-3750-BN	751
412-3750-BN11	751
412-3937	735
412-3937-BN	752
412-4331	735
412-4331-BN	752
412-4375	734
412-4375-BN	751
412-4724	735
412-4724-BN	752
412-5000	734
412-500008	734
412-500011	734
412-5000-BN	751
412-5000-BN11	751
412-6250	734
412-6250-BN	751
412-7500	734
412-7500-BN	751
413	478
414-0312	734
414-031211	734
414-0312-BN	751
414-0312-BN11	751
414-0394	735
414-039411	735
414-0394-BN	752
414-0394-BN11	752
414-0469	734
414-046911	734
414-0469-BN	751
414-0469-BN11	751
414-0591	735
414-0591-BN	752
414-0625	734
414-062511	734
414-0625-BN	751
414-0625-BN11	751
414-0781	734
414-078111	734
414-0781-BN	751
414-0781-BN11	751
414-0787	735
414-0787-BN	752

EDP Number	Page No.
414-0938	734
414-093811	734
414-0938-BN	751
414-0938-BN08	751
414-0938-BN11	751
414-0984	735
414-0984-BN	752
414-1094	734
414-109411	734
414-1094-BN	751
414-1181	735
414-1181-BN	752
414-1250	734
414-125011	734
414-1250-BN	751
414-1250-BN08	751
414-1250-BN11	751
414-1378	735
414-1378-BN	752
414-1406	734
414-140611	734
414-1406-BN	751
414-1562	734
414-156211	734
414-1562-BN	751
414-1562-BN08	751
414-1575	735
414-1575-BN	752
414-1772	735
414-1772-BN	752
414-1875	734
414-187511	734
414-1875-BN	751
414-1875-BN11	751
414-1968	735
414-196811	735
414-1968-BN	752
414-2188	734
414-218811	734
414-2188-BN	751
414-2362	735
414-2362-BN	752
414-2500	734
414-250011	734
414-2500-BN	751
414-2500-BN11	751
414-2756	735
414-2756-BN	752
414-3125	734
414-312511	734
414-3125-BN	751
414-3125-BN08	751
414-3125-BN11	751
414-3150	735
414-3150-BN	752
414-3543	735
414-3543-BN	752
414-3750	734

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EDP Number	Page No.
414-375011	734
414-3750-BN	751
414-3750-BN08	751
414-3750-BN11	751
414-3937	735
414-3937-BN	752
414-4331	735
414-4331-BN	752
414-4375	734
414-437511	734
414-4375-BN	751
414-4724	735
414-4724-BN	752
414-5000	734
414-500011	734
414-5000-BN	751
414-5000-BN08	751
414-6250	734
414-625011	734
414-6250-BN	751
414-7500	734
414-750011	734
414-7500-BN	751
415-1000	728
415-1001	728
415-1250	728
415-1251	728
415-1561	728
415-1562	728
415-1871	728
415-1875	728
415-2181	728
415-2188	728
415-2500	728
415-2501	728
415-3121	728
415-3125	728
415-3750	728
415-3751	728
415-4371	728
415-4375	728
415-5000	728
415-5001	728
415-5621	728
415-5625	728
415-6250	728
415-6251	728
415-7500	728
415-7501	728
415-8750	728
415-8751	728
4200000111	307
4200000211	307
4200000311	307
4200000411	307
4200000511	307
4200000611	307
4200100111	307

EDP Number	Page No.
4200100211	307
4200100311	307
4200100411	307
4200100511	307
4200100611	307
4200100711	307
4200100811	307
4205000	774
4205100	774
4205200	774
4205300	774
4205400	774
4205500	774
4205600	774
4205700	774
4205800	774
4205900	774
422-0312	758
422-0312-BN	760
422-0312-BN11	760
422-0469	758
422-0469-BN	760
422-0469-BN11	760
422-0625	758
422-062511	758
422-0625-BN	760
422-0625-bn11	760
422-0781	758
422-0781-BN	760
422-0938	758
422-093811	758
422-0938-BN	760
422-1094	758
422-1094-BN	760
422-1250	758
422-125011	758
422-1250-BN	760
422-1250-BN11	760
422-1406	758
422-1406-BN	760
422-1562	758
422-1562-BN	760
422-1875	758
422-187511	758
422-1875-BN	760
422-2188	758
422-218811	758
422-2188-BN	760
422-2500	758
422-250011	758
422-2500-BN	760
422-3125	758
422-312511	758
422-3125-BN	760
422-3750	758
422-375011	758
422-3750-BN	760
422-4375	758

EDP Number	Page No.
422-4375-BN	760
422-5000	758
422-500011	758
422-5000-BN	760
423-0312	758
423-0312-BN	760
423-0469	758
423-0469-BN	760
423-0625	758
423-0625-BN	760
423-0938	758
423-0938-BN	760
423-1250	758
423-1250-BN	760
423-1562	758
423-1562-BN	760
423-1875	758
423-1875-BN	760
423-2188	758
423-2188-BN	760
423-2500	758
423-250011	758
423-2500-BN	760
423-3125	758
423-3125-BN	760
423-3750	758
423-375011	758
423-3750-BN	760
423-4375	758
423-4375-BN	760
423-5000	758
423-500011	758
423-5000-BN	760
424-0312	758
424-031211	758
424-0312-BN	760
424-0312-BN11	760
424-0469	758
424-046911	758
424-0469-BN	760
424-0469-BN11	760
424-0625	758
424-062511	758
424-0625-BN	760
424-0625-BN11	760
424-0781	758
424-078111	758
424-0781-BN	760
424-0938	758
424-093811	758
424-0938-BN	760
424-0938-BN11	760
424-1094	758
424-109411	758
424-1094-BN	760
424-1250	758
424-125011	758
424-1250-BN	760

EDP Number	Page No.
424-1250-BN11	760
424-1406	758
424-1406-BN	760
424-1562	758
424-156211	758
424-1562-BN	760
424-1875	758
424-187511	758
424-1875-BN	760
424-1875-BN11	760
424-2188	758
424-2188-BN	760
424-2500	758
424-250011	758
424-2500-BN	760
424-2500-BN11	760
424-3125	758
424-312511	758
424-3125-BN	760
424-3750	758
424-375011	758
424-3750-BN	760
424-3750-BN11	760
424-4375	758
424-4375-BN	760
424-5000	758
424-500011	758
424-5000-BN	760
424-5000-BN11	760
4300100	775
4300300	775
4300500	775
4300700	775
4301200	775
4301300	775
4301500	775
4301700	775
4302100	775
4309700	775
4310100	775
4310300	775
4310500	775
4310700	775
4310900	775
4312100	775
4312300	775
4312500	775
4313300	775
4313500	775
4313700	775
4400100	777
4400300	777
4400500	777
4400700	777
4401300	777
4401500	777
44100111	643
44100211	643

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EDP Numerical Index

EDP Number	Page No.
44100511	643
44100711	643
44100911	643
44101111	643
44101311	643
44101411	643
44101611	643
4410500	777
4410900	777
4412100	777
4412500	777
4413300	777
4413700	777
4420900	777
4421100	777
442-1250	757
442-1250-BN	759
442-1562	757
442-1562-BN	759
442-1875	757
442-1875-BN	759
442-2188	757
442-2188-BN	759
442-2500	757
442-2500-BN	759
442-2812	757
442-2812-BN	759
442-3125	757
442-3125-BN	759
442-3438	757
442-3438-BN	759
442-3750	757
442-3750-BN	759
442-4375	757
442-4375-BN	759
442-5000	757
442-5000-BN	759
44301111	656
44301311	656
44301411	656
44301611	656
44400311	645
44400511	645
44400711	645
44400911	645
44401111	645
44401311	645
44401411	645
44401611	645
44401811	645
44402011	645
444-1250	757
444-125011	757
444-1250-BN	759
444-1250-BN11	759
444-1562	757
444-1562-BN	759
444-1875	757

EDP Number	Page No.
444-187511	757
444-1875-BN	759
444-2188	757
444-2188-BN	759
444-2500	757
444-250011	757
444-2500-BN	759
444-2812	757
444-2812-BN	759
444-3125	757
444-3125-BN	759
444-3438	757
444-3438-BN	759
444-3750	757
444-375011	757
444-3750-BN	759
444-4375	757
444-4375-BN	759
444-5000	757
44450001	657
44450002	657
44450003	657
44450004	657
44450005	657
44450006	657
444-5000-BN	759
445-0394	743
445-0591	743
445-0625	743
445-0787	743
445-0938	743
445-0984	743
445-1000	743
445-1181	743
445-1250	743
445-1378	743
445-1562	743
445-1575	743
445-1772	743
445-1875	743
445-1968	743
445-2188	743
445-2362	743
445-2500	743
445-2756	743
445-2812	743
445-3125	743
445-3150	743
445-3543	743
445-3750	743
445-3937	743
445-4331	743
445-4375	743
445-4724	743
445-5000	743
445-5512	743
445-5625	743
445-6250	743

EDP Number	Page No.
445-6299	743
445-6875	743
445-7087	743
445-7500	743
445-7874	743
445-8750	743
44700111	649
44700211	649
44700311	649
44700411	649
44700511	649
44700611	649
447-0625	745
447-1000	745
447100111	647
447100311	647
447100511	647
447100611	647
447100711	647
447101011	647
447101111	647
447101411	647
447101511	647
447101611	647
447102011	647
447102111	647
447102211	647
447102611	647
447102711	647
447-1250	745
447-125011	745
447-1875	745
447-187511	745
447-2500	745
447-250011	745
447-3125	745
447-3750	745
447-5000	745
447-6250	745
447-7500	745
4500000	772
4500100	772
4500300	772
4500500	772
4500508	772
4500700	772
4500708	772
4500800	772
4500808	772
4500900	772
4501000	772
4501008	772
4501100	772
4501300	772
4501500	772
4501600	772
4501700	772
4501900	772

EDP Number	Page No.
4502100	772
4502300	772
4509000	772
4509100	772
4509200	772
4509400	772
4509500	772
4509700	772
4509800	772
4509900	772
451	478
4510100	772
4510500	772
4510508	772
4510700	772
4510900	772
4510908	772
4511500	772
4511900	772
4512100	772
4512300	772
4512500	772
45130001	658
45130002	658
45130003	658
45130004	658
45130005	658
45130006	658
45130007	658
45130008	658
4513100	772
4513300	772
4513308	772
4513500	772
4513700	772
4513900	772
4514500	772
452	478
4520100	772
4520500	772
452-0625	733
452-0625-BN	750
4520700	772
4520900	772
452-0938	733
452-0938-BN	750
452-1000	733
452-1000-BN	750
4521100	772
452-1250	733
452-1250-BN	750
4521300	772
452-1562	733
452-1562-BN	750
452-1875	733
452-1875-BN	750
452-2188	733
452-2188-BN	750

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
452-2500	733
452-250011	733
452-2500-BN	750
452-2812	733
452-2812-BN	750
452-3125	733
452-3125-BN	750
452-3750	733
452-3750-BN	750
452-4375	733
452-5000	733
452-5000-BN	750
452-5625	733
452-5625-BN	750
452-6250	733
452-6250-BN	750
452-6875	733
452-6875-BN	750
452-7500	733
452-7500-BN	750
453	478
45300001	656
45300002	656
45300003	656
45300004	656
454-0625	733
454-0938	733
454-1000	733
45410000	660
45410001	660
45410002	660
45410003	660
45410004	660
45410005	660
45410006	660
45410007	660
45410008	660
45410009	660
45410010	660
45410011	660
45410012	660
45410013	660
45410014	660
45410015	660
45410016	660
45410017	660
45410018	660
45410019	660
45410020	660
45410021	660
45410022	660
45410023	660
45410024	660
45410025	660
45410026	660
454-1250	733
454-1562	733
454-1875	733

EDP Number	Page No.
454-2188	733
454-2500	733
454-2812	733
454-3125	733
454-3750	733
454-4375	733
454-5000	733
454-5625	733
454-6250	733
454-6875	733
454-7500	733
4550008	773
4550011	773
4550108	773
4550111	773
4550308	773
4550311	773
4550408	773
4550411	773
4550508	773
4550511	773
4550608	773
4550708	773
4550711	773
455-1000	741
4551208	773
4551211	773
455-1250	741
455-125008	741
455-1251	741
455-125108	741
455-125111	741
4551308	773
4551311	773
4551408	773
4551508	773
4551511	773
455-1562	741
455-156208	741
455-156211	741
4551608	773
455-1875	741
455-187508	741
455-1876	741
455-187608	741
455-187611	741
4552108	773
455-2188	741
455-2500	741
455-250008	741
455-2501	741
455-250108	741
455-250111	741
455-2502	741
455-250208	741
455-250211	741
455-2812	741
455-3125	741

EDP Number	Page No.
455-3126	741
455-312608	741
455-312611	741
455-3127	741
455-312708	741
455-312711	741
455-3750	741
455-3751	741
455-375108	741
455-375111	741
455-3752	741
455-375208	741
455-375211	741
455-3753	741
455-375308	741
455-375311	741
455-4375	741
455-437508	741
455-4376	741
455-437608	741
455-4377	741
455-5000	741
455-5001	741
455-500108	741
455-500111	741
455-5002	741
455-500208	741
455-500211	741
455-5003	741
455-500308	741
455-500311	741
455-5625	741
455-6250	741
455-625008	741
455-6251	741
455-625108	741
455-625111	741
455-7500	741
455-750008	741
455-7501	741
455-750108	741
455-750111	741
455-7502	741
455-750208	741
455-750211	741
4558908	773
4559008	773
4559011	773
4559108	773
4559111	773
4559208	773
4559211	773
4559308	773
4559311	773
4559408	773
4559411	773
4559508	773
4559511	773

EDP Number	Page No.
4559608	773
4559611	773
4559708	773
4559711	773
4559808	773
4559811	773
4559908	773
4560008	773
4560108	773
4560111	773
4560308	773
4560408	773
4560508	773
4560511	773
4560708	773
4560711	773
4560908	773
4560911	773
4561008	773
4561208	773
4562108	773
4562111	773
4562308	773
4562311	773
4562508	773
4562511	773
4563308	773
4563311	773
4563508	773
4563511	773
4563708	773
4563711	773
4569108	773
4569808	773
457002011	649
457003011	649
457004011	649
457005011	649
457006011	649
457007011	649
457008011	649
457009011	649
457010011	649
457011011	649
457012011	649
457013011	649
4570708	773
4570908	773
457103011	648
457103111	648
457103211	648
457103311	648
457104011	648
457104111	648
457104211	648
457104311	648
457105011	648
457105111	648

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
457105211	648
457105311	648
457106011	648
457106111	648
457106211	648
457106311	648
457108011	648
457108111	648
457108211	648
457108311	648
457110011	648
457110111	648
457110211	648
457110311	648
457110411	648
457110511	648
4571108	773
4571111	773
457112011	648
457112111	648
457112211	648
457112311	648
4571308	773
45810026	659
45810035	659
45810040	659
45810072	659
45810073	659
45810078	659
45810083	659
45810140	659
45810144	659
45810145	659
45810150	659
45810152	659
45810154	659
45810156	659
45810175	659
45810178	659
45810180	659
4600100	774
4600300	774
4600500	774
4600600	774
4600700	774
460-1000	742
46011	530
4601200	774
460-1250	742
4601300	774
46015	530
4601500	774
46017	530
460-1875	742
46020	530
46023	530
460-2362	742
460-2500	742

EDP Number	Page No.
46029	530
460-3125	742
460-3150	742
46034	530
460-3750	742
46038	530
460-3937	742
460-4375	742
460-4724	742
460-5000	742
460-5512	742
460-6250	742
460-6299	742
46064	530
46068	530
46070	530
460-7087	742
46074	530
460-7500	742
460-7874	742
46079	530
46080	530
46082	530
46085	530
46086	530
46087	530
46089	530
46093	530
460-9843	742
4610400	774
4610500	774
4610700	774
4610900	774
461-1000	744
461-1181	744
461-1250	744
461-1562	744
461-1575	744
461-1875	744
461-187511	744
461-1968	744
4612100	774
4612300	774
461-2362	744
4612500	774
461-2500	744
461-250011	744
461-2756	744
461-2812	744
461-3125	744
461-3150	744
4613300	774
461-3543	744
4613700	774
461-3750	744
461-375011	744
461-3937	744
46142	530

EDP Number	Page No.
46143	530
461-4331	744
461-4375	744
46144	530
46147	530
461-4724	744
461-5000	744
46152	530
46153	530
46154	530
46155	530
461-5512	744
461-5625	744
461-6250	744
461-6299	744
46163	530
46164	530
46165	530
461-6875	744
461-7087	744
461-7500	744
461-7874	744
461-8661	744
461-9843	744
462-1000	736
462-1000-BN	753
462-1181	737
462-1181-BN	753
462-1250	736
462-125011	736
462-1250-BN	753
462-1575	737
462-1575-BN	753
462-1875	736
462-1875-BN	753
462-1968	737
462-1968-BN	753
462-2362	737
462-2362-BN	753
462-2500	736
462-250011	736
462-2500-BN	753
462-2500-BN08	753
46227	530
46228	530
46230	530
462-3125	736
462-312511	736
462-3125-BN	753
462-3150	737
462-3150-BN	753
462-3750	736
462-375008	736
462-375011	736
462-3750-BN	753
46239	530
462-3937	737
462-3937-BN	753

EDP Number	Page No.
46241	530
462-4375	736
462-4375-BN	753
462-4724	737
462-4724-BN	753
462-5000	736
462-5000-BN	753
462-5001	736
462-500108	736
46251	530
46253	530
462-5512	737
462-5512-BN	753
462-6250	736
462-625008	736
462-6250-BN	753
462-6299	737
462-6299-BN	753
46263	530
46265	530
462-7087	737
462-7087-BN	753
462-7500	736
462-7500-BN	753
46276	530
462-7874	737
462-7874-BN	753
46279	530
462-9843	737
462-9843-BN	753
46329	530
46331	530
46341	530
46344	530
46347	530
464-1000	736
464-100008	736
464-1000-BN	753
464-1181	737
464-1181-BN	753
464-1250	736
464-125011	736
464-1250-BN	753
464-1250-BN11	753
464-1575	737
464-1575-BN	753
464-1875	736
464-187511	736
464-1875-BN	753
464-1875-BN11	753
464-1968	737
464-196811	737
464-1968-BN	753
464-2362	737
464-236211	737
464-2362-BN	753
464-2500	736
464-250011	736

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
464-2500-BN	753
464-2500-BN11	753
464-3125	736
464-312511	736
464-3125-BN	753
464-3150	737
464-315011	737
464-3150-BN	753
464-3750	736
464-375011	736
464-3750-BN	753
464-3750-BN11	753
464-3937	737
464-393711	737
464-3937-BN	753
464-4375	736
464-437508	736
464-437511	736
464-4375-BN	753
464-4724	737
464-472411	737
464-4724-BN	753
464-5000	736
464-500011	736
464-5000-BN	753
464-5000-BN08	753
464-5000-BN11	753
464-5001	736
464-500108	736
464-5512	737
464-5512-BN	753
464-6250	736
464-625011	736
464-6250-BN	753
464-6299	737
464-6299-BN	753
464-7087	737
464-7087-BN	753
464-7500	736
464-750011	736
464-7500-BN	753
464-7874	737
464-787411	737
464-7874-BN	753
464-9843	737
464-9843-BN	753
4700000	778
4700100	778
4700200	778
4700300	778
4700500	778
4700600	778
4700700	778
4700900	778
4701300	778
4701400	778
4701500	778
4701700	778

EDP Number	Page No.
4701900	778
4702100	778
4709100	778
4709400	778
4709500	778
4709600	778
4709700	778
4710000	778
4710100	778
4710500	778
4710600	778
4710900	778
4711500	778
4712100	778
4712300	778
4712500	778
4713300	778
4713500	778
4713700	778
4713900	778
4716100	778
4716500	778
4716900	778
4720100	778
4720500	778
4720900	778
4721100	778
4721300	778
4726500	778
4726700	778
4726900	778
4727100	778
4727300	778
48150032	106
48150044	106
48150045	106
48150048	106
48150050	106
48150051	106
48150052	106
48150062	106
48150065	106
48150070	106
48150081	106
48150085	106
48150090	106
48150094	106
48150098	106
48150105	106
48150110	106
48150115	106
48150125	107
48169041	76
48169042	76
48169043	76
48169044	76
48169045	76
48169046	76

EDP Number	Page No.
48169047	76
48169048	77
48169049	77
48169050	77
48169061	77
48169062	77
48169063	77
48169064	77
48169065	77
48169066	77
48169067	78
48169068	78
48169069	78
48169070	78
48169081	78
48169082	78
48169083	78
48169084	78
48169085	78
48169086	78
48169087	78
48169088	79
48169089	79
48169090	79
48169101	79
48169102	79
48169103	79
48169104	79
48169105	79
48169106	79
48169107	79
48169108	80
48169109	80
48169110	80
48169121	80
48169122	80
48169123	80
48169124	80
48169125	80
48169126	80
48169128	80
48169129	80
48169130	80
48169145	81
48169150	81
48169165	82
48169170	82
48169185	82
48169190	82
48170041	83
48170042	83
48170043	83
48170044	83
48170045	83
48170046	83
48170047	84
48170048	84
48170049	84

EDP Number	Page No.
48170050	84
48170061	84
48170062	84
48170063	84
48170064	84
48170065	84
48170066	84
48170067	84
48170068	85
48170069	85
48170070	85
48170081	85
48170082	85
48170083	85
48170084	85
48170085	85
48170086	85
48170087	85
48170088	86
48170089	86
48170090	86
48170101	86
48170102	86
48170103	86
48170104	86
48170105	86
48170106	86
48170107	86
48170108	87
48170109	87
48170110	87
48170121	87
48170122	87
48170123	87
48170124	87
48170125	87
48170126	87
48170128	87
48170129	87
48170130	88
48170145	88
48170150	88
48170165	89
48170170	89
48170185	89
48170190	89
48172201	120
48172202	120
48172203	120
48172204	120
48172206	121
48172207	121
48172208	121
48172209	121
48172211	121
48172212	121
48172213	121
48172214	121

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
48172216	121
48172217	121
48172218	121
48172219	121
48172221	121
48172222	121
48172223	121
48172224	121
48172226	121
48172227	121
48172228	121
48172229	121
48172231	121
48172232	121
48172233	121
48172234	121
48172236	121
48172237	121
48172238	121
48172239	121
48172241	121
48172242	121
48172243	121
48172244	121
48172246	121
48172247	121
48172248	121
48172249	121
48172251	121
48172252	122
48172253	122
48172254	122
48172256	122
48172257	122
48172258	122
48172259	122
48172261	122
48172262	122
48172263	122
48172264	122
48172266	122
48172267	122
48172268	122
48172269	122
48172271	122
48172272	122
48172273	122
48172274	122
48172276	122
48172277	122
48172278	122
48172279	122
48172281	122
48172282	122
48172283	122
48172284	122
48172286	122
48172287	122

EDP Number	Page No.
48172288	122
48172289	122
48172291	122
48172292	122
48172293	122
48172294	122
48172296	122
48172297	122
48172298	122
48172299	122
48172301	122
48172302	123
48172303	123
48172304	123
48172306	123
48172307	123
48172308	123
48172309	123
48172311	123
48172312	123
48172313	123
48172314	123
48172316	123
48172317	123
48172318	123
48172319	123
48172321	123
48172322	123
48172323	123
48172324	123
48172326	123
48172327	123
48172328	123
48172329	123
48172331	123
48172332	123
48172333	123
48172334	123
48172336	123
48172337	123
48172338	123
48172339	123
48172341	123
48172342	123
48172343	123
48172344	123
48172346	123
48172347	123
48172348	124
48172349	124
48172351	124
48172352	124
48172353	124
48172354	124
48172356	124
48172357	124
48172358	124
48172359	124

EDP Number	Page No.
48172361	124
48172362	124
48172363	124
48172364	124
48172366	124
48172367	124
48172368	124
48172369	124
48172371	124
48172372	124
48172373	124
48172374	124
48172376	124
48172377	124
48172378	124
48172379	124
48172381	124
48172382	124
48172383	124
48172384	124
48172386	124
48172387	124
48172388	124
48172389	124
48172391	124
48172392	124
48172393	124
48172394	124
48172396	124
48172397	124
48172398	125
48172399	125
48173001	993
48173002	993
48173003	993
48173004	993
48173005	993
48173006	993
48173007	993
48173008	993
48173009	993
48173010	993
48173011	993
48173012	993
48173013	993
48173014	993
48173015	993
48173016	993
48173017	993
48173018	993
48173019	993
48173020	993
48173021	993
48173022	993
48173023	993
48173024	993
48173025	993
48173026	993

EDP Number	Page No.
48174001	1103
48174002	1103
48174003	1103
48174004	1103
48174005	1103
48174006	1103
48174007	1103
48174008	1103
48174009	1103
48174010	1103
48174011	1103
48174012	1103
48174013	1103
48174014	1103
48174015	1103
48174016	1103
48174017	1103
48174018	1103
48174019	1103
48174020	1103
482	478
48200032	108
48200048	108
48200051	108
48200052	108
48200062	108
48200081	108
48200094	108
48200098	108
482-1000	738
482-1000-BN	754
482-1181	739
482-1181-BN	755
482-1250	738
482-125011	738
482-1250-BN	754
482-1250-BN11	754
482-1575	739
482-1575-BN	755
482-1875	738
482-187508	738
482-1875-BN	754
482-1875-BN11	754
482-1876	738
482-1968	739
482-1968-BN	755
482-2362	739
482-2362-BN	755
482-2500	738
482-250011	738
482-2500-BN	754
482-2500-BN11	754
482-2501	738
482-250108	738
482-2502	738
482-250208	738
482-3125	738
482-3125-BN	754

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
482-3150	739
482-3150-BN	755
482-3750	738
482-3750-BN	754
482-3937	739
482-3937-BN	755
482-4375	738
482-4375-BN	754
482-4724	739
482-4724-BN	755
482-5000	738
482-500008	738
482-500011	738
482-5000-BN	754
482-5512	739
482-5512-BN	755
482-6250	738
482-6250-BN	754
482-6299	739
482-6299-BN	755
482-7087	739
482-7087-BN	755
482-7500	738
482-7500-BN	754
482-7874	739
482-7874-BN	755
482-9843	739
482-9843-BN	755
48300032	110
48300048	110
48300051	110
48300052	110
48300062	110
48300081	110
48300094	110
48300098	110
484-1000	738
484-100008	738
484-100011	738
484-1000-BN	754
484-1181	739
484-1181-BN	755
484-1250	738
484-125011	738
484-1250-BN	754
484-1250-BN11	754
484-1575	739
484-1575-BN	755
484-1875	738
484-187511	738
484-1875-BN	754
484-1875-BN11	754
484-1876	738
484-187608	738
484-1968	739
484-1968-BN	755
484-2362	739
484-2362-BN	755

EDP Number	Page No.
484-2500	738
484-250011	738
484-2500-BN	754
484-2500-BN11	754
484-2501	738
484-250108	738
484-2502	738
484-250208	738
484-3125	738
484-312511	738
484-3125-BN	754
484-3125-BN11	754
484-3126	738
484-312608	738
484-3127	738
484-312708	738
484-3150	739
484-3150-BN	755
484-3750	738
484-375011	738
484-3750-BN	754
484-3750-BN11	754
484-3751	738
484-375108	738
484-3752	738
484-375208	738
484-3753	738
484-3937	739
484-3937-BN	755
484-4375	738
484-4375-BN	754
484-4724	739
484-4724-BN	755
484-5000	738
484-500011	738
484-5000-BN	754
484-5000-BN11	754
484-5001	738
484-500108	738
484-5512	739
484-5512-BN	755
484-6250	738
484-625011	738
484-6250-BN	754
484-6251	738
484-625108	738
484-6299	739
484-6299-BN	755
484-7087	739
484-7087-BN	755
484-7500	738
484-750011	738
484-7500-BN	754
484-7501	738
484-7874	739
484-7874-BN	755
484-9843	739
484-9843-BN	755

EDP Number	Page No.
4900100	776
4900300	776
4900500	776
4900600	776
4900700	776
4900800	776
4900900	776
4901100	776
4901300	776
4901400	776
4901500	776
4901700	776
4901900	776
4902100	776
4902300	776
4909000	776
4909100	776
4909200	776
4909400	776
4909500	776
4909700	776
4909800	776
4909900	776
4910100	776
4910500	776
4910700	776
4910900	776
4911500	776
4911900	776
4912100	776
4912300	776
4912500	776
4913100	776
4913300	776
4913500	776
4913700	776
4913900	776
4914500	776
4920100	776
492-0150	746
492-0200	746
492-0250	746
492-0300	746
492-0350	746
492-0400	746
492-0450	746
4920500	776
492-0500	746
492-0550	746
492-0600	746
4920700	776
4920900	776
4921100	776
4921300	776
4926100	776
4926500	776
4926700	776
4926900	776

EDP Number	Page No.
4927100	776
4927300	776
494-0350	746
494-0400	746
494-0450	746
494-0500	746
494-0550	746
494-0600	746
495-1000	740
495-1002	740
495-1003	740
495-1004	740
495-1006	740
495-1009	740
495-1251	740
495-1872	740
495-1873	740
495-2502	740
495-2503	740
495-2504	740
495-3122	740
495-3123	740
495-3124	740
495-3752	740
495-3753	740
495-3754	740
495-5002	740
495-5003	740
495-5004	740
495-5006	740
495-6252	740
495-6253	740
495-6254	740
495-6256	740
495-6259	740
495-7500	740
495-7502	740
495-7503	740
495-7504	740
495-7506	740
495-7509	740
496-1000	740
496-1002	740
496-1003	740
496-1004	740
496-1006	740
496-1009	740
496-1251	740
496-125111	740
496-1872	740
496-187211	740
496-1873	740
496-187311	740
496-2502	740
496-250211	740
496-2503	740
496-250311	740
496-2504	740

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
496-3122	740
496-312211	740
496-3123	740
496-312311	740
496-3124	740
496-3752	740
496-3753	740
496-375311	740
496-3754	740
496-375411	740
496-5002	740
496-500211	740
496-5003	740
496-500311	740
496-5004	740
496-5006	740
496-500611	740
496-6252	740
496-6253	740
496-6254	740
496-6256	740
496-6259	740
496-7500	740
496-7502	740
496-7503	740
496-750311	740
496-7504	740
496-7506	740
496-7509	740
497-1000	756
497-1181	756
497-1250	756
497-1575	756
497-1875	756
497-1968	756
497-2362	756
497-2500	756
497-3125	756
497-3150	756
497-3750	756
497-3937	756
497-4331	756
497-4375	756
497-4724	756
497-5000	756
497-5512	756
497-5625	756
497-6250	756
497-6299	756
497-7087	756
497-7500	756
497-7874	756
500-0938	761
500-1250	761
5001400	400
5001405	400
5001500	400
5001505	400
5001508	400
5001800	400
5001808	400
500-1875	761
5001900	400
5001908	400
500-2500	761
5002600	400
5002700	400
5002705	400
5002708	400
500-3125	761
5003400	400
5003405	400
5003408	400
5003500	400
5003505	400
5003508	400
500-3750	761
500-4375	761
5004600	400
5004608	400
5004700	400
5004705	400
5004708	400
500-5000	761
5005400	400
5005408	400
5005500	400
5005505	400
5005508	400
5006200	400
5006205	400
5007000	400
5007008	400
5007100	400
5007108	400
502-0938	761
502-1250	761
502-1875	761
502-2500	761
502-3125	761
502-3750	761
502-4375	761
502-5000	761
511	478
512	478
513	478
517112113	73
517112613	73
517114113	73
517114613	73
517115613	73
517116113	73
517116613	73
517117613	73
517118613	73
5200100	779
5200105	779
520011612	76
520012512	76
520013212	76
520013512	76
520013812	76
520014012	76
520014812	76
520015212	76
520015612	76
520015912	76
520016112	76
520016312	76
520016812	76
520017112	76
520017512	76
520018312	76
520018712	76
5200200	779
520020212	77
520020312	77
5200205	779
520020712	77
520021312	77
520021512	77
520021812	77
520023412	77
520024212	77
520025712	77
520026112	77
520026512	78
520027012	78
520027712	78
520028112	78
520029612	78
5200300	779
5200305	779
520031212	78
520032012	78
520032812	78
520033212	78
520033712	78
520034012	78
520034112	78
520034312	79
520034812	79
520035912	79
520037512	79
520037612	79
520039012	79
5200400	779
5200405	779
520040612	79
520041112	79
520042212	79
520042712	80
520043712	80
520045312	80
520046912	80
520048512	80
520049012	80
520049912	80
5200500	779
520050012	80
5200505	779
520051512	80
520053112	81
520054612	81
520055512	81
520055912	81
520056212	81
520056312	81
520056612	81
520057412	81
520057812	81
520057912	81
520058212	81
520058612	81
5200600	779
5200605	779
520062512	81
520063312	82
520065612	82
520066312	82
520069312	82
520069612	82
520069812	82
5200700	779
520073312	82
520075012	82
520075712	82
520077412	82
520077612	82
520077812	82
5201100	779
5201105	779
5201200	779
5201300	779
5201305	779
5201400	779
5201500	779
5201505	779
5201600	779
5201700	779
5201800	779
5201900	779
5202100	779
5202105	779
5202200	779
5202300	779
5202400	779
5202500	779
5202600	779
5202700	779
5202800	779
5202900	779

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
5203100	779
5203105	779
5203200	779
5203205	779
5203300	779
5203305	779
5203400	779
5203500	779
5204100	779
5204105	779
5204200	779
5204300	779
5204400	779
5205100	779
5205105	779
5205200	779
5205300	779
5205400	779
5205500	779
5206100	779
5206200	779
5206300	779
5206400	779
5207400	779
5209100	779
5209200	779
5209300	779
5209400	779
5209500	779
5209700	779
52100001	1072
52100002	1072
52100003	1072
52100004	1072
52100005	1072
52100006	1072
52100007	1072
52100008	1072
52100009	1072
52100010	1072
52100011	1072
52100012	1072
52100013	1072
52100014	1072
52100015	1072
52100016	1072
52100017	1072
52100018	1072
52100019	1072
52100021	1072
52100022	1072
52100023	1072
52100024	1072
52100025	1072
5210100	783
52101001	1075
52101002	1075
52101003	1075
52101004	1075
52101005	1075
52101006	1075
52101011	1075
52101012	1075
52101013	1075
52101014	1075
52101015	1075
52101016	1075
52101021	1075
52101022	1075
52101023	1075
52101024	1075
52101025	1075
52101026	1075
52101031	1075
52101032	1075
52101033	1075
52101034	1075
52101035	1075
52101036	1075
52101041	1075
52101042	1075
52101043	1075
52101044	1075
52101045	1075
52101046	1075
521012512	83
521015612	83
521016112	83
521017112	83
521018712	84
5210200	783
521020312	84
521021312	84
521021812	84
521023412	84
521025712	84
521026512	84
521028112	85
521029612	85
5210300	783
521031212	85
521032812	85
521033212	85
521034312	85
521035912	86
521037512	86
521039012	86
5210400	783
521040612	86
521042212	86
521043812	87
521045312	87
521046912	87
521048512	87
5210500	783
521050012	87
521053112	88
521055512	88
521055912	88
521056212	88
521056312	88
521056612	88
521057412	88
521057812	88
521058212	88
521058612	88
5210600	783
521062512	88
521063312	88
521065612	89
521075012	89
521075712	89
5211100	783
5211200	783
5211300	783
5211500	783
5212100	783
5213100	783
5213200	783
5213300	783
5214100	783
5214300	783
5215100	783
5215200	783
5216100	783
5216200	783
5217100	783
5219600	783
52200000	1080
52200001	1080
52200002	1080
52200003	1080
52200004	1080
52200005	1080
52200006	1080
52200007	1080
52200008	1080
52200009	1080
52200010	1080
52200011	1080
52200012	1080
52200013	1080
52200014	1080
52200015	1080
52200016	1080
52200017	1080
52200018	1080
52200019	1080
52200020	1080
52200021	1080
52200022	1080
52200023	1080
5220100	798
52201000	1083
52201001	1083
52201002	1083
52201003	1083
52201004	1083
52201005	1083
52201006	1083
52201007	1083
52201008	1083
52201009	1083
52201010	1083
52201011	1083
52201012	1083
52201013	1083
52201014	1083
52201015	1083
52201016	1083
52201017	1083
52201018	1083
52201019	1083
52201020	1083
52201021	1083
52201022	1083
52201023	1083
52201024	1083
52201025	1083
52201026	1083
52201027	1083
52201028	1083
5220105	798
52201050	1083
52201051	1083
52201052	1083
52201053	1083
52201054	1083
52201055	1083
52201056	1083
52201057	1083
52201058	1083
52201059	1083
52201060	1083
52201061	1083
52201062	1083
52201063	1083
52201064	1084
52201065	1084
52201066	1084
52201067	1084
52201068	1084
52201069	1084
52201070	1084
52201071	1084
52201072	1084
52201073	1084
52201074	1084
52201075	1084
52201076	1084
52201077	1084
52201078	1084

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
52201100	1084
52201101	1084
52201102	1084
52201103	1084
52201104	1084
52201105	1084
52201106	1084
52201107	1084
52201108	1084
52201109	1084
52201110	1084
52201111	1084
52201112	1084
52201113	1084
5220200	798
5220205	798
5220300	798
5220305	798
5220400	798
5220405	798
5220500	798
5220505	798
5221100	798
5221105	798
5222100	798
5222105	798
5223100	798
5223105	798
5224100	798
5224105	798
5225100	798
5225105	798
5226000	798
5226100	798
5226200	798
5226300	798
5226400	798
5226500	798
5226600	798
5226700	798
5226800	798
5226900	798
5227000	798
5227100	798
5227200	798
5227300	798
5227400	798
5227500	798
5227600	798
5227700	798
5227800	798
5228000	798
5228100	798
5228200	798
5229100	798
5229200	798
5229300	798
5229400	798

EDP Number	Page No.
5229500	798
5229600	798
5229605	798
5229700	798
5229800	798
5229900	798
52300000	1102
52300001	1102
52300002	1102
52300003	1102
52300004	1102
52300005	1102
52300006	1102
52300007	1102
52300008	1102
52300009	1102
52300010	1102
52300011	1102
52300012	1102
52300013	1102
52300014	1102
52300015	1102
52300016	1102
52300017	1102
52300018	1102
52300019	1102
52300020	1104
52300021	1104
52300022	1104
52300023	1104
5230100	802
52301000	1095
52301001	1095
52301002	1095
52301003	1095
52301004	1095
52301005	1095
52301006	1095
52301007	1095
52301008	1095
52301009	1095
52301010	1095
52301011	1095
52301012	1095
52301013	1095
52301014	1095
52301015	1095
52301016	1095
52301017	1095
52301018	1095
52301019	1095
5230200	802
52302000	1097
52302001	1097
52302002	1097
52302003	1097
52302004	1097
52302005	1097

EDP Number	Page No.
52302006	1097
52302007	1097
52302008	1097
52302009	1097
52302010	1097
52302011	1097
52302012	1097
52302013	1097
52302014	1097
52302015	1097
52302016	1097
52302017	1097
52302018	1097
52302019	1097
52302020	1097
52302021	1097
52302022	1097
52302023	1097
52302024	1097
5230300	802
52303000	1098
52303001	1098
52303002	1098
52303003	1098
5230400	802
52304000	1098
52304001	1098
52304002	1098
52304003	1098
5230500	802
52305000	1099
52305001	1099
52305002	1099
52306000	1101
52306001	1101
52306002	1101
52307000	1101
52307001	1101
52307002	1101
52308000	1096
52308001	1096
52308002	1096
52308003	1096
52308004	1096
52308005	1096
52308006	1096
52308007	1096
52308008	1096
52308009	1096
52308010	1096
52308011	1096
52308012	1096
52308013	1096
52308014	1096
52308015	1096
52308016	1096
52308017	1096
52308018	1096

EDP Number	Page No.
52308019	1096
52309000	1099
52309001	1099
52309002	1099
52309003	1099
52309004	1099
52309005	1099
52310000	1100
52310001	1100
52310002	1100
52310003	1100
52310004	1100
52310005	1100
5231100	802
52311000	1100
52311001	1100
52311002	1100
5232100	802
5233100	802
5235100	802
5239600	802
52400000	992
52400001	992
52400002	992
52400003	992
52400004	992
52400005	992
52400006	992
52400007	992
52400008	992
52400009	992
52400010	992
52400011	992
52400012	992
52400100	992
52400101	992
52400102	992
52400103	992
52400104	992
52400105	992
52400106	992
52400107	992
52400108	992
52400109	992
52400110	992
52400111	992
52400112	992
52401000	994
52401001	994
52401002	994
52401003	994
52401004	994
52401005	994
52401006	994
52401007	994
52401008	994
52401009	994
52401010	994

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
52401011	994
52401012	994
52401013	994
52402000	995
52402001	995
52402002	995
52402003	995
52402004	995
52402005	995
52402006	995
52402007	995
52402008	995
52402009	995
52402010	995
52402011	995
52402012	995
52402013	995
52403000	996
52403001	996
52403002	996
52403003	996
52403004	996
52403005	996
52403006	996
52403007	996
52403008	996
52403009	996
52403010	996
52403011	996
52403012	996
52403013	996
52502000	999
52502001	999
52502002	999
52502003	999
52502004	999
52502005	999
52502006	999
52502007	999
52502008	999
52502009	999
52502010	999
52502011	999
52502012	999
52502013	999
52502014	999
52502015	999
52502016	999
52502017	999
52502018	999
52502019	999
52502020	999
52502021	999
52502022	999
52502023	999
52502024	999
52502025	999
52503000	1002

EDP Number	Page No.
52503001	1002
52503002	1002
52503003	1002
52503004	1002
52503005	1002
52503006	1002
52503007	1002
52503008	1002
52503009	1002
52503010	1002
52503011	1002
52503012	1002
52503013	1002
52503014	1002
52503015	1002
52503016	1002
52503017	1002
52503018	1002
52503019	1002
52503020	1002
52503021	1002
52503022	1002
52503023	1002
52503024	1002
52503025	1002
52504000	1005
52504001	1005
52504002	1005
52504003	1005
52504004	1005
52504005	1005
52504006	1005
52504007	1005
52504008	1005
52504009	1005
52504010	1005
52504011	1005
52504012	1005
52504013	1005
52504014	1005
52504015	1005
52504016	1005
52504017	1005
52504018	1005
52504019	1005
52504020	1005
52504021	1005
52504022	1005
52504023	1005
52504024	1005
52504025	1005
5250500	781
52505000	1008
52505001	1008
52505002	1008
52505003	1008
52505004	1008
52505005	1008

EDP Number	Page No.
52505006	1008
52505007	1008
52505008	1008
52505009	1008
52505010	1008
52505011	1008
52505012	1008
52505013	1008
52505014	1008
52505015	1008
52505016	1008
52505017	1008
52505018	1008
52505019	1008
52505020	1008
52505021	1008
52505022	1008
52505023	1008
52505024	1008
52505025	1008
5251100	781
5252100	781
5253100	781
5254100	781
5255100	781
5255200	781
5255300	781
5256100	781
5256200	781
5256300	781
5256400	781
5257400	781
52600000	1091
52600001	1091
52600002	1091
52600003	1091
52600004	1091
52600005	1091
52600010	1091
52600011	1091
52600012	1091
52600013	1091
52600014	1091
52600015	1091
52600016	1091
52600017	1091
52600018	1091
52600019	1091
5260100	783
52601000	1032
52601001	1032
52601002	1032
52601003	1032
52601004	1032
52601005	1032
52601006	1032
5260200	783
52602000	1055

EDP Number	Page No.
52602001	1055
52602002	1055
52602003	1055
52602004	1055
5260300	783
52603000	1064
52603001	1064
52603002	1064
52603003	1064
5260400	783
52604000	1074
52604001	1074
52604002	1074
52604003	1074
52604004	1074
5260500	783
52605000	1082
52605001	1082
52605002	1082
52605003	1082
52605004	1082
5261100	783
5262100	783
5263100	783
5265100	783
5269600	783
52700000	1019
52700001	1019
52700002	1019
52700003	1019
52700004	1019
52700005	1019
52700006	1020
5270100	781
5270200	781
5270300	781
5270400	781
5270500	781
5271100	781
5272100	781
5273100	781
5274100	781
5275100	781
5276100	781
52800000	1022
52800001	1022
52800002	1022
52800003	1022
52800004	1022
52800005	1022
52800006	1022
52800007	1022
52800008	1022
52800009	1022
52900000	1043
52900001	1043
52900002	1043
52900004	1043

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
52900005	1043
52900006	1043
52901000	1044
52901001	1044
52901002	1044
53000000	1038
53000001	1038
53000002	1038
53000003	1038
53000004	1038
53000005	1038
53000006	1038
53000007	1038
53000008	1038
53000009	1038
53000010	1038
53000011	1038
53001000	1040
53001001	1040
53001002	1040
5300300	782
5300400	782
5300500	782
5300600	782
5301100	782
5302100	782
5303100	782
5303200	782
5303300	782
5304100	782
5305100	782
5306100	782
5306200	782
5306300	782
5306400	782
53100000	1047
53100001	1047
53100002	1047
53100003	1047
53100004	1047
53100005	1047
53100006	1047
53100007	1047
53100008	1047
53100009	1047
5310100	784
5310200	784
5310300	784
5310400	784
5310500	784
5310600	784
5310700	784
5311100	784
5311200	784
5311300	784
5311500	784
5312100	784
5312300	784

EDP Number	Page No.
5312500	784
5312700	784
5313100	784
5313200	784
5313300	784
5314100	784
5314200	784
5315100	784
5315200	784
5315300	784
5315500	784
5316100	784
5316200	784
5316300	784
5316400	784
5320100	800
5320200	800
5320300	800
5320400	800
5320500	800
5321100	800
5322100	800
5323100	800
5324100	800
5325100	800
5329600	800
5329800	800
5350300	782
5350400	782
5350500	782
5351000	782
5351100	782
5352100	782
5353100	782
5355100	782
5356100	782
5356200	782
5356400	782
5360300	786
5360400	786
5360500	786
5361000	786
5361100	786
5362100	786
5363100	786
5364100	786
5365100	786
5366100	786
5366200	786
5366400	786
5400100	791
5400105	791
540012411	63
540015611	63
540016111	63
540017211	63
540018711	63
5400200	791

EDP Number	Page No.
540020311	63
5400205	791
540021311	63
540021811	64
540023411	64
540025011	64
540025711	64
540026511	64
540028111	64
540029611	64
5400300	791
5400305	791
540031211	64
540032811	64
540033111	64
540034311	64
540035911	64
540037511	65
540039011	65
5400400	791
5400405	791
540040611	65
540042211	65
540043811	65
540045311	65
540046911	65
540047611	65
540048011	65
540048411	65
540048811	65
540049211	65
540049611	65
5400500	791
540050011	65
540050311	65
5400505	791
540050711	65
540051111	65
540051511	65
540051911	65
540052311	65
540052711	65
540053211	65
540055111	66
540056211	66
540057011	66
540059011	66
5400600	791
5400605	791
540061011	66
540062411	66
540062911	66
540064911	66
540066911	66
540068911	66
5400700	791
540070811	66
540072811	66

EDP Number	Page No.
540074811	66
540075011	66
540076711	66
540078711	66
5401100	791
5401105	791
5401200	791
5401300	791
5401305	791
5401400	791
5401500	791
5401505	791
5401600	791
5401700	791
5401800	791
5401900	791
5402100	791
5402200	791
5402300	791
5402400	791
5402500	791
5402600	791
5402700	791
5402800	791
5402900	791
5403100	791
5403105	791
5403200	791
5403205	791
5403300	791
5403305	791
5403400	791
5403500	791
5404100	791
5404200	791
5404300	791
5404400	791
5405100	791
5405105	791
5405200	791
5405300	791
5405400	791
5405500	791
5406100	791
5406200	791
5406300	791
5406400	791
5407400	791
5408400	791
5409100	791
5409200	791
5409300	791
5409400	791
5409500	791
5409700	791
5410100	787
5410105	787
5410108	787

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
541012411	67
541015611	67
541016111	67
541017211	67
541018711	67
5410200	787
541020311	67
5410205	787
5410208	787
541021311	67
541021811	68
541023411	68
541025011	68
541025711	68
541026511	68
541028111	68
541029611	68
5410300	787
5410305	787
5410308	787
541031211	68
541032811	68
541033111	68
541034311	68
541035911	68
541037511	69
541039011	69
5410400	787
5410405	787
541040611	69
5410408	787
541042211	69
541043811	69
541045311	69
541046911	69
5410500	787
5410505	787
5410508	787
541056211	70
541062411	70
541075011	70
5410900	787
5411000	787
5411008	787
5411100	787
5411105	787
5411500	787
5411700	787
5412000	787
5412008	787
5412100	787
5412105	787
5412108	787
5412111	787
5412200	787
5412500	787
5412508	787
5412600	787

EDP Number	Page No.
5413000	787
5413100	787
5413105	787
5413108	787
5413500	787
5414100	787
5414105	787
5414108	787
5414500	787
5414900	787
5415000	787
5415100	787
5415105	787
5415108	787
5415111	787
5415200	787
5415500	787
5415511	787
5415600	787
5416100	787
5416108	787
5416200	787
5416208	787
5416400	787
5416500	787
5416600	787
5417000	787
5417100	787
5417108	787
5418400	787
5420100	801
5420200	801
5420300	801
5420400	801
5420500	801
5421100	801
5422100	801
5423100	801
5424100	801
5425100	801
5426000	801
5426100	801
5426200	801
5426300	801
5426400	801
5426500	801
5426600	801
5426700	801
5426800	801
5426900	801
5427000	801
5427100	801
5427200	801
5427300	801
5427400	801
5427500	801
5427600	801
5428000	801

EDP Number	Page No.
5428100	801
5428200	801
5428300	801
5429100	801
5429200	801
5429300	801
5429400	801
5429500	801
5429600	801
5429700	801
5429800	801
5429900	801
5430100	802
5430200	802
5430300	802
5430400	802
5430500	802
5431100	802
5432100	802
5433100	802
5434100	802
5435100	802
5440500	790
5441100	790
5442100	790
5442200	790
5443100	790
5444100	790
5445100	790
5446100	790
5446200	790
5449700	790
5450300	792
5450400	792
5450500	792
5451000	792
5451100	792
5452100	792
5453100	792
5454100	792
5455100	792
5455200	792
5455300	792
5455500	792
5456100	792
5456200	792
5456300	792
5456400	792
5457400	792
5458400	792
5460300	788
5460308	788
5460400	788
5460408	788
5460500	788
5460508	788
5461100	788
5461108	788

EDP Number	Page No.
5461500	788
5462100	788
5462108	788
5462500	788
5463100	788
5463108	788
5463500	788
5464100	788
5464108	788
5464500	788
5465100	788
5465108	788
5465500	788
5466100	788
5466400	788
5466500	788
5466600	788
5468400	788
5469400	788
5475100	792
5476100	792
5476200	792
5476300	792
5476400	792
5483100	788
5484100	788
5484108	788
5485100	788
5485108	788
5485208	788
5486100	788
5486108	788
5486200	788
5486208	788
550007812	90
550008212	90
550008612	90
550009312	90
550009412	90
550010612	90
550010912	90
550011161	90
550011631	90
550012511	90
550013231	90
550013561	90
550013871	90
550014051	90
550014841	90
550015211	90
550015611	90
550015961	90
550016111	90
550016361	90

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EDP Numerical Index

EDP Number	Page No.
550016811	90
550017111	90
550017541	90
550018351	90
550018711	90
550020291	91
550020311	91
550020701	91
550021311	91
550021521	91
550021811	91
550023411	91
550024221	91
550025011	91
550025711	91
550026201	91
550026511	91
550027011	91
550027701	91
550028111	91
550029611	91
550031211	91
550032101	92
550032811	92
550033111	92
550033711	92
550034021	92
550034161	92
550034311	92
550034881	92
550035911	92
550037511	92
550037601	92
550039011	92
550040611	92
550041111	92
550042211	92
550042761	92
550043711	92
550045311	93
550046811	93
550048411	93
550049001	93
550049911	93
550050011	93
550051501	93
550053111	93
550054601	93
550056211	93
550057781	93
550062511	94
550063311	94
550065611	94
550066301	94

EDP Number	Page No.
550069321	94
550069601	94
550069801	94
550073391	94
550075011	94
550075711	94
550077401	94
550077661	94
550077801	94
551007812	95
551008212	95
551008612	95
551009312	95
551009412	95
551010612	95
551012511	95
551015611	95
551016111	95
551017111	95
551018711	95
551020311	96
551021311	96
551021811	96
551023411	96
551025011	96
551025711	96
551026511	96
551028111	96
551029611	96
551031211	96
551032811	96
551033111	96
551034311	96
551035911	97
551037511	97
551039011	97
551040611	97
551042211	97
551043711	97
551045311	97
551046811	97
551048411	97
551050011	98
551053111	98
551056211	98
551062511	98
551063311	98
551065611	98
551075011	98
551075711	98
552007812	100
552008212	100
552008612	100
552009012	100

EDP Number	Page No.
552009312	100
552009412	100
552009812	100
552010212	100
552010612	100
552010911	100
552011011	100
552011411	100
552012211	100
552012511	100
552012611	100
552012911	100
552013311	100
552014111	100
552014511	100
552014911	100
552015311	100
552015611	100
552016111	100
552016112	100
552016511	100
552016911	100
552017111	100
552017311	100
552018111	100
552018511	100
552018711	100
552018911	100
552019211	100
552020011	100
552020311	100
552020411	100
552020811	100
552021211	100
552021311	100
552021811	100
552022011	100
552022411	100
552022811	100
552023211	100
552023411	100
552024011	101
552024411	101
552024811	101
552025011	101
552025211	101
552025711	101
552025911	101
552026311	101
552026511	101
552026711	101
552027111	101
552027911	101
552028111	101

EDP Number	Page No.
552028311	101
552028711	101
552029111	101
552029611	101
552029911	101
552030311	101
552030711	101
552031111	101
552031211	101
552031811	101
552032211	101
552032611	101
552032811	101
552033011	101
552033111	101
552033811	101
552034211	101
552034311	101
552034611	101
552035011	101
552035811	101
552035911	101
552036211	101
552036611	101
552037011	101
552037511	101
552037811	101
552038111	101
552038511	102
552038911	102
552039011	102
552039711	102
552040111	102
552040511	102
552040611	102
552040911	102
552041711	102
552042111	102
552042211	102
552042511	102
552042911	102
552043711	102
552043811	102
552044011	102
552044411	102
552044811	102
552045311	102
552045611	102
552046011	102
552046411	102
552046811	102
552047611	102
552048011	102
552048411	102

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EDP Number	Page No.
552048811	102
552049611	102
552050011	102
552053111	102
552053211	102
552055111	102
552056211	102
552057011	102
552062511	102
553007812	103
553008212	103
553008612	103
553009012	103
553009312	103
553009412	103
553009812	103
553010212	103
553010612	103
553010912	103
553011012	103
553011412	103
553012212	103
553012512	103
553012612	103
553012912	103
553013312	103
553014112	103
553014512	103
553014912	103
553015312	103
553015612	103
553016112	103
553016212	103
553016512	103
553016912	103
553017312	103
553018112	103
553018512	103
553018712	103
553018912	103
553019212	103
553020012	103
553020312	103
553020412	103
553020812	103
553021212	104
553021312	104
553021812	104
553022012	104
553022412	104
553022812	104
553023212	104
553024012	104
553024812	104

EDP Number	Page No.
553025012	104
553025212	104
553025712	104
553025912	104
553026312	104
553026512	104
553026712	104
553027112	104
553027912	104
553028112	104
553028312	104
553028712	104
553029112	104
553029912	104
553030312	104
553030712	104
553031112	104
553031212	104
553031812	104
553032212	104
553033012	104
553033212	104
553033812	104
553034212	104
553034312	104
553034612	104
553035012	104
553035812	104
553036212	104
553036612	104
553037012	105
553037512	105
553037812	105
553038112	105
553038512	105
553038912	105
553039712	105
553040112	105
553040512	105
553040912	105
553041312	105
553041712	105
553042112	105
553042212	105
553042512	105
553042912	105
553043712	105
553043812	105
553044012	105
553044412	105
553044812	105
553045212	105
553045312	105
553045612	105

EDP Number	Page No.
553046012	105
553046412	105
553046812	105
553049212	105
553050012	105
553056212	105
553512512	106
553514112	106
553515612	106
553517212	106
553518712	106
553520312	106
553521312	106
553521912	106
553523412	106
553525012	106
553526612	106
553528112	106
553529712	106
553531312	106
553532812	106
553534412	106
553535912	106
553537512	106
553539112	106
553540612	106
553542212	106
553543712	106
553545312	106
553546912	106
553550012	107
553553112	107
553556312	107
554012512	108
554014012	108
554015612	108
554017212	108
554018712	108
554020312	108
554021312	108
554021812	108
554023412	108
554025012	108
554026512	108
554028112	108
554029612	108
554031212	108
554032812	108
554034312	108
554035912	108
554037512	108
554039012	108
554040612	108
554041312	108

EDP Number	Page No.
554042212	108
554043712	108
554045212	108
554045312	108
554046812	109
554049212	109
554050012	109
554053112	109
554056212	109
555011812	110
555012512	110
555014012	110
555015612	110
555017212	110
555018712	110
555020312	110
555021312	110
555021812	110
555023412	110
555025012	110
555026512	110
555028112	110
555029612	110
555031212	110
555032812	110
555034312	110
555035912	110
555037512	110
555039012	110
555040612	110
555041312	110
555042212	110
555043312	110
555043712	110
555045212	110
555045312	110
555046812	111
555047212	111
555049212	111
555050012	111
555053112	111
555056212	111
5570300	793
5570400	793
5570500	793
5571100	793
5572100	793
5573100	793
5574100	793
5575100	793
5576100	793
5576200	793
5578400	793
5580300	789

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
5580400	789
5580500	789
5581100	789
5581108	789
5581500	789
5582100	789
5582108	789
5582500	789
5583100	789
5583108	789
5583500	789
5584100	789
5584108	789
5584500	789
5585100	789
5585108	789
5585500	789
5585508	789
5586100	789
5586500	789
5586600	789
5588400	789
560015711	48
560015911	48
560016011	48
560016111	48
560016311	48
560016511	48
560016811	48
560016911	48
560017211	48
560017311	48
560017511	48
560017711	48
560018111	48
560018311	48
560018511	48
560018711	48
560018911	48
560019211	48
560020311	48
560021311	48
560021911	48
560023411	48
560025011	48
560025711	48
560026611	48
560028111	48
560029711	49
560031311	49
560032811	49
560033211	49
560034411	49
560035911	49

EDP Number	Page No.
560037511	49
560039111	49
560040611	49
560042211	49
560043711	49
560045311	50
560046911	50
560048411	50
560050011	50
560053111	50
560056311	50
560059311	50
560062511	51
560063311	51
560065611	51
560066311	51
560068711	51
560070311	51
560071811	51
560075011	51
560075711	51
561015711	52
561016011	52
561016111	52
561016511	52
561016911	52
561017211	52
561017311	52
561017711	52
561018111	52
561018511	52
561018711	52
561018911	52
561019211	52
561020311	52
561021311	52
561021911	52
561023411	52
561025011	52
561025711	52
561026611	52
561028111	52
561029711	52
561031311	53
561032811	53
561033211	53
561034411	53
561035911	53
561037511	53
561039111	53
561040611	53
561042211	53
561043711	53
561045311	53

EDP Number	Page No.
561046911	54
561048411	54
561050011	54
561053111	54
561056311	54
561059311	54
561062511	54
561063311	54
561065611	55
561066311	55
561068711	55
561070311	55
561071811	55
561075011	55
561075711	55
5627000	803
5627100	803
5627200	803
5627300	803
5627400	803
5627500	803
5627600	803
5627700	803
5627800	803
5627900	803
5628000	803
5637000	803
5637100	803
5637200	803
5637300	803
5637400	803
5637500	803
5637600	803
5637700	803
5637800	803
5637900	803
5638000	803
5647200	804
5647400	804
5647600	804
5647800	804
5648000	804
5667200	804
5667400	804
5667600	804
5667800	804
5668000	804
5677200	805
5677400	805
5677600	805
5677800	805
5678000	805
5687200	805
5687400	805

EDP Number	Page No.
5687600	805
5687800	805
5688000	805
570009311	60
570012511	60
570015611	60
570018711	60
570021811	60
570025011	60
570028111	61
570031211	61
570032811	61
570035911	61
570037511	61
570040611	61
570043711	62
570045311	62
570046811	62
570056211	62
570062511	62
570068711	62
570075011	62
5707200	806
5707400	806
5707600	806
5707800	806
5708000	806
5717200	807
5717400	807
5717600	807
5717800	807
5718000	807
5730100	769
5730108	769
5730200	769
5730300	769
5730308	769
5730400	769
5730408	769
5730500	769
5730508	769
5730600	769
5730608	769
5730700	769
5730708	769
5730800	769
5730808	769
5730900	769
5730908	769
5731000	769
5731008	769
5731100	769
5731108	769
5731200	769

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
5731208	769
5731400	769
5731408	769
5731500	769
5731508	769
5731600	769
5731608	769
5731700	769
5731708	769
5731900	769
5731908	769
5732000	769
5732008	769
5732100	769
5732108	769
573219111	1132
573225111	1132
5732300	769
5732308	769
573237611	1132
5732400	769
5732408	769
573250111	1132
5732600	769
5732608	769
5732700	769
5732708	769
5732800	769
5732808	769
5733000	769
5733008	769
5733200	769
5733208	769
5733400	769
5733408	769
5733500	769
5733508	769
5733700	769
5733708	769
5733900	769
5733908	769
5740100	770
5740108	770
5740200	770
5740208	770
5740300	770
5740308	770
5740400	770
5740408	770
5740500	770
5740508	770
5740600	770
5740608	770
5740700	770

EDP Number	Page No.
5740708	770
5740800	770
5740808	770
5740900	770
5740908	770
5741000	770
5741008	770
5741100	770
5741108	770
5741200	770
5741208	770
5741400	770
5741408	770
5741500	770
5741508	770
5741600	770
5741608	770
5741700	770
5741708	770
5741900	770
5741908	770
5742000	770
5742008	770
5742100	770
5742108	770
5742300	770
5742308	770
5742400	770
5742408	770
5742600	770
5742608	770
5742700	770
5742708	770
5742800	770
5742808	770
5743000	770
5743008	770
5743200	770
5743208	770
5743400	770
5743408	770
5743500	770
5743508	770
5743700	770
5743708	770
5743900	770
5743908	770
5800100	780
5800200	780
5800300	780
5800400	780
5800500	780
5800600	780
5800700	780

EDP Number	Page No.
5800800	780
5800900	780
5801100	780
5801200	780
5801300	780
5801400	780
5802100	780
5802200	780
5802300	780
5803100	780
5803200	780
5803300	780
5804100	780
5804200	780
5805100	780
5805200	780
5805300	780
5806100	780
5806200	780
5806300	780
5806400	780
5806500	780
5808100	780
5808200	780
5808300	780
5808400	780
5808500	780
5808600	780
5808700	780
5808800	780
5808900	780
5809100	780
5809200	780
5809300	780
581	478
5810100	785
5810200	785
5810300	785
5810400	785
5810500	785
5810600	785
5810700	785
5810800	785
5810900	785
5811100	785
5811200	785
5811300	785
5811400	785
5812100	785
5812200	785
5812300	785
5813100	785
5813200	785
5813300	785

EDP Number	Page No.
5814100	785
5814200	785
5815100	785
5815200	785
5815300	785
5816100	785
5816200	785
5816300	785
5816400	785
5818100	785
5818200	785
5818300	785
5818400	785
5818500	785
5818600	785
5818700	785
5818800	785
5818900	785
5819100	785
5819200	785
5819300	785
582	478
5820100	799
5820200	799
5820300	799
5820400	799
5820500	799
5820600	799
5820700	799
5820800	799
5820900	799
5821100	799
5821200	799
5821300	799
5821400	799
5822100	799
5822200	799
5822300	799
5823100	799
5823200	799
5823300	799
5824100	799
5824200	799
5825100	799
5825200	799
5827100	799
5827200	799
5827400	799
5827500	799
5828100	799
5828200	799
5828300	799
5828400	799
5828500	799

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EDP Numerical Index

EDP Number	Page No.
5828600	799
5828700	799
5828800	799
5828900	799
5829100	799
5829200	799
5829300	799
583	478
591	478
5910100	794
5910200	794
5911100	794
5911200	794
5912100	794
5912400	794
5914100	794
5914200	794
5914300	794
5915100	794
5915200	794
5916100	794
5916300	794
5916400	794
5916500	794
5917100	794
5917200	794
5917300	794
5918100	794
5918200	794
5918300	794
5919100	794
592	478
593	478
5930100	794
5930200	794
5931100	794
5931200	794
5931300	794
5932100	794
5932300	794
5934200	794
5934300	794
5935100	794
5935200	794
5936100	794
5936300	794
5936400	794
5936500	794
5937100	794
5937200	794
5937300	794
5938100	794
5938200	794
5938300	794

EDP Number	Page No.
5939100	794
5942200	795
5942300	795
5942400	795
5942500	795
5942600	795
5943100	795
5943200	795
5943300	795
5944200	795
5944300	795
5944400	795
5944700	795
5944800	795
5944900	795
5945000	795
5945100	795
5945200	795
5945400	795
5945500	795
5945600	795
5945700	795
5946100	795
5946200	795
5946300	795
5946400	795
5946500	795
5946600	795
5947100	795
5947200	795
5947300	795
5948100	795
5948200	795
595012511	56
595013011	56
595013411	56
595013711	56
595013811	56
595013911	56
595014211	56
595014611	56
595015011	56
595015411	56
595015611	56
595015711	56
595016111	56
595016311	56
595016511	56
595016911	56
595017111	56
595017311	56
595017711	56
595018111	56
595018511	56

EDP Number	Page No.
595018711	56
595018911	56
595019311	56
595019711	56
595020111	56
595020311	56
595020511	56
595020611	56
595020911	56
595021311	56
595021611	56
595021711	56
595021811	56
595021911	56
595022011	56
595022411	56
595022811	56
595023211	56
595023411	56
595023611	56
595025011	56
595025611	56
595026211	56
595026511	56
595026811	56
595027411	56
595027611	56
595028111	56
595029511	56
595029611	56
595030711	56
595031211	57
595031511	57
595031711	57
595032811	57
595033411	57
595033511	57
595033811	57
595034211	57
595034311	57
595034611	57
595035411	57
595035911	57
595037011	57
595037411	57
595037511	57
595038611	57
595038911	57
595039011	57
595039311	57
595039411	57
595040511	57
595040611	57
595041311	57

EDP Number	Page No.
595042211	57
595042511	57
595042611	57
595043311	57
595043711	57
595045211	57
595045311	57
595045411	57
595045511	57
595046511	57
595046811	57
595047211	57
595048411	57
595050011	57
5952100	796
5952200	796
5952300	796
5952400	796
5952500	796
5952600	796
5953100	796
5953200	796
5953300	796
5954200	796
5954300	796
5954400	796
5954700	796
5954800	796
5954900	796
5955000	796
5955100	796
595512511	58
595513911	58
595515611	58
595517111	58
595518711	58
5955200	796
595520311	58
595520611	58
595521611	58
595521811	58
595523411	58
595525011	58
595526211	58
595526511	58
595527411	58
595528111	58
595529611	58
595531211	59
595531711	59
595532811	59
595533511	59
595534311	59
595535911	59

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
595537011	59
595537511	59
595538911	59
595539011	59
5955400	796
595540611	59
595542211	59
595542611	59
595543711	59
595545211	59
595545311	59
595546811	59
595548411	59
5955500	796
595550011	59
5955600	796
5955700	796
5956100	796
5956200	796
5956300	796
5956400	796
5956500	796
5956600	796
5957100	796
5957200	796
5957300	796
5958100	796
5961200	797
5962200	797
5962300	797
5962400	797
5964200	797
5964300	797
5964700	797
5965200	797
5966100	797
5966300	797
5966400	797
5967200	797
5968100	797
5972400	797
5974200	797
5974500	797
5976100	797
5976300	797
5976400	797
6002600	516
6002700	516
6003200	516
6003300	516
6004500	516
6004600	516
6006000	516
6006100	516

EDP Number	Page No.
6006600	516
6006700	516
6007500	516
6007600	516
6008100	516
6008200	516
6010200	516
6010300	516
6013200	516
6013300	516
6014400	516
6014500	516
6015600	516
6015700	516
6016500	516
6016600	516
6018300	516
6018400	516
6018600	516
6018700	516
6019600	516
6019800	516
6019900	516
6022000	516
612	478
61505	208
6150511	208
61506	208
6150611	208
61507	208
6150711	208
61508	208
61509	208
61510	209
6151011	209
61511	209
6151111	209
61512	209
6151211	209
61513	209
61514	210
6151411	210
61515	210
6151511	210
61516	210
6151611	210
61517	210
6151711	210
61518	210
6151811	210
61519	211
6151911	211
61520	211
6152011	211

EDP Number	Page No.
61521	211
61522	211
6152211	211
61523	212
6152311	212
61524	212
6152411	212
61525	212
6152511	212
61526	212
6152611	212
61527	212
6152711	212
61528	213
6152811	213
61529	213
6152911	213
61530	213
6153011	213
61531	213
6153111	213
61532	214
6153211	214
61533	214
6153311	214
61534	214
6153411	214
61535	214
6153511	214
61536	214
61537	215
6153711	215
61538	215
6153811	215
61539	215
61540	215
6154011	215
61541	216
6154111	216
61542	216
6154211	216
61543	216
6154311	216
61544	216
6154411	216
61545	216
6154511	216
61546	217
6154611	217
61547	217
6154711	217
61548	217
6154811	217
61549	217

EDP Number	Page No.
6154911	217
61550	218
6155011	218
61551	218
6155111	218
61552	218
6155211	218
61553	218
6155311	218
61554	218
61555	219
6155511	219
61556	219
6155611	219
61557	219
61558	219
6155811	219
61559	220
6155911	220
61560	220
6156011	220
61561	220
6156111	220
61562	220
61563	220
6156311	220
61564	220
6156411	220
61565	220
6156511	220
61566	220
6156611	220
61567	220
6156711	220
61568	220
6156811	220
61569	220
6156911	220
61570	220
6157011	220
61571	220
6157111	220
61572	220
6157211	220
61573	220
6157311	220
61574	220
6157411	220
61575	220
6157511	220
61576	221
61577	221
6157711	221
61578	221

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
61579	221
6157911	221
61580	221
6158011	221
61581	221
6158111	221
61582	221
6158211	221
61583	221
6158311	221
61584	221
61585	221
6158511	221
61586	221
6158611	221
61587	221
61588	221
6158811	221
61589	221
61590	221
6159011	221
61591	221
61592	221
61593	221
61594	221
61595	221
6159511	221
61596	221
6159611	221
61597	222
61598	222
6159811	222
61599	222
6159911	222
61600	222
6160011	222
61601	222
61602	222
6160211	222
61603	222
6160311	222
61604	222
61605	222
6160511	222
61606	222
61607	222
6160711	222
61608	222
61609	222
61610	222
6161011	222
61611	222
6161111	222
61612	222

EDP Number	Page No.
61613	222
61614	222
61615	222
6161511	222
61616	222
61617	222
61618	222
61619	222
61620	223
6162011	223
61621	223
61622	223
61623	223
6162311	223
61624	223
6162411	223
61625	223
6162511	223
61626	223
6162611	223
61627	223
6162711	223
61628	223
6162811	223
61629	223
6162911	223
61630	223
6163011	223
61631	223
6163111	223
61632	223
61633	223
61634	223
61635	223
6163511	223
61636	223
61637	223
61638	223
61639	223
61640	223
6164011	223
61641	223
6164111	223
61642	223
61643	223
6164311	223
61644	223
61645	223
6164511	223
61646	223
61647	223
61648	223
61649	223
61650	223

EDP Number	Page No.
6165011	223
61651	223
61652	223
61653	223
6165311	223
61654	223
61655	223
61656	223
61657	223
61658	223
61659	223
6165911	223
61660	223
6166011	223
61661	223
6166111	223
61662	223
61663	224
61664	224
61665	224
6166511	224
61666	224
61667	224
6166711	224
61668	224
61669	224
61670	224
61671	224
6167111	224
61672	224
6167211	224
61673	224
61674	224
61675	224
61676	224
61677	224
6167711	224
61678	224
61679	224
61680	224
6168011	224
61681	224
61682	224
61683	224
61684	224
61685	224
61686	224
61687	224
61688	224
61689	224
61690	224
61691	224
6169111	224
61692	224

EDP Number	Page No.
61693	224
61694	224
61695	224
61696	224
61697	224
61698	224
61699	224
61700	224
61705	224
61710	224
6171011	224
61715	224
6171511	224
61720	224
61725	224
61730	224
6173011	224
61735	224
61740	224
61745	225
61750	225
61755	225
61760	225
61765	225
61770	225
61775	225
61780	225
61785	225
61790	225
61795	225
61800	225
61805	225
61810	225
61815	225
61820	225
6200100	765
6200200	765
6200300	765
6200400	765
6200500	765
6201100	765
6202100	765
6203100	765
6205100	765
6206100	765
6206200	765
6210100	765
6210200	765
6210300	765
6210400	765
6210500	765
6211100	765
6212100	765
6213100	765

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
6215100	765
6216100	765
6216200	765
62520	226
6252011	226
62521	226
62522	226
6252211	226
62523	226
62524	226
6252411	226
62525	227
6252511	227
62526	227
62527	227
62528	227
62529	228
6252911	228
62530	228
6253011	228
62531	228
6253111	228
62532	228
6253211	228
62533	228
6253311	228
62534	229
62535	229
6253511	229
62536	229
62537	229
6253711	229
62538	230
6253811	230
62539	230
62540	230
6254011	230
62541	230
62542	230
62543	231
62544	231
62545	231
6254511	231
62546	231
62547	232
62548	232
6254811	232
62549	232
62550	232
62551	232
62552	233
6255211	233
62553	233
62554	233

EDP Number	Page No.
62555	233
6255511	233
62556	234
62557	234
62558	234
62559	234
62560	234
62561	235
6256111	235
62562	235
62563	235
62564	235
62565	235
6256511	235
62566	235
6256611	235
62567	235
62568	235
6256811	235
62569	235
62570	235
6257011	235
62571	235
62572	235
62573	235
62574	235
6257411	235
62575	235
62576	235
62577	235
6257711	235
62578	235
62579	235
6257911	235
62580	235
62581	235
62582	235
62583	236
62584	236
62585	236
6258511	236
62586	236
6258611	236
62587	236
62588	236
62589	236
62590	236
62591	236
6259111	236
62592	236
6259211	236
62593	236
62594	236
62595	236

EDP Number	Page No.
6259511	236
62596	236
62597	236
62598	236
6259811	236
62599	236
62600	236
62601	236
62602	236
6260211	236
62603	236
62604	236
62605	236
62606	237
62607	237
6260711	237
62608	237
62609	237
6260911	237
62610	237
6261011	237
62611	237
6261111	237
62612	237
62613	237
62614	237
62615	237
62616	237
62617	237
62618	237
62619	237
62620	237
62621	237
62622	237
62623	237
6262311	237
62624	237
6262411	237
62625	237
62626	237
6262611	237
62627	237
6262711	237
62628	237
62629	237
62630	237
62635	237
62640	237
62641	237
62645	238
62650	238
6265011	238
62655	238
62656	238

EDP Number	Page No.
62660	238
62665	238
62670	238
62675	238
62676	238
62680	238
62685	238
62690	238
62695	238
62696	238
62700	238
62705	238
62710	238
62715	238
62720	238
62725	238
62730	238
6273011	238
62735	238
62740	238
62745	238
62750	238
62755	238
62760	238
62765	238
62770	238
62780	238
62790	238
62800	238
62810	238
62820	238
62903	239
62904	239
62906	239
62908	239
62910	239
62912	239
62916	239
62918	239
62920	239
62923	239
62924	239
62926	239
62928	239
62930	239
62932	239
62936	239
62938	239
62940	239
63503	240
63504	240
63506	240
63508	240
63510	240

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
63512	240
63516	240
63518	240
63520	240
63603	239
63604	239
63606	239
63608	239
63610	239
63612	239
63616	239
63618	239
63620	239
63653	239
63654	239
63656	239
63658	239
63660	239
63662	239
63703	239
63704	239
63706	239
63708	239
63710	239
63712	239
640-0621	762
640-0622	762
640-0623	762
640-0624	762
640-0931	762
640-0932	762
640-0933	762
640-0934	762
640-1251	762
640-1252	762
640-1253	762
640-1254	762
640-1871	762
640-1872	762
640-1873	762
640-1874	762
640-1881	762
640-1882	762
640-1883	762
640-1884	762
640-2501	762
640-2502	762
640-2503	762
640-2504	762
640-2511	762
640-2512	762
640-2513	762
640-2514	762
640-3121	762

EDP Number	Page No.
640-3122	762
640-3123	762
640-3124	762
640-3751	762
640-3752	762
640-3753	762
640-3754	762
640-5001	762
640-5002	762
640-5003	762
640-5004	762
641	478
6410100	766
6410200	766
6410300	766
6410400	766
6410500	766
6410600	766
6411100	766
6411500	766
641-1871	1143
641-1872	1143
641-1873	1143
641-1874	1143
6412100	766
6412500	766
641-2501	1143
641-2502	1143
641-2503	1143
641-2504	1143
6413100	766
6413500	766
641-3751	1143
641-3752	1143
641-3753	1143
641-3754	1143
6414100	766
6414500	766
641-5001	1143
641-5002	1143
641-5003	1143
641-5004	1143
6415100	766
6415500	766
6416100	766
6416200	766
6416400	766
642	478
643	478
6440500	767
6441100	767
6441500	767
6442100	767
6442500	767

EDP Number	Page No.
6443100	767
6443500	767
6444100	767
6444500	767
6445100	767
6445500	767
6446100	767
6446200	767
6446500	767
6446600	767
6450001	1069
6450002	1069
6460300	768
6460500	768
6461100	768
6461500	768
6462100	768
6462500	768
6463100	768
6463500	768
6464100	768
6464500	768
6465100	768
6465500	768
6466100	768
6466200	768
6466400	768
651	478
652	478
653	478
6600300	768
6600400	768
6600500	768
6600600	768
6601100	768
6602100	768
6603100	768
6604100	768
6605100	768
662	478
664001	1118
668-2501	1142
668-3751	1142
668-3752	1142
668-5001	1142
668-5002	1142
6737005	763
6737105	763
6737205	763
6737305	763
6737405	763
6737505	763
6737605	763
6737705	763

EDP Number	Page No.
6737805	763
6737905	763
6738005	763
6767205	764
6767405	764
6767605	764
6767805	764
6768005	764
6777205	764
6777405	764
6777605	764
6777805	764
6778005	764
6900105	771
6900305	771
6900505	771
6900705	771
6900905	771
6901305	771
6901505	771
6901705	771
6909105	771
6909405	771
6909705	771
6909805	771
6910105	771
6910505	771
6910905	771
6912105	771
6912305	771
6912505	771
6913305	771
6913505	771
692	478
6920105	771
6920505	771
6920705	771
6920905	771
700-1000	170
700-1001	170
700-1002	170
700-1250	170
700-1251	170
700-1252	170
700-1871	170
700-1872	170
700-1875	170
700-2500	170
700-2501	170
700-2502	170
7002600	514
7003200	514
700-3750	170
700-3751	170

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
700-3752	170
7004400	514
7005000	514
700-5000	170
700-5001	170
700-5002	170
700-6250	170
700-6251	170
700-6252	170
700-6253	170
700-6254	170
700-6255	170
7007100	514
700-7500	170
700-7501	170
700-7502	170
7008600	514
7009800	514
70100116	669
70100216	669
70100316	669
70100416	669
70100516	669
70100716	669
70100816	669
70100916	669
70101116	669
70101316	669
70101416	669
70101616	669
70105716	669
70106116	669
70106416	669
70106616	669
7010700	514
701-1000	171
701-1001	171
701-1002	171
701-2500	171
701-2501	171
701-2502	171
701-3750	171
701-3751	171
701-3752	171
7014700	514
701-5000	171
701-5001	171
701-5002	171
7015300	514
7015900	514
7016200	514
701-6250	171
701-6251	171
701-6252	171

EDP Number	Page No.
7017100	514
7017400	514
701-7500	171
701-7501	171
701-7502	171
7018000	514
7018300	514
70200016	666
70200116	666
70200216	666
70200316	666
70200416	666
70200516	666
70200716	666
70200816	666
70200916	666
70201116	666
70201316	666
70201416	666
70201616	666
70205716	666
70206116	666
70206416	666
70206616	666
70300116	670
70300216	670
70300316	670
70300416	670
70300516	670
70300716	670
70300916	670
70301116	670
70301316	670
70301416	670
70301616	670
70310916	671
70311116	671
70311416	671
70311616	671
70320116	671
70320216	671
70320316	671
70320416	671
70320516	671
70320616	671
70320716	671
70320816	671
70400316	667
70400416	667
70400516	667
70400716	667
70400916	667
70401116	667
70401316	667

EDP Number	Page No.
70401416	667
70401616	667
70410716	668
70410916	668
70411116	668
70411416	668
70411616	668
70420116	668
70420216	668
70420316	668
70420416	668
70420516	668
70420616	668
70420716	668
70420816	668
706-1000-060	172
706-1000-082	172
706-1000-090	172
706-2500-060	172
706-2500-082	172
706-2500-090	172
706-3750-060	172
706-3750-082	172
706-3750-090	172
706-5000-060	172
706-5000-082	172
706-5000-090	172
706-6250-060	172
706-6250-082	172
706-6250-090	172
706-7500-060	172
706-7500-082	172
706-7500-090	172
70720116	669
70720216	669
70720316	669
70720416	669
70720516	669
70720616	669
70720716	669
70720816	669
71100116	670
71100216	670
71100316	670
71100416	670
71100616	670
71100816	670
71101016	670
71101216	670
71200116	667
71200216	667
71200316	667
71200416	667
71200616	667

EDP Number	Page No.
71200816	667
71201016	667
71201216	667
71320116	673
71320216	673
71320316	673
71320416	673
71320516	673
71320616	673
71320716	673
71320816	673
71320916	673
71321016	673
71400116	673
71400216	673
71400316	673
71400416	673
71400516	673
71400616	673
71400716	673
71400816	673
71400916	673
71401016	673
71730116	672
71730216	672
71730316	672
71730416	672
71730516	672
71730616	672
71730716	672
71730816	672
71730916	672
71731016	672
72300116	674
72300216	674
72300416	674
72300516	674
72300616	674
72300716	674
72300816	674
72310116	674
72310216	674
72310316	674
72310416	674
72310516	674
72310616	674
72310716	674
72310816	674
731	478
732	478
733	478
73801000	148
73801100	148
73801100	149

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
73801200	148
73801300	148
73801400	149
73801500	149
73801600	149
73801700	149
73802000	148
73803000	149
73803500	149
73804000	148
73805000	148
73806000	148
73807000	149
73808100	148
73809000	148
73809100	148
73809200	148
73809300	148
73811000	148
73812000	148
73813005	149
73817000	149
73818105	148
73819000	148
73819011	148
73819100	148
73819111	148
741	478
742	478
743	478
750009816	1128
750012816	1128
750012916	1128
750016116	1128
750016216	1128
750018716	1128
750019016	1128
750019116	1128
750019216	1128
750019316	1128
750019416	1128
750019516	1128
750019716	1128
750021816	1128
750022116	1128
750025016	1128
750025116	1128
750025316	1128
750025416	1128
750025516	1128
750031216	1128
750031316	1128
750031416	1128
750031516	1128

EDP Number	Page No.
750037516	1128
750037616	1128
750037716	1128
750037816	1128
750043816	1128
750050116	1128
750-0625	168
750-0781	168
750-0938	168
750-1094	168
750109816	1126
750112916	1126
750116116	1126
750119116	1126
750119216	1126
750122116	1126
750-1250	168
750125116	1126
750125216	1126
750131316	1126
750137616	1126
750137716	1126
750-1406	168
750143816	1126
750150116	1126
750-1562	168
750-1719	168
750-1875	168
750-2031	168
750-2188	168
750-2344	168
750-2500	168
750-2812	168
750-3125	168
750-3438	168
750-3750	168
751	478
752	478
752009816	1127
752012916	1127
752016116	1127
752019216	1127
752022116	1127
752025116	1127
752031316	1127
752037616	1127
752043816	1127
752050116	1127
753	478
753009816	1129
753012916	1129
753016116	1129
753019116	1129
753022116	1129

EDP Number	Page No.
753025116	1129
753031316	1129
753037616	1129
753043816	1129
753050116	1129
753209816	1131
753212916	1131
753216116	1131
753219116	1131
753222116	1131
753225116	1131
753231316	1131
753237616	1131
753243816	1131
753250116	1131
753419116	1130
753425116	1130
753437616	1130
7800000	1069
7800004	1069
7800009	1069
7800013	1069
7800052	1069
7800053	1069
7800054	1069
7800055	1069
7800056	1069
7800057	1069
7800058	1069
7800059	1069
7800060	1069
7800061	1069
7800062	1069
7800063	1069
7800100	1016
7800101	1016
7800102	1016
7800103	1016
7800104	1016
7800105	1016
7800106	1016
7800107	1016
7800108	1016
7800109	1016
7800110	1016
7800111	1016
7800112	1016
7800113	1016
7800114	1016
7800115	1016
7800116	1016
7800117	1016
7800118	1016
7800119	1016

EDP Number	Page No.
7800120	1016
7800121	1016
7800122	1016
7800123	1016
7800124	1016
7800125	1016
7800126	1016
7800127	1016
7800128	1016
7800130	1016
7800131	1016
7800132	1016
7800133	1016
7800134	1016
7800135	1016
7800136	1016
7800137	1016
7800138	1016
7800139	1016
7800140	1016
7800200	1054
7800201	1054
7800202	1054
7800203	1054
7800204	1054
7800206	1054
7800207	1054
7800208	1054
7800209	1054
7800210	1054
7800211	1054
7800212	1054
7800213	1054
7800214	1054
7800216	1054
7800217	1054
7800218	1054
7800219	1054
7800300	1052
7800301	1052
7800302	1052
7800303	1052
7800304	1052
7800305	1052
7800306	1052
7800307	1052
7800308	1052
7800309	1052
7800310	1052
7800311	1052
7800312	1052
7800313	1052
7800314	1052
7800315	1052

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
7800316	1052
7800317	1052
7800318	1052
7800319	1052
7800320	1052
7800321	1052
7800322	1052
7800323	1052
7800324	1052
7800325	1052
7800400	1053
7800401	1053
7800402	1053
7800403	1053
7800404	1053
7800405	1053
7800406	1053
7800407	1053
7800408	1053
7800409	1053
7800410	1053
7800411	1053
7800412	1053
7800413	1053
7800414	1053
7800415	1053
7800416	1053
7800500	1051
7800501	1051
7800502	1051
7800503	1051
7800504	1051
7800505	1051
7800506	1051
7800507	1051
7800508	1051
7800509	1051
7800600	1063
7800601	1063
7800603	1063
7800605	1063
7800606	1063
7800607	1063
7800608	1063
7800610	1063
7800612	1063
7800613	1063
7800614	1063
7800615	1063
7800616	1063
7800617	1063
7800618	1063
7800700	1060
7800701	1060

EDP Number	Page No.
7800702	1060
7800703	1060
7800704	1060
7800705	1060
7800706	1060
7800707	1060
7800708	1061
7800709	1061
7800710	1061
7800711	1061
7800712	1061
7800713	1061
7800714	1061
7800715	1061
7800716	1060
7800717	1060
7800718	1060
7800719	1060
7800720	1060
7800721	1060
7800722	1060
7800723	1060
7800724	1060
7800725	1060
7800726	1060
7800727	1060
7800728	1060
7800729	1060
7800730	1061
7800731	1061
7800732	1061
7800733	1061
7800734	1061
7800735	1061
7800736	1061
7800737	1061
7800738	1061
7800739	1061
7800740	1060
7800741	1060
7800742	1060
7800743	1060
7800744	1061
7800745	1061
7800800	1062
7800801	1062
7800802	1062
7800803	1062
7800804	1062
7800805	1062
7800806	1062
7800807	1062
7800808	1062
7800809	1062

EDP Number	Page No.
7800810	1062
7800811	1062
7800900	1059
7800901	1059
7800902	1059
7800903	1059
7800904	1059
7800910	1059
7800911	1059
7800912	1059
7800920	1059
7800921	1059
7800922	1059
7800923	1059
7800924	1059
7800925	1059
7800926	1059
7800927	1059
7800928	1059
7800929	1059
7800930	1059
7800931	1059
7800932	1059
7800933	1059
7800934	1059
7800935	1059
7800936	1059
7800937	1059
7800938	1059
7800939	1059
7800940	1059
7800941	1059
7801000	1031
7801001	1031
7801002	1031
7801003	1031
7801004	1031
7801005	1031
7801006	1031
7801007	1031
7801008	1031
7801009	1031
7801010	1031
7801011	1031
7801012	1031
7801014	1031
7801015	1031
7801016	1031
7801017	1031
7801018	1031
7801020	1031
7801021	1031
7801022	1031
7801023	1031

EDP Number	Page No.
7801024	1031
7801025	1031
7801026	1031
7801027	1031
7801100	1028
7801101	1028
7801102	1028
7801103	1028
7801104	1028
7801105	1028
7801106	1028
7801107	1028
7801108	1028
7801109	1028
7801110	1028
7801111	1028
7801112	1028
7801113	1028
7801114	1028
7801115	1028
7801116	1028
7801117	1028
7801118	1028
7801119	1028
7801120	1028
7801121	1028
7801122	1028
7801123	1028
7801124	1028
7801125	1028
7801126	1028
7801127	1028
7801128	1028
7801129	1028
7801130	1028
7801131	1028
7801132	1028
7801133	1029
7801134	1029
7801135	1029
7801136	1029
7801137	1029
7801138	1029
7801139	1028
7801140	1028
7801141	1028
7801142	1028
7801143	1029
7801144	1029
7801200	1030
7801201	1030
7801202	1030
7801203	1030
7801204	1030

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
7801205	1030
7801206	1030
7801207	1030
7801208	1030
7801209	1030
7801210	1030
7801211	1030
7801212	1030
7801213	1030
7801214	1030
7801215	1030
7801216	1030
7801217	1030
7801300	1027
7801301	1027
7801302	1027
7801303	1027
7801304	1027
7801305	1027
7801306	1027
7801307	1027
7801308	1027
7801309	1027
7801310	1027
7801320	1027
7801321	1027
7801323	1027
7801324	1027
7801325	1027
7801330	1027
7801332	1027
7801333	1027
7801334	1027
7801335	1027
7801336	1027
7801337	1027
7801338	1027
7801339	1027
7801340	1027
7801341	1027
7801342	1027
7801343	1027
7801344	1027
7801345	1027
7801346	1027
7801347	1027
7801348	1027
7801349	1027
7801350	1027
7801351	1027
7801352	1027
7801353	1027
7801354	1027
7801355	1027

EDP Number	Page No.
7801356	1027
7801400	1073
7801401	1073
7801402	1073
7801403	1073
7801404	1073
7801405	1073
7801406	1073
7801419	1073
7801420	1073
7801421	1073
7801422	1073
7801423	1073
7801424	1073
7801425	1073
7801426	1073
7801427	1073
7801429	1073
7801430	1073
7801431	1073
7801432	1073
7801433	1073
7801434	1073
7801435	1073
7801436	1073
7801437	1073
7801439	1073
7801440	1073
7801441	1073
7801442	1073
7801443	1073
7801444	1073
7801445	1073
7801446	1073
7801447	1073
7801490	1074
7801491	1074
7801492	1074
7801493	1074
7801494	1074
7801495	1074
7801500	1065
7801501	1065
7801502	1065
7801503	1065
7801504	1065
7801505	1065
7801506	1065
7801507	1065
7801508	1065
7801509	1065
7801510	1065
7801511	1065
7801512	1065

EDP Number	Page No.
7801600	1033
7801601	1033
7801602	1033
7801603	1033
7801604	1033
7801605	1033
7801606	1033
7801607	1033
7801608	1033
7801609	1033
7801610	1033
7801611	1033
7801612	1033
7801613	1033
7801614	1033
7801615	1033
7801616	1033
7801617	1033
7801618	1033
7801619	1033
7801700	1055
7801701	1055
7801702	1055
7801703	1055
7801704	1055
7801705	1055
7801706	1055
7801707	1055
7801707	1073
7801890	1104
7801891	1104
7801892	1104
7801893	1104
7801894	1104
7801895	1104
7801896	1104
7801900	1092
7801901	1092
7801902	1092
7801903	1092
7801904	1092
7801905	1092
7801910	1092
7801911	1092
7801912	1092
7801913	1092
7801914	1092
7801915	1092
7801916	1092
7801917	1092
7801918	1092
7801919	1092
7802000	1019
7802001	1019

EDP Number	Page No.
7802002	1019
7802003	1019
7802004	1019
7802020	1023
7802021	1023
7802022	1023
7802023	1023
7802024	1023
7802089	1023
7802091	1023
7802093	1023
7802095	1023
7802500	1093
7802501	1093
7802502	1093
7802503	1093
7802504	1093
7802505	1093
7802506	1093
7802507	1093
7802508	1093
7802509	1093
7802510	1093
7802511	1093
7802512	1093
7802513	1093
7802514	1093
7802515	1093
7802516	1093
7802517	1093
7802518	1093
7802519	1093
7802520	1093
7802521	1093
7802522	1093
7802523	1093
7802524	1093
7802525	1093
7802526	1093
7802527	1093
7802528	1093
7802529	1093
7802530	1093
7802531	1093
7802550	1094
7802551	1094
7802552	1094
7802553	1094
7802554	1094
7802555	1094
7802556	1094
7802557	1094
7802558	1094
7802559	1094

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
7802560	1094
7802561	1094
7802562	1094
7802563	1094
7802564	1094
7802565	1094
7802566	1094
7802567	1094
7802568	1094
7802569	1094
7802570	1094
7802571	1094
7802572	1094
7802573	1094
7802717	1009
7802718	1009
7802719	1009
7802720	1009
7802721	1009
7802722	1009
7802723	1009
7802724	1009
7802725	1009
7802726	1009
7802727	1009
7802728	1009
7802729	1009
7802730	1009
7802731	1009
7802732	1009
7802733	1009
7802734	1009
7802735	1009
7802736	1009
7802737	1009
7802738	1009
7802739	1009
7802740	1009
7802741	1009
7802742	1009
7802743	1009
7802744	1009
7802745	1009
7802746	1009
7802747	1009
7802748	1009
7802749	1009
7802750	1009
7802751	1009
7802752	1009
7802753	1009
7802754	1009
7802755	1009
7802756	1009

EDP Number	Page No.
7802757	1009
7802758	1009
7802759	1009
7802760	1009
7802761	1010
7802762	1010
7802763	1010
7802764	1010
7802765	1010
7802766	1010
7802767	1010
7802768	1010
7802769	1010
7802770	1010
7802771	1010
7802772	1010
7802773	1010
7802774	1010
7802775	1010
7802776	1010
7802777	1010
7802778	1010
7802779	1010
7802850	1040
7802851	1040
7802852	1040
7802900	1039
7802901	1039
7802902	1039
7802903	1039
7802904	1039
7802905	1039
7802906	1039
7803001	1043
7803002	1043
7803003	1043
7803011	1044
7803012	1044
7803013	1044
7803100	1048
7803101	1048
7803102	1048
7803103	1048
7803104	1048
7803105	1048
7803106	1048
7803107	1048
7803108	1048
7803109	1048
7803110	1048
7803111	1048
7803112	1048
7803113	1048
7803114	1048

EDP Number	Page No.
7803115	1048
7803117	1000
7803118	1000
7803119	1000
7803120	1000
7803121	1000
7803122	1000
7803123	1000
7803124	1000
7803125	1000
7803126	1000
7803127	1000
7803128	1000
7803129	1000
7803130	1000
7803131	1000
7803132	1000
7803133	1000
7803134	1000
7803135	1000
7803136	1000
7803137	1000
7803138	1000
7803139	1000
7803140	1000
7803141	1000
7803142	1000
7803143	1000
7803144	1000
7803145	1000
7803146	1000
7803147	1000
7803148	1000
7803149	1000
7803150	1000
7803151	1000
7803152	1000
7803153	1000
7803154	1000
7803155	1000
7803156	1000
7803157	1000
7803158	1000
7803159	1000
7803160	1000
7803161	1000
7803162	1000
7803163	1000
7803164	1000
7803165	1000
7803166	1001
7803167	1001
7803168	1001
7803169	1001

EDP Number	Page No.
7803170	1001
7803171	1001
7803172	1001
7803173	1001
7803174	1001
7803175	1001
7803176	1001
7803177	1001
7803178	1001
7803179	1001
7803217	1003
7803218	1003
7803219	1003
7803220	1003
7803221	1003
7803222	1003
7803223	1003
7803224	1003
7803225	1003
7803226	1003
7803227	1003
7803228	1003
7803229	1003
7803230	1003
7803231	1003
7803232	1003
7803233	1003
7803234	1003
7803235	1003
7803236	1003
7803237	1003
7803238	1003
7803239	1003
7803240	1003
7803241	1003
7803242	1003
7803243	1003
7803244	1003
7803245	1003
7803246	1003
7803247	1003
7803248	1003
7803249	1003
7803250	1003
7803251	1003
7803252	1003
7803253	1003
7803254	1003
7803255	1003
7803256	1003
7803257	1003
7803258	1003
7803259	1003
7803260	1003

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
7803261	1004
7803262	1004
7803263	1004
7803264	1004
7803265	1004
7803266	1004
7803267	1004
7803268	1004
7803269	1004
7803270	1004
7803271	1004
7803272	1004
7803273	1004
7803274	1004
7803275	1004
7803276	1004
7803277	1004
7803278	1004
7803279	1004
7803317	1006
7803318	1006
7803319	1006
7803320	1006
7803321	1006
7803322	1006
7803323	1006
7803324	1006
7803325	1006
7803326	1006
7803327	1006
7803328	1006
7803329	1006
7803330	1006
7803331	1006
7803332	1006
7803333	1006
7803334	1006
7803335	1006
7803336	1006
7803337	1006
7803338	1006
7803339	1006
7803340	1006
7803341	1006
7803342	1006
7803343	1006
7803344	1006
7803345	1006
7803346	1006
7803347	1006
7803348	1006
7803349	1006
7803350	1006
7803351	1006

EDP Number	Page No.
7803352	1006
7803353	1006
7803354	1006
7803355	1006
7803356	1006
7803357	1006
7803358	1006
7803359	1006
7803360	1006
7803361	1007
7803362	1007
7803363	1007
7803364	1007
7803365	1007
7803366	1007
7803367	1007
7803368	1007
7803369	1007
7803370	1007
7803371	1007
7803372	1007
7803373	1007
7803374	1007
7803375	1007
7803376	1007
7803377	1007
7803378	1007
7803379	1007
7808000	1020
7808000	1070
7808001	1070
7808002	1070
7808100	1017
7808102	1017
7808104	1017
7808107	1035
7808108	1017
7808109	1035
7808110	1017
7808110	1045
7808111	1017
7808111	1066
7808112	1056
7808112	1066
7808113	1017
7808113	1056
7808113	1066
7808114	1012
7808115	1035
7808116	1056
7808117	1077
7808117	1088
7808118	1077
7808118	1088

EDP Number	Page No.
7808119	1077
7808119	1088
7808120	1077
7808120	1088
7808121	1077
7808121	1088
7808122	1077
7808122	1088
7808123	1077
7808123	1088
7808124	1077
7808129	1049
7808130	1025
7808131	1020
7808135	1012
7808136	1012
7808137	1012
7808138	1012
7808139	1012
7808140	1025
7808141	1025
7808150	1035
7808150	1066
7808151	1025
7808151	1035
7808151	1049
7808151	1056
7808203	1017
7808203	1077
7808204	1017
7808204	1077
7808204	1088
7808205	1017
7808205	1045
7808205	1077
7808205	1088
7808207	1056
7808207	1077
7808207	1088
7808208	1017
7808208	1025
7808208	1049
7808208	1056
7808208	1066
7808208	1077
7808208	1088
7808209	1017
7808209	1025
7808209	1056
7808209	1066
7808209	1077
7808209	1088
7808212	1077
7808212	1088

EDP Number	Page No.
7808223	1012
7808224	1012
7808225	1012
7808225	1035
7808226	1012
7808228	1012
7808228	1035
7808229	1012
7808282	997
7808283	997
7808284	997
7810000	1070
7811009	1056
7811013	1056
7811016	1056
7811024	1034
7811046	1034
7811048	1034
7811049	1034
7811076	1045
7812017	1056
7812018	1056
7812019	1056
7812020	1066
7812022	1066
7812025	1034
7812029	1034
7812033	1034
7812058	1034
7812060	1020
7812062	1024
7812064	1024
7812075	1045
7812086	1024
7812090	1049
7813008	1056
7813011	1056
7813014	1056
7813020	1066
7813022	1066
7813025	1034
7813026	1034
7813028	1034
7813032	1034
7813033	1034
7813057	1034
7813058	1034
7813061	1020
7813062	1024
7813073	1045
7813074	1045
7813089	1049
7814018	1056
7814019	1056

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EDP Number	Page No.
7814020	1066
7814022	1066
7814025	1034
7814026	1034
7814029	1034
7814030	1056
7814032	1034
7814033	1034
7814038	1034
7814053	1034
7814054	1034
7814055	1034
7814057	1034
7814058	1034
7814061	1020
7814062	1024
7814064	1024
7814073	1045
7814074	1045
7814077	1034
7814078	1034
7814079	1034
7814080	1034
7814081	1034
7814082	1034
7814088	1049
7815010	1056
7815012	1056
7815015	1056
7815021	1066
7815023	1066
7815027	1034
7815031	1034
7815050	1056
7815051	1056
7815052	1056
7815056	1034
7816021	1066
7816023	1066
7816027	1034
7816031	1034
7816034	1034
7816050	1056
7816051	1056
7816052	1056
7816056	1034
7816073	1045
7816085	1024
7816091	1049
7817001	1017
7817002	1017
7817003	1017
7817004	1017
7817005	1017
7817006	1017
7817007	1017
7818001	1017
7818002	1017
7818003	1017
7818004	1017
7818005	1017
7818006	1017
7818007	1017
7819061	1020
7820010	1076
7820011	1076
7820012	1076
7820013	1076
7820014	1076
7820015	1076
7820016	1076
7820018	1076
7820019	1076
7820020	1076
7820021	1076
7820022	1076
7820023	1076
7820024	1076
7820025	1076
7820026	1076
7820030	1076
7820031	1076
7820032	1076
7820033	1076
7820034	1076
7820035	1076
7820036	1076
7820039	1076
7820040	1076
7820041	1076
7820042	1076
7820043	1076
7820044	1076
7820045	1076
7820046	1076
7820047	1076
7820048	1076
7820049	1076
7820050	1076
7820051	1076
7820052	1076
7820053	1076
7820054	1076
7820055	1076
7820056	1076
7820200	1085
7820201	1085
7820202	1085
7820203	1085
7820204	1085
7820205	1085
7820206	1085
7820207	1085
7820208	1085
7820209	1085
7820210	1085
7820211	1085
7820212	1085
7820213	1085
7820214	1085
7820215	1085
7820216	1085
7820217	1085
7820218	1085
7820219	1085
7820220	1085
7820221	1085
7820222	1085
7820223	1086
7820224	1086
7820225	1086
7820226	1086
7820227	1086
7820228	1086
7820229	1086
7820230	1086
7820231	1086
7820232	1086
7820233	1086
7820234	1086
7820235	1086
7820236	1086
7820237	1086
7820250	1086
7820251	1086
7820252	1086
7820253	1086
7820254	1086
7820255	1086
7820256	1086
7820257	1086
7820258	1086
7820259	1086
7820260	1086
7820261	1086
7820262	1086
7820263	1087
7820264	1087
7820265	1087
7820266	1087
7820267	1087
7820268	1087
7820269	1087
7820270	1087
7820271	1087
7820272	1087
7820273	1087
7820274	1087
7820275	1087
7820276	1087
7820277	1087
7820278	1087
7820279	1087
7820280	1087
7820281	1087
7820282	1087
7820283	1087
7820284	1087
7820285	1087
7820286	1087
7820287	1087
7820300	1087
7820301	1087
7820302	1087
7820303	1087
7820304	1087
7820305	1087
7820306	1087
7820307	1087
7820308	1087
7820309	1087
7820310	1087
7820311	1087
7820312	1087
7820313	1087
7820314	1087
7820350	1085
7820351	1085
7820352	1085
7820353	1085
7820354	1085
7820355	1085
7820356	1085
7820357	1085
7820358	1085
7820359	1085
7820360	1085
7820361	1085
7820362	1085
7820363	1085
7820364	1085
7820365	1085
7820366	1085
7820367	1085
7820368	1085
7820369	1085

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
7820370	1085
7820371	1085
7820372	1086
7820373	1086
7820374	1086
7820375	1086
7820400	1086
7820401	1086
7820402	1086
7820403	1086
7820404	1086
7820405	1086
7820406	1086
7820407	1086
7820408	1086
7820409	1086
7820410	1086
7820411	1086
7820412	1086
7820413	1086
7820414	1087
7820415	1087
7820416	1087
7820417	1087
7820418	1087
7820419	1087
7820420	1087
7820421	1087
7820422	1087
7820423	1087
7820424	1087
7820425	1087
7820450	1087
7820451	1087
7820452	1087
7821062	1024
7821090	1049
7823064	1011
7823065	1011
7823066	1011
7823067	1011
7823068	1011
7823069	1011
7823071	1011
7823072	1011
7823073	1011
7823075	1011
7823097	1011
7823164	1011
7823165	1011
7823166	1011
7823167	1011
7823168	1011
7823169	1011

EDP Number	Page No.
7823171	1011
7823172	1011
7823173	1011
7823175	1011
7823197	1011
7823264	1011
7823265	1011
7823266	1011
7823267	1011
7823268	1011
7823269	1011
7823271	1011
7823272	1011
7823273	1011
7823275	1011
7823297	1011
7824035	1034
7824036	1034
7824083	1056
7824084	1056
7825017	1056
7825018	1056
7825019	1056
7825020	1066
7825022	1066
7825025	1034
7825026	1034
7825029	1034
7825032	1034
7825033	1034
7825057	1034
7825058	1034
7825062	1024
7825088	1049
7826008	1056
7826011	1056
7826014	1056
7826020	1066
7826022	1066
7826025	1034
7826026	1034
7826029	1034
7826032	1034
7826057	1034
7826062	1024
7830004	1095
7830005	1095
7830006	1095
7830007	1095
7830008	1095
7830009	1095
7830010	1095
7830011	1095
7830012	1095

EDP Number	Page No.
7830013	1095
7830014	1095
7830015	1095
7830016	1095
7830017	1095
7830018	1095
7830019	1095
7830020	1095
7830021	1095
7830022	1095
7830023	1095
7830104	1097
7830105	1097
7830106	1097
7830107	1097
7830108	1097
7830109	1097
7830110	1097
7830111	1097
7830112	1097
7830113	1097
7830114	1097
7830115	1097
7830116	1097
7830117	1097
7830118	1097
7830119	1097
7830120	1097
7830121	1097
7830122	1097
7830123	1097
7830124	1097
7830125	1097
7830126	1097
7830127	1097
7830128	1097
7830129	1097
7830201	1099
7830202	1099
7830203	1099
7830251	1101
7830252	1101
7830253	1101
7830271	1100
7830272	1100
7830273	1100
7830301	1101
7830302	1101
7830303	1101
7830351	1099
7830352	1099
7830353	1099
7830354	1099
7830355	1099

EDP Number	Page No.
7830356	1099
7830371	1100
7830372	1100
7830373	1100
7830374	1100
7830375	1100
7830376	1100
7830401	1098
7830402	1098
7830403	1098
7830404	1098
7830451	1098
7830452	1098
7830453	1098
7830454	1098
7831140	994
7831145	994
7831150	994
7831155	994
7831160	994
7831165	994
7831167	994
7831170	994
7831175	994
7831180	994
7831185	994
7831187	994
7831190	994
7831195	994
7831200	994
7831205	994
7831207	994
7831210	994
7831215	994
7831220	994
7831224	994
7831225	994
7831230	994
7831235	994
7831240	994
7831245	994
7831250	994
7831254	994
7831351	994
7831352	994
7831353	994
7831354	994
7831355	994
7831356	994
7831440	995
7831445	995
7831450	995
7831455	995
7831460	995

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
7831465	995
7831467	995
7831470	995
7831475	995
7831480	995
7831485	995
7831487	995
7831490	995
7831495	995
7831500	995
7831505	995
7831507	995
7831510	995
7831515	995
7831520	995
7831524	995
7831525	995
7831530	995
7831535	995
7831540	995
7831545	995
7831550	995
7831554	995
7831740	996
7831745	996
7831750	996
7831755	996
7831760	996
7831765	996
7831767	996
7831770	996
7831775	996
7831780	996
7831785	996
7831787	996
7831790	996
7831795	996
7831800	996
7831805	996
7831807	996
7831810	996
7831815	996
7831820	996
7831824	996
7831825	996
7831830	996
7831835	996
7831840	996
7831845	996
7831850	996
7831854	996
7832000	1081
7832001	1081
7832002	1081

EDP Number	Page No.
7832003	1081
7832004	1081
7832005	1081
7832006	1081
7832007	1081
7832019	1081
7832020	1081
7832021	1081
7832022	1081
7832023	1081
7832024	1081
7832025	1081
7832026	1081
7832027	1081
7832029	1081
7832030	1081
7832031	1081
7832032	1081
7832033	1081
7832034	1081
7832035	1081
7832036	1081
7832037	1081
7832039	1081
7832040	1081
7832041	1081
7832042	1081
7832043	1081
7832044	1081
7832045	1081
7832046	1081
7832047	1081
7832090	1082
7832091	1082
7832092	1082
7832093	1082
7832094	1082
7832095	1082
7832096	1082
7835004	1096
7835005	1096
7835006	1096
7835007	1096
7835008	1096
7835009	1096
7835010	1096
7835011	1096
7835012	1096
7835013	1096
7835014	1096
7835015	1096
7835016	1096
7835017	1096
7835018	1096

EDP Number	Page No.
7835019	1096
7835020	1096
7835021	1096
7835022	1096
7835023	1096
7835024	1096
7835025	1096
7835026	1096
7835027	1096
7835028	1096
7835029	1096
7835030	1096
7835031	1096
7835032	1096
7835033	1096
7835034	1096
7835035	1096
7835036	1096
7835037	1096
7835038	1096
792	478
8003000	505
8003600	505
8005400	505
8005700	505
8006900	505
8007200	505
8007800	505
800-8001	823
800-8001-30	824
800-8002	823
800-8002-30	824
800-8003	823
800-8003-30	824
800-8004	823
800-8004-30	824
800-8005	823
800-8005-30	824
800-8006	823
800-8006-30	824
800-8007	823
800-8007-30	824
800-8008	823
800-8008-30	824
800-8009	823
800-8009-30	824
800-8010	823
800-8010-30	824
800-8011	823
800-8011-30	824
800-8012	823
800-8012-30	824
800-8013	823
800-8013-30	824

EDP Number	Page No.
800-8014	823
800-8014-30	824
800-8015	823
800-8015-30	824
800-8016	823
800-8016-30	824
800-8017	823
800-8017-30	824
800-8018	823
800-8018-30	824
800-8019	823
800-8019-30	824
800-8020	823
800-8020-30	824
8008100	505
8008429	1117
8008430	1115
8008626	1117
8008700	505
8008747	1117
8008748	1117
8009000	505
8009023	1115
8009063	1117
8010900	505
801-1000	809
801-1000-60	809
801-1000-60-EC	809
801-1000-EC	809
8011200	505
801-1250	809
801-1250-60	809
801-1250-60-EC	809
801-1250-EC	809
8011800	505
801-1875	809
801-1875-60	809
801-1875-60-EC	809
801-1875-EC	809
8012100	505
801-2362	809
801-2362-EC	809
801-2500	809
801-2500-EC	809
8013000	505
801-3125	809
801-3125-60	809
801-3125-60-EC	809
801-3125-EC	809
8013300	505
8013600	505
8013700	505
801-3750	809
801-3750-60	809

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
801-3750-60-EC	809
801-3750-EC	809
801-4375	809
801-4375-60	809
801-4375-60-EC	809
801-4375-EC	809
801-5000	809
801-5000-60	809
801-5000-60-EC	809
801-5000-EC	809
801-5001	809
801-5001-60	809
801-5001-60-EC	809
801-5001-EC	809
8015400	505
8015700	505
8015800	505
8015900	505
801-6250	809
801-6250-60	809
801-6250-60-EC	809
801-6250-EC	809
8017000	505
8017400	505
8017500	505
801-7500	809
801-7500-60	809
801-7500-60-EC	809
801-7500-EC	809
801-7501	809
801-7501-60	809
801-7501-60-EC	809
801-7501-EC	809
8018000	505
8018400	505
8019000	482
8020000	482
802-1250	809
802-1250-60	809
802-1875	809
802-1875-60	809
802-2362	809
802-2500	809
802-3125	809
802-3125-60	809
802-3750	809
802-3750-60	809
802-4375	809
802-4375-60	809
802-5000	809
802-5000-60	809
802-6250	809
802-6250-60	809
802-7500	809

EDP Number	Page No.
802-7500-60	809
803-2362	809
803-2500	809
8033300	1115
803-3750	809
803-3750-60	809
803-5000	809
803-5000-60	809
803-5001	809
803-5001-60	809
803-6250	809
803-6250-60	809
803-7500	809
803-7500-60	809
803-7501	809
803-7501-60	809
803-7502	809
803-7502-60	809
804-2362	811
804-2500	811
804-3125	811
804-3125-60	811
804-3750	811
804-3750-60	811
804-5000	811
804-5000-60	811
804-5001	811
804-5001-60	811
804-6250	811
804-6250-60	811
804-7500	811
804-7500-60	811
804-7501	811
804-7501-60	811
805-2362	811
805-2363	811
805-2364	811
805-2500	811
805-2501	811
805-2502	811
805-3750	811
805-3750-60	811
805-5000	811
805-5000-60	811
805-6250	811
805-6250-60	811
8059301	1115
806-2362	811
806-2500	811
806-3750	811
806-3750-60	811
806-5000	811
806-5000-60	811
806-6250	811

EDP Number	Page No.
806-6250-60	811
806-7500	811
806-7500-60	811
8070255	1114
8070256	1114
8070257	1114
8070265	1116
8070266	1116
8070267	1116
807-2362	813
807-2500	813
807-3125	813
807-3125-60	813
807-3750	813
807-3750-60	813
807-5000	813
807-5000-60	813
807-6250	813
807-6250-60	813
807-7500	813
807-7500-60	813
8080801	1117
808-1000	813
808-1000-60	813
808-1250	813
808-1250-60	813
808-1875	813
808-1875-60	813
808-2362	813
808-2500	813
808-3125	813
808-3125-60	813
808-3750	813
808-3750-60	813
808-5000	813
808-5000-60	813
808-6250	813
808-6250-60	813
808-7500	813
808-7500-60	813
8091278	1115
815-0001	827
815-0001-30	827
815-0002	827
815-0002-30	827
815-0003	827
815-0003-30	827
815-0004	827
815-0004-30	827
815-0005	827
815-0005-30	827
815-0006	827
815-0006-30	827
815-0007	827

EDP Number	Page No.
815-0007-30	827
815-0008	827
815-0008-30	827
815-0009	827
815-0009-30	827
820-0001	829
820-0001-30	829
820-0002	829
820-0002-30	829
820-0003	829
820-0003-30	829
820-0004	829
820-0004-30	829
820-0005	829
820-0005-30	829
820-0006	829
820-0006-30	829
820-0007	829
820-0007-30	829
820-0008	829
820-0008-30	829
820-0009	829
820-0009-30	829
820-0010	829
820-0010-30	829
820-0011	829
820-0011-30	829
820-0012	829
820-0012-30	829
8304701	306
8304711	306
8304712	306
8304721	306
8304723	306
8304732	306
8304734	306
8304743	306
8304744	306
8304753	306
8304754	306
8304773	306
8304775	306
8304784	306
8304786	306
8315054	348
8315055	348
8315060	348
8315061	348
8315066	348
8315067	348
8315072	348
8315073	348
8315084	348
8315085	348

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8315096	348
8315097	348
8315102	348
8315103	348
8315114	348
8315115	348
8315120	348
8315121	348
8315126	348
8315127	348
8315254	405
8315255	405
8315260	405
8315261	405
8315266	405
8315267	405
8315272	405
8315273	405
8315284	405
8315285	405
8315296	405
8315297	405
8315302	405
8315303	405
8315314	405
8315315	405
8315633	349
8315639	349
8315645	349
8315649	349
8315653	349
8315657	349
8315661	349
8315722	488
8315728	488
8315734	488
8315736	488
8315739	488
8315742	488
8315745	488
8330049	485
8330055	485
8330061	485
8330067	485
8330073	485
8330085	485
8330087	485
8330097	485
8330099	485
8330101	485
8330115	485
8330117	485
8330119	485
8330121	485

EDP Number	Page No.
8330123	485
8330125	485
8330131	485
8330133	485
8330139	485
8330141	485
8330147	485
8330149	485
849-1000	813
849-1000-60	813
849-2362	813
849-2500	813
849-3750	813
849-3750-60	813
849-5000	813
849-5000-60	813
849-6250	813
849-6250-60	813
849-7500	813
849-7500-60	813
850-1000	815
850-1000-60	815
8502010	695
8502015	695
8502020	695
8502025	695
8502030	695
8502035	695
8502040	695
8502045	695
8502050	695
8502055	695
8502060	695
8502065	695
8502070	695
8502075	695
8502080	695
8502085	695
8502090	695
8502095	695
8502100	695
8502105	695
8502110	695
8502115	695
8502120	695
8502130	695
8502140	695
8502150	695
8502160	695
850-2362	815
850-2500	815
850-3750	815
850-3750-60	815
850-5000	815

EDP Number	Page No.
850-5000-60	815
850-6250	815
850-6250-60	815
850-7500	815
850-7500-60	815
851	478
851-3125	815
851-3125-60	815
851-5000	815
851-5000-60	815
851-6250	815
851-6250-60	815
851-7500	815
851-7500-60	815
852	478
852-2362	815
852-2500	815
852-3750	815
852-3750-60	815
852-5000	815
852-5000-60	815
8525210	664
8525211	664
8525212	664
8525213	664
8525214	664
8525215	664
8525216	664
8525217	664
8525218	664
8525219	664
8525220	664
8525221	664
8525222	664
8525223	664
8525224	664
8525225	664
8525226	664
8525227	664
8525228	664
8525229	664
8525230	664
8525304	664
8525305	664
8525306	664
8525307	664
8525308	664
8525309	664
8525310	664
8525622	664
8525623	664
8525633	664
8525634	664
8525654	664

EDP Number	Page No.
8525655	664
8525656	664
8525657	664
8525854	664
8525855	664
8525856	664
8525857	664
8525877	664
8525903	664
8525904	664
8525905	664
8525956	664
8525957	664
8526210	665
8526211	665
8526220	665
8526221	665
8526222	665
8526223	665
8526231	665
8526232	665
8526233	665
8526241	665
8526242	665
8526243	665
8526245	665
852-6250	815
852-6250-60	815
8526261	665
8526262	665
8526263	665
8526265	665
8526410	665
8526411	665
8526420	665
8526421	665
8526422	665
8526423	665
8526431	665
8526432	665
8526433	665
8526441	665
8526442	665
8526443	665
8526445	665
8526461	665
8526462	665
8526463	665
8526465	665
852-7500	815
852-7500-60	815
853	478
8533259	680
8533260	682

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
8533261	682
8533262	682
8533263	682
8533264	682
8533265	680
8533266	682
8533267	682
8533268	682
8533269	682
8533270	682
8533300	683
8533301	685
8533302	685
8533303	685
8533304	685
8533305	685
8533306	683
8533307	685
8533308	685
8533309	685
8533310	685
8533311	685
8533361	680
8533362	682
8533363	682
8533364	682
8533365	682
8533366	682
8533400	680
8533401	682
8533402	682
8533403	682
8533404	682
8533405	682
8555716	679
8555720	679
8555725	679
8561500	75
8561501	75
8561502	75
8561503	75
8561504	75
8561506	75
8561508	75
8561510	75
8561512	75
8561516	75
8561520	75
8561525	75
8567130	112
8567140	112
8567150	112
8567160	112
8567165	112

EDP Number	Page No.
8567170	112
8567180	112
8567190	112
8567200	112
8567340	112
8567345	112
8567350	112
8567355	112
8567360	112
8567370	112
8567380	112
8567390	112
8567400	112
8567450	112
8567455	112
8567460	112
8567470	112
8567480	112
8569010	113
8569011	113
8569012	113
8569013	113
8569014	113
8569015	113
8569016	113
8569017	113
8569018	113
8569019	113
8569020	113
8569025	113
8569030	113
8577050	126
8577054	126
8577055	126
8577056	126
8577060	126
8577063	126
8577064	126
8577065	126
8577070	126
8577071	126
8577072	126
8577073	126
8577074	126
8577075	126
8577080	126
8577081	126
8577082	126
8577090	126
8577091	126
8577092	126
8577100	126
8577110	126
8577111	126

EDP Number	Page No.
8577112	126
8577115	126
8577120	126
8577127	126
8577128	126
8577129	126
8577130	126
8577140	126
8577145	126
8577146	126
8577147	126
8577150	126
8577151	126
8577152	126
8577153	126
8577155	126
8577156	126
8577157	126
8577160	126
8577170	126
8577180	126
8577181	126
8577182	126
8577183	126
8577190	126
8577198	126
8577199	126
8577200	127
8577210	127
8577212	127
8577213	127
8577214	127
8577220	127
8577229	127
8577230	127
8577231	127
8577239	127
8577240	127
8577241	127
8577242	127
8577250	127
8577255	127
8577256	127
8577257	127
8577260	127
8577270	127
8577277	127
8577278	127
8577279	127
8577280	127
8577290	127
8577300	127
8589002	115
8589003	115

EDP Number	Page No.
8589004	115
8589005	115
8589008	115
8589052	115
8589053	115
8589054	115
8589055	115
8589058	115
8589102	116
8589103	116
8589104	116
8589105	116
8589108	116
8589152	116
8589153	116
8589154	116
8589155	116
8589158	116
8589205	114
8589255	114
8593020	182
8593021	182
8593022	182
8593023	182
8593024	182
8593025	182
8593026	182
8593027	182
8593028	182
8593029	182
8593030	182
8593031	182
8593032	182
8593033	182
8593034	182
8593035	182
8593036	182
8593037	182
8593038	182
8593039	182
8593040	182
8593041	182
8593042	182
8593043	182
8593044	182
8593045	182
8593046	182
8593047	182
8593048	182
8593049	182
8593050	182
8593051	182
8593052	182
8593053	182

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8593054	182
8593055	182
8593056	182
8593057	182
8593058	182
8593059	182
8593060	182
8593061	182
8593062	182
8593063	182
8593064	182
8593065	182
8593066	182
8593067	182
8593068	182
8593069	182
8593070	182
8593071	182
8593072	182
8593073	183
8593074	183
8593075	183
8593076	183
8593077	183
8593078	183
8593079	183
8593080	183
8593081	183
8593082	183
8593083	183
8593084	183
8593085	183
8593086	183
8593087	183
8593088	183
8593089	183
8593090	183
8593091	183
8593092	183
8593093	183
8593094	183
8593095	183
8593096	183
8593097	183
8593098	183
8593099	183
8593100	183
8593101	183
8593102	183
8593103	183
8593104	183
8593105	183
8593106	183
8593107	183

EDP Number	Page No.
8593108	183
8593109	183
8593110	183
8593111	183
8593112	183
8593113	183
8593114	183
8593115	183
8593116	183
8593117	183
8593118	183
8593119	183
8593120	183
8593121	183
8593122	184
8593123	184
8593124	184
8593125	184
8593126	184
8593127	184
8593128	184
8593129	184
8593130	184
8593135	184
8593140	184
8593145	184
8593150	184
8593155	184
8593160	184
8593165	184
8593170	184
8593175	184
8593180	184
8593185	184
8593190	184
8593195	184
8593200	184
8593205	184
8593210	184
8593215	184
8593220	184
8593225	184
8593230	184
8593235	184
8593240	184
8593245	184
8593250	184
8593255	184
8593260	184
8593265	184
8593270	184
8593280	184
8593290	184
8593300	184

EDP Number	Page No.
8593310	184
8593320	184
8594020	194
8594021	194
8594022	194
8594023	194
8594024	194
8594025	194
8594026	194
8594027	194
8594028	194
8594029	194
8594030	194
8594031	194
8594032	194
8594033	194
8594034	194
8594035	194
8594036	194
8594037	194
8594038	194
8594039	194
8594040	194
8594041	194
8594042	194
8594043	194
8594044	194
8594045	194
8594046	194
8594047	194
8594048	194
8594049	194
8594050	194
8594051	194
8594052	194
8594053	194
8594054	194
8594055	194
8594056	194
8594057	194
8594058	194
8594059	194
8594060	194
8594061	194
8594062	194
8594063	194
8594064	194
8594065	194
8594066	194
8594067	194
8594068	194
8594069	194
8594070	194
8594071	194

EDP Number	Page No.
8594072	195
8594073	195
8594074	195
8594075	195
8594076	195
8594077	195
8594078	195
8594079	195
8594080	195
8594081	195
8594082	195
8594083	195
8594084	195
8594085	195
8594086	195
8594087	195
8594088	195
8594089	195
8594090	195
8594091	195
8594092	195
8594093	195
8594094	195
8594095	195
8594096	195
8594097	195
8594098	195
8594099	195
8594100	195
8594101	195
8594102	195
8594103	195
8594104	195
8594105	195
8594106	195
8594107	195
8594108	195
8594109	195
8594110	195
8594111	195
8594112	195
8594113	195
8594114	195
8594115	195
8594116	195
8594117	195
8594118	195
8594119	195
8594120	196
8594121	196
8594122	196
8594123	196
8594124	196
8594125	196

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
8594126	196
8594127	196
8594128	196
8594129	196
8594130	196
8595051	208
859505111	208
8595052	208
8595053	208
8595054	208
8595055	208
8595056	208
8595057	208
859505711	208
8595058	208
8595059	208
8595061	208
8595062	208
8595063	208
8595064	208
859506411	208
8595065	208
859506511	208
8595066	208
8595067	208
8595068	208
8595069	208
8595071	208
859507111	208
8595072	208
8595073	208
8595074	208
8595075	208
8595076	208
8595077	208
8595078	208
8595079	208
859507911	208
8595081	208
859508111	208
8595082	208
8595083	208
8595084	208
859508411	208
8595085	208
8595086	208
8595087	208
8595088	208
8595089	208
8595091	208
859509111	208
8595092	208
8595093	208
8595094	208
8595095	208
8595096	209
8595097	209
8595098	209
8595099	209
8595101	209
8595102	209
859510211	209
8595103	209
859510311	209
8595104	209
8595105	209
8595106	209
8595107	209
8595108	209
8595109	209
859510911	209
8595111	209
8595112	209
8595113	209
8595114	209
859511411	209
8595115	209
8595116	209
8595117	209
8595118	209
859511811	209
8595119	209
859511911	209
8595121	209
8595122	209
859512211	209
8595123	209
8595124	209
8595125	209
859512511	209
8595126	209
8595127	209
859512711	209
8595128	209
8595129	209
8595131	209
8595132	209
859513211	209
8595133	209
8595134	209
8595135	209
859513511	209
8595136	209
8595137	209
8595138	209
8595139	210
8595141	210
859514111	210
8595142	210
8595143	210
8595144	210
859514411	210
8595145	210
859514511	210
8595146	210
8595147	210
8595148	210
8595149	210
8595151	210
859515111	210
8595152	210
859515211	210
8595153	210
8595154	210
8595155	210
859515511	210
8595156	210
859515611	210
8595157	210
859515711	210
8595158	210
859515811	210
8595159	210
859515911	210
8595161	210
859516111	210
8595162	210
859516211	210
8595163	210
8595164	210
8595165	210
859516511	210
8595166	210
8595167	210
8595168	210
8595169	210
8595171	210
859517111	210
8595172	210
859517211	210
8595173	210
8595174	210
859517411	210
8595175	210
859517511	210
8595176	210
859517611	210
8595177	210
859517711	210
8595178	210
859517811	210
8595179	210
8595181	210
8595182	210
8595183	210
8595184	210
8595185	211
859518511	211
8595186	211
8595187	211
8595188	211
8595189	211
8595191	211
859519111	211
8595192	211
8595193	211
8595194	211
8595195	211
859519511	211
8595196	211
8595197	211
859519711	211
8595198	211
859519811	211
8595199	211
859519911	211
8595201	211
8595202	211
8595203	211
8595204	211
8595205	211
859520511	211
8595206	211
8595207	211
8595208	211
859520811	211
8595209	211
8595211	211
8595212	211
8595213	211
8595214	211
8595215	211
859521511	211
8595216	211
8595217	211
8595218	211
8595219	211
859521911	211
8595221	211
8595222	211
8595223	211
8595224	211
8595225	211
859522511	211
8595226	211
859522611	211

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8595227	211
8595228	212
8595229	212
8595231	212
8595232	212
8595233	212
8595234	212
8595235	212
8595236	212
8595237	212
859523711	212
8595238	212
859523811	212
8595239	212
859523911	212
8595241	212
859524111	212
8595242	212
859524211	212
8595243	212
8595244	212
859524411	212
8595245	212
859524511	212
8595246	212
859524611	212
8595247	212
8595248	212
8595249	212
859524911	212
8595251	212
8595252	212
859525211	212
8595253	212
859525311	212
8595254	212
8595255	212
859525511	212
8595256	212
8595257	212
8595258	212
859525811	212
8595259	212
8595261	212
8595262	212
8595263	212
8595264	212
859526411	212
8595265	212
859526511	212
8595266	212
859526611	212
8595267	212
8595268	212
8595269	212
8595271	212
859527111	212
8595272	212
8595273	212
8595274	213
8595275	213
8595276	213
8595277	213
8595278	213
859527811	213
8595279	213
859527911	213
8595281	213
8595282	213
859528211	213
8595283	213
859528311	213
8595284	213
8595285	213
859528511	213
8595286	213
859528611	213
8595287	213
8595288	213
8595289	213
8595291	213
8595292	213
8595293	213
8595294	213
8595295	213
859529511	213
8595296	213
8595297	213
8595298	213
8595299	213
8595301	213
8595302	213
8595303	213
8595304	213
8595305	213
859530511	213
8595306	213
8595307	213
8595308	213
8595309	213
8595311	213
8595312	213
8595313	213
8595314	213
8595315	213
859531511	213
8595316	213
8595317	214
8595318	214
859531811	214
8595319	214
8595321	214
8595322	214
859532211	214
8595323	214
8595324	214
8595325	214
859532511	214
8595326	214
859532611	214
8595327	214
859532711	214
8595328	214
8595329	214
859532911	214
8595331	214
8595332	214
8595333	214
8595334	214
8595335	214
859533511	214
8595336	214
8595337	214
8595338	214
8595339	214
8595341	214
8595342	214
8595343	214
8595344	214
8595345	214
859534511	214
8595346	214
859534611	214
8595347	214
859534711	214
8595348	214
8595349	214
8595351	214
8595352	214
8595353	214
8595354	214
8595355	214
8595356	214
8595357	214
859535711	214
8595358	214
8595359	214
8595361	214
8595362	214
8595363	215
8595364	215
8595365	215
8595366	215
859536611	215
8595367	215
8595368	215
8595369	215
8595371	215
8595372	215
8595373	215
859537311	215
8595374	215
8595375	215
859537511	215
8595376	215
8595377	215
8595378	215
8595379	215
8595381	215
8595382	215
8595383	215
8595384	215
8595385	215
859538511	215
8595386	215
859538611	215
8595387	215
8595388	215
8595389	215
8595391	215
859539111	215
8595392	215
8595393	215
8595394	215
8595395	215
859539511	215
8595396	215
8595397	215
859539711	215
8595398	215
8595399	215
859539911	215
8595401	215
8595402	215
8595403	215
8595404	215
859540411	215
8595405	215
8595406	216
8595407	216
8595408	216
8595409	216
859540911	216
8595411	216
8595412	216
8595413	216

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
8595414	216
8595415	216
859541511	216
8595416	216
8595417	216
859541711	216
8595418	216
8595419	216
8595421	216
8595422	216
859542211	216
8595423	216
8595424	216
8595425	216
8595426	216
8595427	216
8595428	216
8595429	216
8595431	216
8595432	216
8595433	216
859543311	216
8595434	216
8595435	216
8595436	216
8595437	216
859543711	216
8595438	216
8595439	216
8595441	216
859544111	216
8595442	216
8595443	216
8595444	216
8595445	216
859544511	216
8595446	216
8595447	216
8595448	216
8595449	216
8595451	216
8595452	217
8595453	217
8595454	217
8595455	217
8595456	217
8595457	217
859545711	217
8595458	217
8595459	217
8595461	217
8595462	217
859546211	217
8595463	217

EDP Number	Page No.
8595464	217
8595465	217
8595466	217
8595467	217
8595468	217
8595469	217
8595471	217
8595472	217
8595473	217
8595474	217
8595475	217
859547511	217
8595476	217
859547611	217
8595477	217
8595478	217
8595479	217
8595481	217
8595482	217
8595483	217
8595484	217
8595485	217
8595486	217
859548611	217
8595487	217
859548711	217
8595488	217
859548811	217
8595489	217
8595491	217
8595492	217
8595493	217
8595494	217
8595495	218
8595496	218
859549611	218
8595497	218
8595498	218
859549811	218
8595499	218
8595501	218
8595502	218
8595503	218
8595504	218
8595505	218
859550511	218
8595506	218
8595507	218
8595508	218
8595509	218
8595511	218
859551111	218
8595512	218
8595513	218

EDP Number	Page No.
8595514	218
8595515	218
8595516	218
859551611	218
8595517	218
8595518	218
859551811	218
8595519	218
8595521	218
8595522	218
859552211	218
8595523	218
8595524	218
8595525	218
8595526	218
8595527	218
8595528	218
8595529	218
8595531	218
8595532	218
8595533	218
8595534	218
8595535	218
8595536	218
8595537	218
8595538	218
8595539	218
8595541	218
8595542	219
8595543	219
8595544	219
8595545	219
859554511	219
8595546	219
8595547	219
8595548	219
859554811	219
8595549	219
8595551	219
8595552	219
8595553	219
8595554	219
8595555	219
8595556	219
859555611	219
8595557	219
8595558	219
8595559	219
8595561	219
8595562	219
8595563	219
8595564	219
8595565	219
859556511	219

EDP Number	Page No.
8595566	219
8595567	219
8595568	219
8595569	219
8595571	219
8595572	219
859557211	219
8595573	219
8595574	219
8595575	219
859557511	219
8595576	219
8595577	219
8595578	219
859557811	219
8595579	219
859557911	219
8595581	219
8595582	219
8595583	219
8595584	219
8595585	220
8595586	220
8595587	220
8595588	220
8595589	220
8595591	220
8595592	220
8595593	220
8595594	220
8595595	220
859559511	220
8595596	220
8595597	220
859559711	220
8595598	220
8595599	220
8595605	220
8595615	220
8595625	220
8595635	220
859563511	220
8595645	220
8595655	220
859565511	220
8595665	220
8595675	220
859567511	220
8595685	220
859568511	220
8595695	220
8595705	220
8595715	220
859571511	220

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8595725	220
8595735	220
8595745	220
8595755	221
859575511	221
8595765	221
859576511	221
8595775	221
859577511	221
8595785	221
8595795	221
859579511	221
8595805	221
8595815	221
8595825	221
8595835	221
859583511	221
8595845	221
8595855	221
8595865	221
8595875	221
859587511	221
8595885	221
8595895	221
8595905	221
8595915	221
8595925	221
8595935	221
8595945	221
8595955	221
8595965	221
859596511	221
8595975	222
8595985	222
8595995	222
8596005	222
8596015	222
859601511	222
8596025	222
8596035	222
859603511	222
8596045	222
8596055	222
8596065	222
8596075	222
8596085	222
8596095	222
8596105	222
8596115	222
8596125	222
8596135	222
8596145	222
8596155	222
8596165	222

EDP Number	Page No.
8596175	222
8596185	222
8596195	222
8597201	226
8597202	226
8597203	226
8597204	226
859720411	226
8597205	226
8597206	226
8597207	226
8597208	226
859720811	226
8597209	226
8597211	226
8597212	226
8597213	226
8597214	226
8597215	226
8597216	226
8597217	226
8597218	226
859721811	226
8597219	226
8597221	226
8597222	226
8597223	226
8597224	226
8597225	226
8597226	226
859722611	226
8597227	226
8597228	226
859722811	226
8597229	226
8597231	226
8597232	226
8597233	226
8597234	226
8597235	226
8597236	226
8597237	226
8597238	226
859723811	226
8597239	226
8597241	226
8597242	226
8597243	226
8597244	226
8597245	226
8597246	227
8597247	227
8597248	227
8597249	227

EDP Number	Page No.
8597251	227
8597252	227
8597253	227
8597254	227
8597255	227
859725511	227
8597256	227
8597257	227
8597258	227
859725811	227
8597259	227
8597261	227
8597262	227
8597263	227
8597264	227
8597265	227
8597266	227
8597267	227
8597268	227
8597269	227
8597271	227
8597272	227
8597273	227
8597274	227
8597275	227
8597276	227
8597277	227
8597278	227
859727811	227
8597279	227
859727911	227
8597281	227
859728111	227
8597282	227
8597283	227
8597284	227
8597285	227
8597286	227
859728611	227
8597287	227
8597288	227
8597289	228
8597291	228
8597292	228
8597293	228
8597294	228
859729411	228
8597295	228
8597296	228
8597297	228
8597298	228
8597299	228
8597301	228
8597302	228

EDP Number	Page No.
8597303	228
8597304	228
859730411	228
8597305	228
859730511	228
8597306	228
8597307	228
8597308	228
8597309	228
8597311	228
8597312	228
8597313	228
8597314	228
8597315	228
8597316	228
8597317	228
8597318	228
859731811	228
8597319	228
8597321	228
8597322	228
8597323	228
8597324	228
8597325	228
8597326	228
8597327	228
8597328	228
8597329	228
8597331	228
8597332	228
8597333	228
8597334	228
8597335	229
8597336	229
8597337	229
8597338	229
8597339	229
8597341	229
8597342	229
8597343	229
8597344	229
8597345	229
859734511	229
8597346	229
8597347	229
8597348	229
8597349	229
8597351	229
8597352	229
8597353	229
8597354	229
8597355	229
8597356	229
8597357	229

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
859735711	229
8597358	229
859735811	229
8597359	229
8597361	229
8597362	229
8597363	229
8597364	229
8597365	229
8597366	229
8597367	229
8597368	229
8597369	229
8597371	229
8597372	229
8597373	229
8597374	229
8597375	229
8597376	229
8597377	229
8597378	230
8597379	230
8597381	230
8597382	230
859738211	230
8597383	230
859738311	230
8597384	230
859738411	230
8597385	230
8597386	230
8597387	230
8597388	230
8597389	230
8597391	230
8597392	230
8597393	230
8597394	230
8597395	230
8597396	230
8597397	230
859739711	230
8597398	230
8597399	230
859739911	230
8597401	230
8597402	230
8597403	230
8597404	230
859740411	230
8597405	230
8597406	230
8597407	230
8597408	230

EDP Number	Page No.
8597409	230
859740911	230
8597411	230
8597412	230
8597413	230
8597414	230
8597415	230
8597416	230
8597417	230
8597418	230
8597419	230
8597421	230
8597422	230
859742211	230
8597423	230
8597424	231
8597425	231
8597426	231
8597427	231
8597428	231
8597429	231
8597431	231
8597432	231
8597433	231
8597434	231
8597435	231
8597436	231
8597437	231
859743711	231
8597438	231
8597439	231
8597441	231
8597442	231
8597443	231
8597444	231
8597445	231
8597446	231
8597447	231
8597448	231
8597449	231
8597451	231
8597452	231
8597453	231
8597454	231
8597455	231
8597456	231
8597457	231
859745711	231
8597458	231
8597459	231
8597461	231
8597462	231
8597463	231
8597464	231

EDP Number	Page No.
8597465	231
8597466	231
8597467	232
8597468	232
8597469	232
8597471	232
8597472	232
8597473	232
8597474	232
8597475	232
859747511	232
8597476	232
859747611	232
8597477	232
8597478	232
8597479	232
8597481	232
8597482	232
8597483	232
8597484	232
8597485	232
859748511	232
8597486	232
8597487	232
8597488	232
8597489	232
8597491	232
8597492	232
8597493	232
8597494	232
8597495	232
8597496	232
8597497	232
8597498	232
859749811	232
8597499	232
8597501	232
8597502	232
859750211	232
8597503	232
8597504	232
8597505	232
8597506	232
8597507	232
8597508	232
8597509	232
8597511	232
859751111	232
8597512	232
8597513	233
8597514	233
8597515	233
8597516	233
859751611	233

EDP Number	Page No.
8597517	233
8597518	233
8597519	233
8597521	233
8597522	233
8597523	233
8597524	233
8597525	233
8597526	233
8597527	233
8597528	233
8597529	233
8597531	233
859753111	233
8597532	233
8597533	233
8597534	233
8597535	233
8597536	233
8597537	233
8597538	233
8597539	233
8597541	233
8597542	233
8597543	233
8597544	233
8597545	233
8597546	233
8597547	233
859754711	233
8597548	233
8597549	233
8597551	233
8597552	233
8597553	233
8597554	233
8597555	233
8597556	234
8597557	234
8597558	234
8597559	234
8597561	234
859756111	234
8597562	234
8597563	234
8597564	234
8597565	234
8597566	234
8597567	234
8597568	234
8597569	234
8597571	234
8597572	234
8597573	234

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8597574	234
8597575	234
8597576	234
8597577	234
8597578	234
8597579	234
8597581	234
8597582	234
8597583	234
8597584	234
8597585	234
8597586	234
8597587	234
8597588	234
8597589	234
8597591	234
8597592	234
8597593	234
8597594	234
8597595	234
859759511	234
8597596	234
8597597	234
8597598	234
8597599	234
8597605	234
8597615	235
8597625	235
8597635	235
859763511	235
8597645	235
8597655	235
8597665	235
8597675	235
859767511	235
8597685	235
8597695	235
8597705	235
8597715	235
8597725	235
859772511	235
8597735	235
8597745	235
8597755	235
8597765	235
8597775	235
8597785	235
8597795	235
8597805	235
8597815	235
8597825	236
8597835	236
8597845	236
8597855	236

EDP Number	Page No.
8597865	236
8597875	236
8597885	236
8597895	236
8597905	236
8597915	236
8597925	236
859792511	236
8597935	236
859793511	236
8597945	236
8597955	236
8597965	236
8597975	236
8597985	236
8597995	236
8598005	236
8598015	236
8598025	236
8598035	236
8598045	236
8598055	237
8598065	237
8598075	237
8598085	237
8598095	237
8598105	237
8598115	237
8598125	237
8598135	237
8598145	237
8598155	237
8598165	237
8598175	237
8598185	237
8598195	237
8599005	173
8599006	173
8599007	173
8599008	173
8599009	173
8599010	173
8599013	174
8599014	174
8599015	174
8599017	174
8599018	174
8599135	179
8599136	179
8599140	179
8599142	179
8599145	179
8599146	179
8599150	179

EDP Number	Page No.
8599155	179
8599157	179
8599160	179
8599165	179
8599170	179
8599175	179
8599177	179
8599180	179
8599185	179
8599190	179
8599195	179
8599200	179
8608055	173
8608056	173
8608057	173
8608061	173
8608063	173
8608065	173
8608066	173
8608068	173
8608069	173
8608071	173
8608074	173
8608075	173
8608082	173
8608083	173
8608085	173
8608088	173
8608089	173
8608094	173
8608095	173
8608099	173
8608102	173
8608104	173
8608105	173
8608106	173
8608107	173
8608109	173
8608113	173
8608114	173
8608118	173
8608119	173
8608122	173
8608124	173
8608125	173
8608126	173
8608127	174
8608128	174
8608129	174
8608131	174
8608132	174
8608146	174
8608147	174
8608148	174

EDP Number	Page No.
8608151	174
8608153	174
8608155	174
8608159	174
8608161	174
8608162	174
8608163	174
8608164	174
8608166	174
8608169	174
8608176	174
8608177	174
8608178	174
8608182	174
8608185	174
8608193	174
8608198	174
8608199	174
8608203	174
8608204	174
8608206	174
8608208	174
8608213	174
8608215	174
8608216	174
8608218	174
8608222	174
8608226	174
8608231	174
8608233	174
8608237	174
8608238	174
8608244	175
8608246	175
8608249	175
8608253	175
8608258	175
8608264	175
8608271	175
8608278	175
8608279	175
8608281	175
8608282	175
8608287	175
8608295	175
8608305	175
8608318	175
8608319	175
8608326	175
8608336	175
8608345	175
8608352	175
8608357	175
8608366	175

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
8608373	175
8608377	175
8608386	175
8608391	175
8608397	175
8608399	175
8608404	175
8608409	175
8608415	176
8608422	176
8608427	176
8608431	176
8608437	176
8608439	176
8608445	176
8608457	176
8608462	176
8608466	176
8608476	176
8608479	176
8608485	176
8608491	176
8608498	176
8608505	176
8608511	176
8608515	176
8608516	176
8608518	176
8608522	176
8608526	176
8608531	176
8608541	176
8608546	176
8608556	176
8608561	176
8608579	176
8608595	176
8608635	177
8608675	177
8608714	177
8608754	177
8608794	177
8608833	177
8608873	177
8608913	177
8608952	178
8608954	179
8608956	179
8608958	179
8608960	179
8608962	179
8608964	179
8608966	179
8608968	179

EDP Number	Page No.
8608992	178
8609032	178
8609072	178
8609111	178
8609151	178
8609191	178
8609349	179
8609429	179
8609588	179
8609667	179
8609905	179
8612199	180
8612206	180
8612208	180
8612218	180
8612226	180
8612237	180
8612238	180
8612244	180
8612249	180
8612253	180
8612258	180
8612264	180
8612271	180
8612278	180
8612279	180
8612282	180
8612287	180
8612295	180
8612305	180
8612317	180
8612326	180
8612345	180
8612357	180
8612366	180
8612373	180
8612380	180
8612386	180
8612391	180
8612397	180
8612399	180
8612404	180
8612409	180
8612422	180
8612430	180
8612437	180
8612439	180
8612450	180
8612457	180
8612462	180
8612470	180
8612476	180
8612480	180
8612485	180

EDP Number	Page No.
8612491	180
8612498	180
8612505	180
8612511	180
8612516	180
8612518	180
8612522	180
8612531	180
8612541	180
8612556	180
8612561	181
8612579	181
8612594	181
8612595	181
8612604	181
8612615	181
8612625	181
8612635	181
8612653	181
8612663	181
8612675	181
8612690	181
8612703	181
8612714	181
8612737	181
8612749	181
8612754	181
8612767	181
8612794	181
8612803	181
8612820	181
8612833	181
8612843	181
8612861	181
8612873	181
8612884	181
8612909	181
8612913	181
8612934	181
8612952	181
8612957	181
8612980	181
8612992	181
8613008	181
8613026	181
8613032	181
8613049	181
8613072	181
8613111	181
8613151	181
8613191	181
8613230	181
8613270	181
8613349	181

EDP Number	Page No.
8613429	181
8613588	181
8613667	181
8613746	181
861-3750	817
861-3750-60	817
861-5000	817
861-5000-60	817
862	478
8622816	187
8622818	187
8622820	187
8622821	187
8622822	187
8622823	187
8622824	187
8622825	187
8622826	187
8622827	187
8622828	187
8622829	187
8622830	187
8622831	187
8622832	187
8622833	187
8622834	187
8622835	187
8622836	187
8622837	187
8622838	187
8622839	187
8622840	187
8622841	187
8622842	187
8622843	187
8622844	187
8622845	187
8622846	187
8622847	187
8622848	187
8622849	187
8622850	187
8622851	187
8622852	188
8622853	188
8622854	188
8622855	188
8622856	188
8622857	188
8622858	188
8622859	188
8622860	188
8622861	188
8622862	188

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8622863	188
8622864	188
8622865	188
8622866	188
8622867	188
8622868	188
8622869	188
8622870	188
8622871	188
8622872	188
8622873	188
8622874	188
8622875	188
8622876	188
8622877	188
8622878	188
8622879	188
8622880	188
8622881	188
8622882	188
8622883	188
8622884	188
8622885	188
8622886	188
8622887	188
8622888	188
8622889	188
8622890	188
8622891	188
8622892	188
8622893	189
8622894	189
8622895	189
8622896	189
8622897	189
8622898	189
8622899	189
8622900	189
8622901	189
8622902	189
8622903	189
8622904	189
8622905	189
8622906	189
8622907	189
8622908	189
8622909	189
8622910	189
8622911	189
8622912	189
8622913	189
8622914	189
8622915	189
8622916	189

EDP Number	Page No.
8622917	189
8622918	189
8622919	189
8622920	189
8623016	190
8623018	190
8623020	190
8623021	190
8623022	190
8623023	190
8623024	190
8623025	190
8623026	190
8623027	190
8623028	190
8623029	190
8623030	190
8623031	190
8623032	190
8623033	190
8623034	190
8623035	190
8623036	190
8623037	190
8623038	190
8623039	190
8623040	190
8623041	190
8623042	190
8623043	190
8623044	190
8623045	190
8623046	190
8623047	190
8623048	190
8623049	190
8623050	190
8623051	190
8623052	190
8623053	190
8623054	190
8623055	190
8623056	190
8623057	190
8623058	190
8623060	191
8623062	191
8623063	191
8623065	191
8623066	191
8623068	191
8623069	191
8623070	191
8623071	191

EDP Number	Page No.
8623075	191
8623080	191
8623081	191
8623082	191
8623085	191
8623086	191
8623088	191
8623090	191
8623093	191
8623095	191
8623097	191
8623098	191
8623100	191
8623105	191
8623110	191
8623115	191
8623118	191
8623120	191
8623216	192
8623218	192
8623220	192
8623221	192
8623222	192
8623223	192
8623224	192
8623225	192
8623226	192
8623227	192
8623228	192
8623229	192
8623230	192
8623231	192
8623232	192
8623233	192
8623234	192
8623235	192
8623237	192
8623238	192
8623240	192
8623241	192
8623242	192
8623243	192
8623245	192
8623246	192
8623248	192
8623250	192
8623251	192
8623252	192
8623255	192
8623257	192
8623258	192
8623260	192
8623265	192
8623270	192

EDP Number	Page No.
8623275	192
8623280	193
8623281	193
8623282	193
8623285	193
8623290	193
8623300	193
8623310	193
8623320	193
862-3750	817
862-3750-60	817
862-5000	817
862-5000-60	817
8630230	90
8630250	90
8630260	90
8630280	90
8630290	90
8630300	90
8630310	90
8630320	90
8630330	90
8630340	90
8630350	90
8630360	90
8630370	90
8630380	90
8630390	90
8630400	90
8630410	90
8630420	90
8630430	90
8630440	90
8630450	90
8630460	90
8630470	90
8630480	90
8630490	90
8630500	90
8630510	91
8630520	91
8630530	91
8630540	91
8630550	91
8630560	91
8630570	91
8630580	91
8630590	91
8630600	91
8630610	91
8630620	91
8630630	91
8630640	91
8630650	91

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
8630660	91
8630670	91
8630680	91
8630690	91
8630700	91
8630710	91
8630720	91
8630730	91
8630740	91
8630750	91
8630760	91
8630770	91
8630780	91
8630790	91
8630800	91
8630810	92
8630820	92
8630830	92
8630840	92
8630850	92
8630860	92
8630870	92
8630880	92
8630890	92
8630900	92
8630910	92
8630920	92
8630930	92
8630940	92
8630950	92
8630960	92
8630970	92
8630980	92
8630990	92
8631000	92
8631010	92
8631020	92
8631030	92
8631040	92
8631050	92
8631060	92
8631070	92
8631080	92
8631090	92
8631100	92
8631110	92
8631120	92
8631130	92
8631140	93
8631150	93
8631160	93
8631170	93
8631180	93
8631190	93

EDP Number	Page No.
8631200	93
8631210	93
8631220	93
8631230	93
8631240	93
8631250	93
8631260	93
8631270	93
8631280	93
8631290	93
8631300	93
8631310	93
8631320	93
8631330	93
8631340	93
8631350	93
8631360	93
8631370	93
8631380	93
8631390	93
8631400	93
8631410	93
8631420	93
8631430	93
8631440	93
8631450	93
8631460	93
8631470	93
8631480	93
8631490	93
8631500	94
8631510	94
8631520	94
8631530	94
8631540	94
8631550	94
8631560	94
8631570	94
8631580	94
8631590	94
8631600	94
8631650	94
8631700	94
8631750	94
8631800	94
8631850	94
8631900	94
8631950	94
8632000	94
8632230	95
8632250	95
8632260	95
8632278	95
8632280	95

EDP Number	Page No.
8632290	95
8632300	95
8632310	95
8632320	95
8632330	95
8632340	95
8632350	95
8632360	95
8632370	95
8632380	95
8632390	95
8632400	95
8632410	95
8632420	95
8632430	95
8632440	95
8632450	95
8632460	95
8632470	95
8632480	95
8632490	95
8632500	95
8632510	95
8632520	96
8632530	96
8632540	96
8632550	96
8632560	96
8632570	96
8632580	96
8632590	96
8632600	96
8632610	96
8632620	96
8632630	96
8632640	96
8632650	96
8632660	96
8632670	96
8632680	96
8632690	96
8632700	96
8632710	96
8632720	96
8632730	96
8632740	96
8632750	96
8632760	96
8632770	96
8632780	96
8632790	96
8632800	96
8632810	96
8632820	96

EDP Number	Page No.
8632830	96
8632840	96
8632850	96
8632860	96
8632870	96
8632880	96
8632890	97
8632900	97
8632910	97
8632920	97
8632930	97
8632940	97
8632950	97
8632960	97
8632970	97
8632980	97
8632990	97
8633000	97
8633010	97
8633020	97
8633030	97
8633040	97
8633050	97
8633060	97
8633070	97
8633080	97
8633090	97
8633100	97
8633110	97
8633120	97
8633130	97
8633140	97
8633150	97
8633160	97
8633170	97
8633180	97
8633190	97
8633200	97
8633210	97
8633220	97
8633230	97
8633240	97
8633250	98
8633260	98
8633270	98
8633280	98
8633290	98
8633300	98
8633310	98
8633320	98
8633330	98
8633340	98
8633350	98
8633360	98

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8633370	98
8633380	98
8633390	98
8633400	98
8633410	98
8633420	98
8633430	98
8633440	98
8633450	98
8633460	98
8633470	98
8633480	98
8633490	98
8633500	98
8633510	98
8633520	98
8633530	98
8633540	98
8633550	98
8633560	98
8633570	98
8633580	98
8633590	98
8633600	98
8633650	98
8633700	98
8633750	98
863-3750	817
863-3750-60	817
8633800	98
8633850	98
8633900	98
8633950	99
8634000	99
8634300	100
8634350	100
8634400	100
8634450	100
8634500	100
8634550	100
8634600	100
8634650	101
8634700	101
8634750	101
8634800	101
8634850	101
8634900	101
8634950	101
8635000	102
863-5000	817
863-5000-60	817
8635050	102
8635100	102
8635150	102

EDP Number	Page No.
8635200	102
8635250	102
8636300	103
8636350	103
8636400	103
8636450	103
8636500	103
8636550	104
8636600	104
8636620	104
8636650	104
8636700	104
8636750	104
8636800	104
8636830	104
8636850	104
8636900	104
8636950	105
8637000	105
8637100	105
8637200	105
8638300	106
8638350	106
8638400	106
8638550	106
8638600	106
8638750	106
8638800	106
8638950	106
8639000	106
8639200	107
8646300	108
8646350	108
8646400	108
8646450	108
8646500	108
8646550	108
8646600	108
8646650	108
8646700	108
8646750	108
8646800	108
8646850	108
8646900	108
8646950	108
8647000	108
8647100	108
8647200	109
8648350	110
8648400	110
8648450	110
8648500	110
8648550	110
8648600	110

EDP Number	Page No.
8648650	110
8648700	110
8648750	110
8648800	110
8648850	110
8648900	110
8648950	110
8649000	110
8650100	197
8650150	197
8650180	197
8650181	197
8650183	197
8650200	197
8650211	197
8650213	197
8650228	197
8650230	197
8650238	197
8650240	197
8650250	197
8650260	197
8650276	197
8650278	197
8650280	197
8650300	197
8650320	197
8650325	197
8650330	197
8650340	197
8650350	198
8650365	198
8650367	198
8650390	198
8650400	198
8650410	198
8650420	198
8650430	198
8650450	198
8650459	198
8650463	198
8650500	198
8650510	198
8650520	198
8650548	198
8650550	198
8650600	198
8650680	198
8650690	198
8650700	198
8650734	198
8650738	198
8650800	198
8650810	198

EDP Number	Page No.
8650850	198
8650860	198
8650880	198
8650900	198
8650918	199
8650920	199
8650924	199
8650934	199
8650936	199
8651000	199
8651030	199
8651040	199
8651050	199
8651100	199
8651200	199
8655200	200
8655230	200
8655250	200
8655260	200
8655280	200
8655300	200
8655330	200
8655340	200
8655350	200
8655400	200
8655420	200
8655430	200
8655450	200
8655500	200
8655510	200
8655520	200
8655550	200
8655600	200
8655680	200
8655690	200
8655700	200
8655800	200
8655850	200
8655860	200
8655880	200
8655900	200
8656000	200
8656030	200
8656040	200
8656050	201
8656100	201
8656200	201
8660500	48
8660510	48
8660520	48
8660530	48
8660540	48
8660550	48
8660560	48

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
8660570	48
8660580	48
8660590	48
8660600	48
8660610	48
8660620	48
8660630	48
8660640	48
8660650	48
8660660	48
8660670	48
8660680	48
8660690	48
8660700	48
8660710	48
8660720	48
8660730	48
8660740	48
8660750	48
8660760	49
8660770	49
8660780	49
8660790	49
8660800	49
8660810	49
8660820	49
8660830	49
8660840	49
8660850	49
8660860	49
8660870	49
8660880	49
8660890	49
8660900	49
8660910	49
8660920	49
8660930	49
8660940	49
8660950	49
8660960	49
8660970	49
8660980	49
8660990	49
8661000	49
8661010	49
8661020	49
8661030	49
8661040	49
8661050	49
8661060	49
8661070	49
8661080	49
8661090	49
8661100	49

EDP Number	Page No.
8661110	49
8661120	50
8661130	50
8661140	50
8661150	50
8661160	50
8661170	50
8661180	50
8661190	50
8661200	50
8661210	50
8661220	50
8661230	50
8661240	50
8661250	50
8661260	50
8661270	50
8661280	50
8661290	50
8661300	50
8661310	50
8661320	50
8661330	50
8661340	50
8661350	50
8661360	50
8661370	50
8661380	50
8661390	50
8661400	50
8661410	50
8661420	50
8661430	50
8661440	50
8661450	50
8661460	50
8661470	50
8661480	50
8661490	50
8661500	50
8661510	50
8661520	50
8661530	50
8661540	50
8661550	50
8661560	50
8661570	51
8661580	51
8661590	51
8661600	51
8661650	51
8661700	51
8661750	51
8661800	51

EDP Number	Page No.
8661850	51
8661900	51
8661950	51
8662000	51
8662500	52
8662510	52
8662520	52
8662530	52
8662540	52
8662550	52
8662560	52
8662570	52
8662580	52
8662590	52
8662600	52
8662610	52
8662620	52
8662630	52
8662640	52
8662650	52
8662660	52
8662670	52
8662680	52
8662690	52
8662700	52
8662710	52
8662720	52
8662730	52
8662740	52
8662750	52
8662760	52
8662770	52
8662780	52
8662790	52
8662800	53
8662810	53
8662820	53
8662830	53
8662840	53
8662850	53
8662860	53
8662870	53
8662880	53
8662890	53
8662900	53
8662910	53
8662920	53
8662930	53
8662940	53
8662950	53
8662960	53
8662970	53
8662980	53
8662990	53

EDP Number	Page No.
8663000	53
8663010	53
8663020	53
8663030	53
8663040	53
8663050	53
8663060	53
8663070	53
8663080	53
8663090	53
8663100	53
8663110	53
8663120	53
8663130	53
8663140	53
8663150	53
8663160	53
8663170	54
8663180	54
8663190	54
8663200	54
8663210	54
8663220	54
8663230	54
8663240	54
8663250	54
8663260	54
8663270	54
8663280	54
8663290	54
8663300	54
8663310	54
8663320	54
8663330	54
8663340	54
8663350	54
8663360	54
8663370	54
8663380	54
8663390	54
8663400	54
8663410	54
8663420	54
8663430	54
8663440	54
8663450	54
8663460	54
8663470	54
8663480	54
8663490	54
8663500	54
8663510	54
8663520	54
8663530	54

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
8663540	54
8663550	54
8663560	54
8663570	54
8663580	54
8663590	54
8663600	54
8663650	55
8663700	55
8663750	55
8663800	55
8663850	55
8663900	55
8663950	55
8664000	55
8665280	76
8665290	76
8665300	76
8665310	76
8665315	76
8665320	76
8665326	76
8665330	76
8665340	76
8665350	76
8665360	76
8665370	76
8665375	76
8665380	76
8665390	76
8665400	76
8665410	76
8665420	76
8665430	76
8665440	76
8665450	76
8665460	76
8665470	76
8665480	77
8665485	77
8665490	77
8665500	77
8665510	77
8665520	77
8665525	77
8665530	77
8665540	77
8665550	77
8665560	77
8665570	77
8665580	77
8665590	77
8665600	77
8665610	77

EDP Number	Page No.
8665620	77
8665625	77
8665630	77
8665635	77
8665640	77
8665650	77
8665660	77
8665670	77
8665675	78
8665680	78
8665690	78
8665700	78
8665710	78
8665720	78
8665725	78
8665730	78
8665740	78
8665750	78
8665760	78
8665770	78
8665775	78
8665780	78
8665790	78
8665800	78
8665810	78
8665820	78
8665825	78
8665830	78
8665840	78
8665850	78
8665860	78
8665870	78
8665875	79
8665880	79
8665890	79
8665900	79
8665910	79
8665920	79
8665925	79
8665930	79
8665940	79
8665950	79
8665960	79
8665970	79
8665975	79
8665980	79
8665990	79
8666000	79
8666010	79
8666020	79
8666025	79
8666030	79
8666040	79
8666050	79

EDP Number	Page No.
8666060	79
8666070	79
8666075	80
8666080	80
8666090	80
8666100	80
8666110	80
8666120	80
8666130	80
8666140	80
8666150	80
8666160	80
8666170	80
8666180	80
8666190	80
8666200	80
8666210	80
8666220	80
8666230	80
8666240	80
8666250	80
8666260	80
8666270	80
8666275	80
8666280	80
8666290	80
8666300	80
8666310	80
8666320	81
8666330	81
8666340	81
8666350	81
8666360	81
8666370	81
8666380	81
8666390	81
8666400	81
8666410	81
8666420	81
8666430	81
8666440	81
8666450	81
8666460	81
8666470	81
8666480	81
8666490	81
8666500	81
8666510	81
8666520	81
8666530	81
8666540	81
8666550	81
8666560	81
8666570	81

EDP Number	Page No.
8666580	81
8666590	81
8666600	82
8666650	82
8666700	82
8666750	82
8666800	82
8666850	82
8666900	82
8666950	82
8667000	82
8667276	83
8667278	83
8667280	83
8667290	83
8667300	83
8667310	83
8667315	83
8667320	83
8667326	83
8667330	83
8667340	83
8667350	83
8667360	83
8667366	83
8667368	83
8667370	83
8667375	83
8667380	83
8667390	83
8667400	83
8667410	83
8667420	83
8667430	83
8667440	83
8667450	83
8667460	83
8667462	83
8667464	84
8667470	84
8667480	84
8667485	84
8667490	84
8667500	84
8667510	84
8667520	84
8667525	84
8667530	84
8667540	84
8667550	84
8667552	84
8667554	84
8667560	84
8667570	84

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
8667580	84
8667590	84
8667600	84
8667610	84
8667620	84
8667625	84
8667630	84
8667635	84
8667640	84
8667650	84
8667660	84
8667670	84
8667675	84
8667680	85
8667690	85
8667700	85
8667710	85
8667720	85
8667725	85
8667730	85
8667736	85
8667738	85
8667740	85
8667750	85
8667752	85
8667754	85
8667760	85
8667770	85
8667775	85
8667780	85
8667790	85
8667800	85
8667810	85
8667820	85
8667825	85
8667830	85
8667840	85
8667850	85
8667860	85
8667870	85
8667875	86
8667880	86
8667890	86
8667900	86
8667910	86
8667920	86
8667924	86
8667925	86
8667926	86
8667930	86
8667936	86
8667938	86
8667940	86
8667950	86

EDP Number	Page No.
8667952	86
8667954	86
8667960	86
8667970	86
8667975	86
8667980	86
8667990	86
8668000	86
8668010	86
8668020	86
8668025	86
8668030	86
8668040	86
8668050	86
8668060	86
8668070	86
8668075	86
8668080	86
8668090	87
8668100	87
8668110	87
8668120	87
8668122	87
8668124	87
8668130	87
8668136	87
8668138	87
8668140	87
8668150	87
8668160	87
8668170	87
8668180	87
8668190	87
8668200	87
8668210	87
8668220	87
8668230	87
8668240	87
8668250	87
8668260	87
8668270	87
8668275	87
8668280	87
8668290	87
8668300	87
8668310	88
8668320	88
8668325	88
8668330	88
8668340	88
8668350	88
8668360	88
8668370	88
8668380	88

EDP Number	Page No.
8668390	88
8668400	88
8668410	88
8668420	88
8668430	88
8668440	88
8668450	88
8668460	88
8668470	88
8668480	88
8668490	88
8668500	88
8668510	88
8668520	88
8668525	88
8668530	88
8668540	88
8668550	88
8668560	88
8668570	88
8668580	88
8668590	88
8668600	88
8668650	89
8668700	89
8668750	89
8668800	89
8668850	89
8668900	89
8668950	89
8669000	89
867-3750	819
867-3750-60	819
867-5000	819
867-5000-60	819
868-3750	819
868-3750-60	819
868-5000	819
868-5000-60	819
871	478
872	478
873	478
87700	74
87702	74
87703	74
87704	74
87705	74
87706	74
87707	74
87708	74
87709	74
87710	74
87781	74
87782	74

EDP Number	Page No.
881	478
881-2362	821
881-2500	821
881-3125-60	821
881-3750	821
881-3750-60	821
881-5000	821
881-5000-60	821
881-6250	821
881-6250-60	821
881-7500	821
881-7500-60	821
882	478
882-2362	821
882-2500	821
882-3750	821
882-3750-60	821
882-5000	821
882-5000-60	821
882-6250	821
882-6250-60	821
882-7500	821
882-7500-60	821
883	478
883-2362	821
883-2500	821
883-3750	821
883-3750-60	821
883-5000	821
883-5000-60	821
883-6250	821
883-6250-60	821
883-7500	821
883-7500-60	821
885-5000	822
885-5000-60	822
885-6250	822
885-6250-60	822
885-7500	822
885-7500-60	822
886-3750	822
886-3750-60	822
886-5000	822
886-5000-60	822
886-6250	822
886-6250-60	822
886-7500	822
886-7500-60	822
887-3750	822
887-3750-60	822
887-5000	822
887-5000-60	822
887-6250	822
887-6250-60	822

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
887-7500	822
887-7500-60	822
888-2362	822
888-2500	822
888-3125-60	822
888-3750	822
888-3750-60	822
888-5000	822
888-5000-60	822
888-6250	822
888-6250-60	822
8910000	1169
8910001	1169
8910002	1169
8910003	1169
8910004	1169
8910005	1169
8910006	1169
8910007	1169
8910008	1170
8910009	1170
8910010	1170
8910011	1170
8910012	1170
8910013	1170
8910014	1170
8910015	1170
8910016	1170
8910017	1170
8910030	1171
8910031	1171
8910032	1171
8910033	1171
8910034	1171
8910035	1171
8910036	1171
8910037	1171
8910038	1171
8910039	1171
8910040	1171
8910041	1171
8910042	1171
8910043	1171
8910044	1171
8910045	1171
8910046	1171
8910047	1171
8910050	1172
8910051	1172
8910052	1172
8910053	1172
8910054	1172
8910055	1172
8910056	1172
8910057	1172
8910058	1172
8910059	1172
8910060	1172
8910061	1172
8910062	1172
8910063	1172
8910064	1172
8910065	1172
8910066	1172
8910067	1172
8910070	1174
8910071	1174
8910072	1174
8910073	1174
8910074	1174
8910075	1174
8910076	1174
8910077	1174
8910078	1174
8910079	1174
8910080	1174
8910081	1174
8910082	1174
8910083	1174
8910084	1174
8910085	1174
8910086	1174
8910087	1174
8910088	1174
8910089	1174
8910090	1174
8910091	1174
8910092	1174
8910093	1174
8910094	1174
8910095	1174
8910096	1174
8910097	1174
8910098	1174
8910099	1174
8910100	1174
8910101	1174
8910102	1174
8910103	1174
8910104	1174
8910105	1174
8910106	1174
8910107	1174
8910108	1174
8910109	1174
8910110	1174
8910111	1174
8910112	1174
8910113	1174
8910120	1177
8910121	1177
8910122	1177
8910123	1177
8910124	1177
8910125	1177
8910126	1177
8910127	1177
8910129	1177
8910131	1177
8910132	1177
8910138	1177
8910140	1177
8910142	1177
8910143	1177
8910145	1177
8910147	1177
8910148	1177
8910154	1177
8910155	1177
8910159	1177
8910240	1178
8910241	1178
8910242	1178
8910243	1178
8910244	1178
8910245	1178
8910246	1178
8910247	1178
8910401	1175
8910406	1175
8910413	1175
8910415	1175
8910424	1175
8910426	1177
8910428	1175
8910434	1177
8910435	1175
8910436	1177
8910440	1175
8910443	1177
8910445	1177
8910449	1175
8910450	1175
8910451	1177
8910456	1177
8910457	1175
8910458	1175
8910460	1177
900-9001	825
900-9001-30	826
900-9002	825
900-9002-30	826
900-9003	825
900-9003-30	826
900-9004	825
900-9004-30	826
900-9005	825
900-9005-30	826
900-9006	825
900-9006-30	826
900-9007	825
900-9007-30	826
900-9008	825
900-9008-30	826
900-9009	825
900-9009-30	826
900-9010	825
900-9010-30	826
900-9011	825
900-9011-30	826
900-9012	825
900-9012-30	826
900-9013	825
900-9013-30	826
900-9014	825
900-9014-30	826
900-9015	825
900-9015-30	826
900-9016	825
900-9016-30	826
900-9017	825
900-9017-30	826
900-9018	825
900-9018-30	826
900-9019	825
900-9019-30	826
900-9020	825
900-9020-30	826
90100111	661
90100311	661
90100711	661
90100911	661
90101111	661
90101311	661
90101411	661
90101611	661
901-1000	810
901-1000-60	810
901-1000-60-EC	810
901-1000-EC	810
90110111	662
90110211	662
90110311	662
90110411	662
90110511	662
90110611	662

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
90110711	662
901-1250	810
901-1250-60	810
901-1250-60-EC	810
901-1250-EC	810
901-1875	810
901-1875-60-EC	810
901-1875-EC	810
901-2362	810
901-2362-EC	810
901-2500	810
901-2500-EC	810
901-3125	810
901-3125-60	810
901-3125-60-EC	810
901-3125-EC	810
901-3750	810
901-3750-60	810
901-3750-60-EC	810
901-3750-EC	810
901-4375	810
901-4375-60	810
901-4375-60-EC	810
901-4375-EC	810
901-5000	810
901-5000-60	810
901-5000-60-EC	810
901-5000-EC	810
901-5001	810
901-5001-60	810
901-5001-60-EC	810
901-6250	810
901-6250-60	810
901-6250-60-EC	810
901-6250-EC	810
901-7500	810
901-7500-60	810
901-7500-60-EC	810
901-7500-EC	810
901-7501	810
901-7501-60	810
901-7501-60-EC	810
901-7501-EC	810
902-1250	810
902-1250-60	810
902-1875	810
902-1875-60	810
902-2362	810
902-2500	810
902-3125	810
902-3125-60	810
902-3750	810
902-3750-60	810
902-4375	810
902-4375-60	810
902-5000	810
902-5000-60	810
902-6250	810
902-6250-60	810
902-7500	810
902-7500-60	810
903-2362	810
903-2500	810
903-3750	810
903-3750-60	810
903-5000	810
903-5000-60	810
903-5001	810
903-5001-60	810
903-6250	810
903-6250-60	810
903-7500	810
903-7500-60	810
903-7501	810
903-7501-60	810
903-7502	810
903-7502-60	810
904-2362	812
904-2500	812
904-3125	812
904-3125-60	812
904-3750	812
904-3750-60	812
904-5000	812
904-5000-60	812
904-5001	812
904-5001-60	812
904-6250	812
904-6250-60	812
904-7500	812
904-7500-60	812
904-7501	812
904-7501-60	812
905-2362	812
905-2363	812
905-2364	812
905-2500	812
905-2501	812
905-2502	812
905-3750	812
905-3750-60	812
905-5000	812
905-5000-60	812
905-6250	812
905-6250-60	812
906-2362	812
906-2500	812
906-3750	812
906-3750-60	812
906-5000	812
906-5000-60	812
906-6250	812
906-6250-60	812
906-7500	812
906-7500-60	812
907-2362	814
907-2500	814
907-3125	814
907-3125-60	814
907-3750	814
907-3750-60	814
907-5000	814
907-5000-60	814
907-6250	814
907-6250-60	814
907-7500	814
907-7500-60	814
908-1000	814
908-1000-60	814
908-1250	814
908-1250-60	814
908-1875	814
908-1875-60	814
908-2362	814
908-2500	814
908-3125	814
908-3125-60	814
908-3750	814
908-3750-60	814
908-5000	814
908-5000-60	814
908-6250	814
908-6250-60	814
908-7500	814
908-7500-60	814
91100111	661
91100211	661
91100311	661
91100411	661
91100611	661
91100811	661
91101011	661
91110111	662
91110211	662
91110311	662
91110411	662
91110511	662
91110611	662
91110711	662
91400311	663
91400411	663
91400511	663
91400611	663
91400811	663
91401011	663
91401211	663
91440611	663
91440811	663
91441011	663
91441111	663
91441211	663
91441311	663
915-0001	828
915-0001-30	828
915-0002	828
915-0002-30	828
915-0003	828
915-0003-30	828
915-0004	828
915-0004-30	828
915-0005	828
915-0005-30	828
915-0006	828
915-0006-30	828
915-0007	828
915-0007-30	828
915-0008	828
915-0008-30	828
915-0009	828
915-0009-30	828
920-0001	830
920-0001-30	830
920-0002	830
920-0002-30	830
920-0003	830
920-0003-30	830
920-0004	830
920-0004-30	830
920-0005	830
920-0005-30	830
920-0006	830
920-0006-30	830
920-0007	830
920-0007-30	830
920-0008	830
920-0008-30	830
920-0009	830
920-0009-30	830
920-0010	830
920-0010-30	830
920-0011	830
920-0011-30	830
920-0012	830
920-0012-30	830
949-1000	814
949-1000-60	814

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
949-2362	814
949-2500	814
949-3750	814
949-3750-60	814
949-5000	814
949-5000-60	814
949-6250	814
949-6250-60	814
949-7500	814
949-7500-60	814
950-1000	816
950-1000-60	816
950-2362	816
950-2500	816
950-3750	816
950-3750-60	816
950-5000	816
950-5000-60	816
950-6250	816
950-6250-60	816
950-7500	816
950-7500-60	816
951-3125	816
951-3125-60	816
951-5000	816
951-5000-60	816
951-6250	816
951-6250-60	816
951-7500	816
951-7500-60	816
952-2362	816
952-2500	816
952-3750	816
952-3750-60	816
952-5000	816
952-5000-60	816
952-6250	816
952-6250-60	816
952-7500	816
952-7500-60	816
9598615	177
9598665	177
9598686	177
9598704	177
9598815	177
9598856	177
9598868	177
9598886	177
9598955	178
9599020	174
9599021	174
9599022	174
9599023	174
9599024	174
9599025	175
9599026	175
9599027	175
9599028	175
9599029	175
9599030	175
9599031	175
9599032	175
9599033	175
9599034	175
9599035	175
9599036	175
9599037	175
9599038	175
9599039	175
9599040	175
9599041	176
9599042	176
9599043	176
9599044	176
9599045	176
9599046	176
9599047	176
9599048	176
9599049	176
9599050	176
9599051	176
9599052	176
9599053	176
9599054	176
9599055	176
9599056	176
9599057	176
9599058	176
9599059	176
9599060	176
9599061	176
9599062	177
9599063	177
9599064	177
9599065	177
9599066	177
9599067	177
9599068	177
9599069	177
9599070	177
9599071	177
9599072	177
9599073	177
9599074	177
9599075	177
9599076	177
9599077	177
9599078	177
9599079	177
9599080	177
9599081	177
9599082	177
9599083	177
9599084	177
9599085	177
9599086	177
9599087	177
9599088	177
9599089	177
9599090	177
9599091	177
9599092	178
9599093	178
9599094	178
9599095	178
9599096	178
9599097	178
9599098	178
9599099	178
9599100	178
9599101	178
9599102	178
9599103	178
9599104	178
9599105	178
9599106	178
9599107	178
9599108	178
9599109	178
9599110	178
9599111	178
9599112	178
9599113	178
9599114	178
9599115	178
9599116	178
9599117	178
9599118	178
9599119	178
9599120	178
9599121	178
9599122	178
9599123	178
9599124	178
9599125	178
9599126	178
9599127	178
9599128	178
9599129	178
9599130	179
9599144	178
9599186	178
9599245	178
9599268	178
9599308	179
9599387	179
9599468	179
9599684	179
9599976	179
961-3750	818
961-3750-60	818
961-5000	818
961-5000-60	818
962-3750	818
962-3750-60	818
962-5000	818
962-5000-60	818
963-3750	818
963-3750-60	818
963-5000	818
963-5000-60	818
967-3750	820
967-3750-60	820
967-5000	820
967-5000-60	820
968-3750	820
968-3750-60	820
968-5000	820
968-5000-60	820
981	478
982	478
983	478
991	478
9910002	1169
9910004	1169
9910005	1169
9910006	1169
9910008	1170
9910011	1170
9910031	1171
9910034	1171
9910037	1171
9910040	1171
9910043	1171
9910046	1171
9910048	1171
9910051	1172
9910054	1172
9910057	1172
9910060	1172
9910063	1172
9910066	1172
9910068	1172
9910076	1173
9910077	1173
9910084	1173

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Numerical Index

EDP Number	Page No.
9910085	1173
9910088	1173
9910089	1173
9910096	1173
9910097	1173
9910104	1173
9910105	1173
9910108	1173
9910109	1173
9910112	1173
9910113	1173
9910120	1176
9910121	1176
9910122	1176
9910123	1176
9910124	1176
9910125	1176
9910136	1175
9910137	1176
9910138	1176
9910139	1175
9910140	1176
9910142	1175
9910143	1176
9910144	1175
9910145	1176
9910147	1175
9910148	1176
9910149	1175
9910150	1176
9910151	1175
9910152	1176
9910156	1175
9910157	1176
9910158	1175
9910159	1176
9911001	1167
9911002	1167
9911003	1167
9911004	1167
9911005	1167
9911006	1167
9911008	1167
9911009	1167
9911010	1167
9911011	1167
9911012	1167
9911013	1167
9911014	1167
9911015	1167
9911016	1167
9911017	1167
9911018	1167
9911019	1167

EDP Number	Page No.
9911020	1168
9911021	1168
9911022	1168
9911023	1168
9911026	1168
9911027	1168
9911028	1168
9911029	1168
9911030	1168
9911031	1168
9911032	1168
9911033	1168
9911034	1168
9911035	1168
9911036	1168
9911037	1168
9911038	1168
9911039	1168
9911040	1168
9911041	1168
9911042	1168
9911043	1168
9911044	1168
9911045	1168
9911046	1168
9911047	1168
9911101	1167
9911102	1167
9911103	1167
9911104	1167
9911105	1167
9911106	1167
9911107	1167
9911108	1167
9911109	1167
9911110	1167
9911111	1167
9911112	1167
992	478
993	478
99632	1118
99634	1118
99640	1118
HP243-0394	128
HP243-0433	128
HP243-0469	128
HP243-0472	128
HP243-0512	128
HP243-0551	128
HP243-0591	128
HP243-0626	128
HP243-0630	128
HP243-0669	128
HP243-0709	128

EDP Number	Page No.
HP243-0748	128
HP243-0780	128
HP243-0787	128
HP243-0827	128
HP243-0866	128
HP243-0906	128
HP243-0937	128
HP243-0945	128
HP243-0984	128
HP243-1024	128
HP243-1063	128
HP243-1094	128
HP243-1102	128
HP243-1142	128
HP243-1181	128
HP243-1220	128
HP243-1248	128
HP243-1260	128
HP243-1299	128
HP243-1339	128
HP243-1378	128
HP243-1406	128
HP243-1417	128
HP243-1457	128
HP243-1496	128
HP243-1535	128
HP243-1563	128
HP243-1575	128
HP243-1610	128
HP243-1614	128
HP243-1654	128
HP243-1693	128
HP243-1720	128
HP243-1732	128
HP243-1772	128
HP243-1811	128
HP243-1831	128
HP243-1850	128
HP243-1874	128
HP243-1890	129
HP243-1929	129
HP243-1969	129
HP243-2008	129
HP243-2031	129
HP243-2047	129
HP243-2087	129
HP243-2126	129
HP243-2130	129
HP243-2165	129
HP243-2189	129
HP243-2205	129
HP243-2244	129
HP243-2283	129
HP243-2323	129

EDP Number	Page No.
HP243-2343	129
HP243-2362	129
HP243-2402	129
HP243-2441	129
HP243-2480	129
HP243-2500	129
HP243-2520	129
HP243-2559	129
HP243-2571	129
HP243-2598	129
HP243-2638	129
HP243-2657	129
HP243-2677	129
HP243-2717	129
HP243-2756	129
HP243-2795	129
HP243-2811	129
HP243-2835	129
HP243-2874	129
HP243-2913	129
HP243-2953	129
HP243-2969	129
HP243-2992	129
HP243-3031	129
HP243-3071	129
HP243-3110	129
HP243-3126	129
HP243-3150	129
HP243-3189	129
HP243-3228	129
HP243-3268	129
HP243-3280	130
HP243-3307	130
HP243-3319	130
HP243-3346	130
HP243-3386	130
HP243-3425	130
HP243-3437	130
HP243-3465	130
HP243-3504	130
HP243-3543	130
HP243-3583	130
HP243-3594	130
HP243-3622	130
HP243-3642	130
HP243-3661	130
HP243-3701	130
HP243-3740	130
HP243-3748	130
HP243-3780	130
HP243-3819	130
HP243-3858	130
HP243-3898	130
HP243-3906	130

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EDP Number	Page No.
HP243-3937	130
HP243-3976	130
HP243-4016	130
HP243-4055	130
HP243-4063	130
HP243-4094	130
HP243-4134	130
HP243-4173	130
HP243-4213	130
HP243-4220	130
HP243-4252	130
HP243-4291	130
HP243-4331	130
HP243-4370	130
HP243-4374	130
HP243-4409	130
HP243-4449	130
HP243-4488	130
HP243-4528	130
HP243-4531	130
HP243-4567	130
HP243-4606	130
HP243-4646	130
HP243-4685	130
HP243-4689	130
HP243-4724	130
HP243-4764	130
HP243-4803	131
HP243-4843	131
HP243-4882	131
HP243-4921	131
HP243-4961	131
HP243-5000	131
HP243-5039	131
HP243-5079	131
HP243-5118	131
HP243-5157	131
HP243-5197	131
HP243-5236	131
HP243-5276	131
HP243-5311	131
HP243-5315	131
HP243-5394	131
HP243-5512	131
HP243-5626	131
HP243-5709	131
HP243-5780	131
HP243-5787	131
HP243-5906	131
HP243-5937	131
HP243-6102	131
HP243-6181	131
HP243-6248	131
HP243-6299	131

EDP Number	Page No.
HP243-6339	131
HP243-6496	131
HP243-6563	131
HP243-6693	131
HP243-6890	131
HP243-7087	131
HP243-7283	131
HP243-7480	131
HP243-7500	131
HP243-7579	131
HP243-7677	131
HP243-7874	131
HP245-0394	132
HP245-0433	132
HP245-0469	132
HP245-0472	132
HP245-0512	132
HP245-0551	132
HP245-0591	132
HP245-0626	132
HP245-0630	132
HP245-0669	132
HP245-0709	132
HP245-0748	132
HP245-0780	132
HP245-0787	132
HP245-0827	132
HP245-0866	132
HP245-0906	132
HP245-0937	132
HP245-0945	132
HP245-0984	132
HP245-1024	132
HP245-1063	132
HP245-1094	132
HP245-1102	132
HP245-1142	132
HP245-1181	132
HP245-1220	132
HP245-1248	132
HP245-1260	132
HP245-1299	132
HP245-1339	132
HP245-1378	132
HP245-1406	132
HP245-1417	132
HP245-1457	132
HP245-1496	132
HP245-1535	132
HP245-1563	132
HP245-1575	132
HP245-1610	132
HP245-1614	132
HP245-1654	132

EDP Number	Page No.
HP245-1693	132
HP245-1720	132
HP245-1732	132
HP245-1772	132
HP245-1811	132
HP245-1831	132
HP245-1850	132
HP245-1874	132
HP245-1890	133
HP245-1929	133
HP245-1969	133
HP245-2008	133
HP245-2031	133
HP245-2047	133
HP245-2087	133
HP245-2126	133
HP245-2130	133
HP245-2165	133
HP245-2189	133
HP245-2205	133
HP245-2244	133
HP245-2283	133
HP245-2323	133
HP245-2343	133
HP245-2362	133
HP245-2402	133
HP245-2441	133
HP245-2480	133
HP245-2500	133
HP245-2520	133
HP245-2559	133
HP245-2571	133
HP245-2598	133
HP245-2638	133
HP245-2657	133
HP245-2677	133
HP245-2717	133
HP245-2756	133
HP245-2795	133
HP245-2811	133
HP245-2835	133
HP245-2874	133
HP245-2913	133
HP245-2953	133
HP245-2969	133
HP245-2992	133
HP245-3031	133
HP245-3071	133
HP245-3110	133
HP245-3126	133
HP245-3150	133
HP245-3189	133
HP245-3228	133
HP245-3268	133

EDP Number	Page No.
HP245-3280	134
HP245-3307	134
HP245-3319	134
HP245-3346	134
HP245-3386	134
HP245-3425	134
HP245-3437	134
HP245-3465	134
HP245-3504	134
HP245-3543	134
HP245-3583	134
HP245-3594	134
HP245-3622	134
HP245-3642	134
HP245-3661	134
HP245-3701	134
HP245-3740	134
HP245-3748	134
HP245-3780	134
HP245-3819	134
HP245-3858	134
HP245-3898	134
HP245-3906	134
HP245-3937	134
HP245-3976	134
HP245-4016	134
HP245-4055	134
HP245-4063	134
HP245-4094	134
HP245-4134	134
HP245-4173	134
HP245-4213	134
HP245-4220	134
HP245-4252	134
HP245-4291	134
HP245-4331	134
HP245-4370	134
HP245-4374	134
HP245-4409	134
HP245-4449	134
HP245-4488	134
HP245-4528	134
HP245-4531	134
HP245-4567	134
HP245-4606	134
HP245-4646	134
HP245-4685	134
HP245-4689	134
HP245-4724	134
HP245-4764	134
HP245-4803	135
HP245-4843	135
HP245-4882	135
HP245-4921	135

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EDP Numerical Index

EDP Number	Page No.
HP245-4961	135
HP245-5000	135
HP245-5039	135
HP245-5079	135
HP245-5118	135
HP245-5157	135
HP245-5197	135
HP245-5236	135
HP245-5276	135
HP245-5311	135
HP245-5315	135
HP245-5394	135
HP245-5512	135
HP245-5626	135
HP245-5709	135
HP245-5780	135
HP245-5787	135
HP245-5906	135
HP245-5937	135
HP245-6102	135
HP245-6181	135
HP245-6248	135
HP245-6299	135
HP245-6339	135
HP245-6496	135
HP245-6563	135
HP245-6693	135
HP245-6890	135
HP245-7087	135
HP245-7283	135
HP245-7480	135
HP245-7500	135
HP245-7579	135
HP245-7677	135
HP245-7874	135
HP253-1181	136
HP253-1220	136
HP253-1248	136
HP253-1260	136
HP253-1299	136
HP253-1339	136
HP253-1378	136
HP253-1406	136
HP253-1417	136
HP253-1457	136
HP253-1496	136
HP253-1535	136
HP253-1563	136
HP253-1575	136
HP253-1610	136
HP253-1614	136
HP253-1654	136
HP253-1693	136
HP253-1720	136
HP253-1732	136
HP253-1772	136
HP253-1811	136
HP253-1831	136
HP253-1850	136
HP253-1874	136
HP253-1890	136
HP253-1929	136
HP253-1969	136
HP253-2008	136
HP253-2031	136
HP253-2047	136
HP253-2087	136
HP253-2126	136
HP253-2130	136
HP253-2165	136
HP253-2189	136
HP253-2205	136
HP253-2244	136
HP253-2283	136
HP253-2323	136
HP253-2343	136
HP253-2362	136
HP253-2402	136
HP253-2441	136
HP253-2480	136
HP253-2500	136
HP253-2520	136
HP253-2559	136
HP253-2571	136
HP253-2598	136
HP253-2638	137
HP253-2657	137
HP253-2677	137
HP253-2717	137
HP253-2756	137
HP253-2795	137
HP253-2811	137
HP253-2835	137
HP253-2874	137
HP253-2913	137
HP253-2953	137
HP253-2969	137
HP253-2992	137
HP253-3031	137
HP253-3071	137
HP253-3110	137
HP253-3126	137
HP253-3150	137
HP253-3189	137
HP253-3228	137
HP253-3268	137
HP253-3280	137
HP253-3307	137
HP253-3319	137
HP253-3346	137
HP253-3386	137
HP253-3425	137
HP253-3437	137
HP253-3465	137
HP253-3504	137
HP253-3543	137
HP253-3583	137
HP253-3594	137
HP253-3622	137
HP253-3642	137
HP253-3661	137
HP253-3701	137
HP253-3740	137
HP253-3748	137
HP253-3780	137
HP253-3819	137
HP253-3858	137
HP253-3898	137
HP253-3906	137
HP253-3937	137
HP253-3976	137
HP253-4016	138
HP253-4055	138
HP253-4063	138
HP253-4094	138
HP253-4134	138
HP253-4173	138
HP253-4213	138
HP253-4220	138
HP253-4252	138
HP253-4291	138
HP253-4331	138
HP253-4370	138
HP253-4374	138
HP253-4409	138
HP253-4449	138
HP253-4488	138
HP253-4528	138
HP253-4531	138
HP253-4567	138
HP253-4606	138
HP253-4646	138
HP253-4685	138
HP253-4689	138
HP253-4724	138
HP253-4764	138
HP253-4803	138
HP253-4843	138
HP253-4882	138
HP253-4921	138
HP253-4961	138
HP253-5000	138
HP253-5039	138
HP253-5079	138
HP253-5118	138
HP253-5157	138
HP253-5197	138
HP253-5236	138
HP253-5276	138
HP253-5311	138
HP253-5315	138
HP253-5394	138
HP253-5512	138
HP253-5626	138
HP253-5709	138
HP253-5780	138
HP253-5787	138
HP253-5906	138
HP253-5937	138
HP253-6102	138
HP253-6181	138
HP253-6248	139
HP253-6299	139
HP253-6339	139
HP253-6496	139
HP253-6563	139
HP253-6693	139
HP253-6890	139
HP253-7087	139
HP253-7283	139
HP253-7480	139
HP253-7500	139
HP253-7579	139
HP253-7677	139
HP253-7874	139
HP255-1181	140
HP255-1220	140
HP255-1248	140
HP255-1260	140
HP255-1299	140
HP255-1339	140
HP255-1378	140
HP255-1406	140
HP255-1417	140
HP255-1457	140
HP255-1496	140
HP255-1535	140
HP255-1563	140
HP255-1575	140
HP255-1610	140
HP255-1614	140
HP255-1654	140
HP255-1693	140
HP255-1720	140
HP255-1732	140
HP255-1772	140

Rapp Industrial Sales Call 724 789-7853 for your discounted pricing sales@rappindustrialsales.com

EDP Number	Page No.
HP255-1811	140
HP255-1831	140
HP255-1850	140
HP255-1874	140
HP255-1890	140
HP255-1929	140
HP255-1969	140
HP255-2008	140
HP255-2031	140
HP255-2047	140
HP255-2087	140
HP255-2126	140
HP255-2130	140
HP255-2165	140
HP255-2189	140
HP255-2205	140
HP255-2244	140
HP255-2283	140
HP255-2323	140
HP255-2343	140
HP255-2362	140
HP255-2402	140
HP255-2441	140
HP255-2480	140
HP255-2500	140
HP255-2520	140
HP255-2559	140
HP255-2571	140
HP255-2598	140
HP255-2638	141
HP255-2657	141
HP255-2677	141
HP255-2717	141
HP255-2756	141
HP255-2795	141
HP255-2811	141
HP255-2835	141
HP255-2874	141
HP255-2913	141
HP255-2953	141
HP255-2969	141
HP255-2992	141
HP255-3031	141
HP255-3071	141
HP255-3110	141
HP255-3126	141
HP255-3150	141
HP255-3189	141
HP255-3228	141
HP255-3268	141
HP255-3280	141
HP255-3307	141
HP255-3319	141
HP255-3346	141

EDP Number	Page No.
HP255-3386	141
HP255-3425	141
HP255-3437	141
HP255-3465	141
HP255-3504	141
HP255-3543	141
HP255-3583	141
HP255-3594	141
HP255-3622	141
HP255-3642	141
HP255-3661	141
HP255-3701	141
HP255-3740	141
HP255-3748	141
HP255-3780	141
HP255-3819	141
HP255-3858	141
HP255-3898	141
HP255-3906	141
HP255-3937	141
HP255-3976	141
HP255-4016	142
HP255-4055	142
HP255-4063	142
HP255-4094	142
HP255-4134	142
HP255-4173	142
HP255-4213	142
HP255-4220	142
HP255-4252	142
HP255-4291	142
HP255-4331	142
HP255-4370	142
HP255-4374	142
HP255-4409	142
HP255-4449	142
HP255-4488	142
HP255-4528	142
HP255-4531	142
HP255-4567	142
HP255-4606	142
HP255-4646	142
HP255-4685	142
HP255-4689	142
HP255-4724	142
HP255-4764	142
HP255-4803	142
HP255-4843	142
HP255-4882	142
HP255-4921	142
HP255-4961	142
HP255-5000	142
HP255-5039	142
HP255-5079	142

EDP Number	Page No.
HP255-5118	142
HP255-5157	142
HP255-5197	142
HP255-5236	142
HP255-5276	142
HP255-5311	142
HP255-5315	142
HP255-5394	142
HP255-5512	142
HP255-5626	142
HP255-5709	142
HP255-5780	142
HP255-5787	142
HP255-5906	142
HP255-5937	142
HP255-6102	142
HP255-6181	142
HP255-6248	143
HP255-6299	143
HP255-6339	143
HP255-6496	143
HP255-6563	143
HP255-6693	143
HP255-6890	143
HP255-7087	143
HP255-7283	143
HP255-7480	143
HP255-7500	143
HP255-7579	143
HP255-7677	143
HP255-7874	143
HP258-1181	144
HP258-1220	144
HP258-1248	144
HP258-1260	144
HP258-1299	144
HP258-1339	144
HP258-1378	144
HP258-1406	144
HP258-1417	144
HP258-1457	144
HP258-1496	144
HP258-1535	144
HP258-1563	144
HP258-1575	144
HP258-1610	144
HP258-1614	144
HP258-1654	144
HP258-1693	144
HP258-1720	144
HP258-1732	144
HP258-1772	144
HP258-1811	144
HP258-1831	144

EDP Number	Page No.
HP258-1850	144
HP258-1874	144
HP258-1890	144
HP258-1929	144
HP258-1969	144
HP258-2008	144
HP258-2031	144
HP258-2047	144
HP258-2087	144
HP258-2126	144
HP258-2130	144
HP258-2165	144
HP258-2189	144
HP258-2205	144
HP258-2244	144
HP258-2283	144
HP258-2323	144
HP258-2343	144
HP258-2362	144
HP258-2402	144
HP258-2441	144
HP258-2480	144
HP258-2500	144
HP258-2520	144
HP258-2559	144
HP258-2571	144
HP258-2598	144
HP258-2638	145
HP258-2657	145
HP258-2677	145
HP258-2717	145
HP258-2756	145
HP258-2795	145
HP258-2811	145
HP258-2835	145
HP258-2874	145
HP258-2913	145
HP258-2953	145
HP258-2969	145
HP258-2992	145
HP258-3031	145
HP258-3071	145
HP258-3110	145
HP258-3126	145
HP258-3150	145
HP258-3189	145
HP258-3228	145
HP258-3268	145
HP258-3280	145
HP258-3307	145
HP258-3319	145
HP258-3346	145
HP258-3386	145
HP258-3425	145

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EDP Numerical Index

EDP Number	Page No.
HP258-3437	145
HP258-3465	145
HP258-3504	145
HP258-3543	145
HP258-3583	145
HP258-3594	145
HP258-3622	145
HP258-3642	145
HP258-3661	145
HP258-3701	145
HP258-3740	145
HP258-3748	145
HP258-3780	145
HP258-3819	145
HP258-3858	145
HP258-3898	145
HP258-3906	145
HP258-3937	145
HP258-3976	145
HP258-4016	146
HP258-4055	146
HP258-4063	146
HP258-4094	146
HP258-4134	146
HP258-4173	146
HP258-4213	146
HP258-4220	146
HP258-4252	146
HP258-4291	146
HP258-4331	146
HP258-4370	146
HP258-4374	146
HP258-4409	146
HP258-4449	146
HP258-4488	146
HP258-4528	146
HP258-4531	146
HP258-4567	146
HP258-4606	146
HP258-4646	146
HP258-4685	146
HP258-4689	146
HP258-4724	146
HP258-4764	146
HP258-4803	146
HP258-4843	146
HP258-4882	146
HP258-4921	146
HP258-4961	146
HP258-5000	146
HP258-5039	146
HP258-5079	146
HP258-5118	146
HP258-5157	146

EDP Number	Page No.
HP258-5197	146
HP258-5236	146
HP258-5276	146
HP258-5311	146
HP258-5315	146
HP258-5394	146
HP258-5512	146
HP258-5626	146
HP258-5709	146
HP258-5780	146
HP258-5787	146
HP258-5906	146
HP258-5937	146
HP258-6102	146
HP258-6181	146
HP258-6248	147
HP258-6299	147
HP258-6496	147
HP258-6563	147
HP258-6693	147
HP258-6890	147
HP258-7087	147
HP258-7283	147
HP258-7480	147
HP258-7500	147
HP258-7677	147
HP258-7874	147
HP400-1000	711
HP400-1181	711
HP400-1575	711
HP400-1968	711
HP400-2362	711
HP400-2500	711
HP400-3125	711
HP400-3150	711
HP400-3750	711
HP400-3937	711
HP400-4724	711
HP400-5000	711
HP400-6250	711
HP400-6299	711
HP400-7500	711
HP400-7874	711
HP400-9843	711
HP410-0197	712
HP410-0236	712
HP410-0312	712
HP410-0315	712
HP410-0394	712
HP410-0472	712
HP410-0551	712
HP410-0591	712
HP410-0625	712
HP410-0630	712

EDP Number	Page No.
HP410-0709	712
HP410-0787	712
HP410-0938	712
HP410-0984	712
HP410-1250	712
HP410-1875	712
HP410L-0197	713
HP410L-0198	713
HP410L-0236	713
HP410L-0315	713
HP410L-0394	713
HP410L-0395	713
HP410L-0472	713
HP410L-0551	713
HP410L-0552	713
HP410L-0591	713
HP410L-0592	713
HP410L-0630	713
HP410L-0631	713
HP410L-0709	713
HP410L-0710	713
HP410L-0711	713
HP410L-0787	713
HP410L-0788	713
HP410L-0789	713
HP411-1181	714
HP411-1250	714
HP411-1378	714
HP411-1575	714
HP411-1875	714
HP411-1969	714
HP411-2362	714
HP411-2500	714
HP413-0312	722
HP413-0394	722
HP413-0472	722
HP413-0551	722
HP413-0591	722
HP413-0625	722
HP413-0630	722
HP413-0709	722
HP413-0787	722
HP413-0938	722
HP413-0984	722
HP413-1181	722
HP413-1250	722
HP413-1378	722
HP413-1575	722
HP413-1875	722
HP413-1969	722
HP413-2362	722
HP416-0312	718
HP416-0394	718
HP416-0472	718

EDP Number	Page No.
HP416-0551	718
HP416-0591	718
HP416-0625	718
HP416-0630	718
HP416-0709	718
HP416-0787	718
HP416-0938	718
HP416-0984	718
HP416-1181	718
HP416-1250	718
HP416-1378	718
HP416-1575	718
HP416-1576	718
HP416-1772	718
HP416-1875	718
HP416-1969	718
HP416-2165	718
HP416-2362	718
HP416-2500	718
HP416-2559	718
HP416-2756	718
HP416-2953	718
HP416-3125	718
HP416-3150	718
HP416-3346	718
HP416-3543	718
HP416-3740	718
HP416-3750	718
HP416-3937	718
HP416-4331	718
HP416-4724	718
HP416-5000	718
HP416-5118	718
HP416-5512	718
HP416-5906	718
HP416-6299	718
HP416-7087	718
HP416-7874	718
HP416-9843	718
HP418-0390	719
HP418-0391	719
HP418-0392	719
HP418-0780	719
HP418-0781	719
HP418-0782	719
HP418-0938	719
HP418-1180	719
HP418-1181	719
HP418-1250	719
HP418-1570	719
HP418-1571	719
HP418-1875	719
HP418-1960	719
HP418-1961	719

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EDP Number	Page No.
HP418-2360	719
HP418-2361	719
HP418-2500	719
HP418-3150	719
HP418-3151	719
HP418-3750	719
HP418-3930	719
HP418-3931	719
HP418-4720	719
HP418-4721	719
HP419-0197	720
HP419-0236	720
HP419-0312	720
HP419-0315	720
HP419-0394	720
HP419-0472	720
HP419-0551	720
HP419-0591	720
HP419-0625	720
HP419-0630	720
HP419-0709	720
HP419-0787	720
HP419-0938	720
HP419-0984	720
HP419-1181	720
HP419-1250	720
HP419-1378	720
HP419-1575	720
HP419-1875	720
HP419-1969	720
HP419-2362	720
HP419L-0236	721
HP419L-0315	721
HP419L-0394	721
HP419L-0472	721
HP419L-0551	721
HP419L-0591	721
HP419L-0630	721
HP419L-0709	721
HP419L-0787	721
HP419L-1181	721
HP421-0394	706
HP421-0394-BN	717
HP421-0469	705
HP421-0469-BN	716
HP421-0591	706
HP421-0591-BN	717
HP421-0625	705
HP421-0625-BN	716
HP421-0781	705
HP421-0781-BN	716
HP421-0787	706
HP421-0787-BN	717
HP421-0938	705

EDP Number	Page No.
HP421-0938-BN	716
HP421-0984	706
HP421-0984-BN	717
HP421-1000	705
HP421-1000-BN	716
HP421-1094	705
HP421-1094-BN	716
HP421-1181	706
HP421-1181-BN	717
HP421-1250	705
HP421-1250-BN	716
HP421-1378	706
HP421-1378-BN	717
HP421-1406	705
HP421-1406-BN	716
HP421-1562	705
HP421-1562-BN	716
HP421-1575	706
HP421-1575-BN	717
HP421-1719	705
HP421-1719-BN	716
HP421-1772	706
HP421-1772-BN	717
HP421-1875	705
HP421-1875-BN	716
HP421-1968	706
HP421-1968-BN	717
HP421-2031	705
HP421-2031-BN	716
HP421-2188	705
HP421-2188-BN	716
HP421-2362	706
HP421-2362-BN	717
HP421-2500	705
HP421-2500-BN	716
HP421-2756	706
HP421-2756-BN	717
HP421-2812	705
HP421-2812-BN	716
HP421-3125	705
HP421-3125-BN	716
HP421-3150	706
HP421-3150-BN	717
HP421-3438	705
HP421-3438-BN	716
HP421-3543	706
HP421-3543-BN	717
HP421-3750	705
HP421-3750-BN	716
HP421-3937	706
HP421-3937-BN	717
HP421-4062	705
HP421-4062-BN	716
HP421-4331	706

EDP Number	Page No.
HP421-4331-BN	717
HP421-4375	705
HP421-4375-BN	716
HP421-4724	706
HP421-4724-BN	717
HP421-5000	705
HP421-5000-BN	716
HP421-5512	706
HP421-5512-BN	717
HP421-5625	705
HP421-5625-BN	716
HP421-6250	705
HP421-6250-BN	716
HP421-6299	706
HP421-6299-BN	717
HP421-6875	705
HP421-6875-BN	716
HP421-7087	706
HP421-7087-BN	717
HP421-7500	705
HP421-7500-BN	716
HP421-7874	706
HP421-7874-BN	717
HP421-8661	706
HP421-8661-BN	717
HP421-8750	705
HP421-8750-BN	716
HP421-9843	706
HP421-9843-BN	717
HP432-1006	723
HP432-1009	723
HP432-1012	723
HP432-1181	724
HP432-1182	724
HP432-1251	723
HP432-1575	724
HP432-1576	724
HP432-1577	724
HP432-1872	723
HP432-1960	724
HP432-1961	724
HP432-1962	724
HP432-2360	724
HP432-2361	724
HP432-2362	724
HP432-2363	724
HP432-2364	724
HP432-2502	723
HP432-2503	723
HP432-3122	723
HP432-3123	723
HP432-3150	724
HP432-3151	724
HP432-3152	724

EDP Number	Page No.
HP432-3153	724
HP432-3752	723
HP432-3753	723
HP432-3930	724
HP432-3931	724
HP432-3932	724
HP432-3933	724
HP432-3934	724
HP432-4720	724
HP432-4721	724
HP432-4722	724
HP432-4723	724
HP432-4724	724
HP432-5002	723
HP432-5003	723
HP432-5006	723
HP432-6253	723
HP432-6256	723
HP432-6259	723
HP432-7506	723
HP432-7509	723
HP432-7512	723
HP433-1181	725
HP433-1182	725
HP433-1575	725
HP433-1576	725
HP433-1577	725
HP433-1960	725
HP433-1961	725
HP433-1962	725
HP433-2360	725
HP433-2361	725
HP433-2362	725
HP433-2363	725
HP433-2364	725
HP433-3150	725
HP433-3151	725
HP433-3152	725
HP433-3153	725
HP433-3930	725
HP433-3931	725
HP433-3932	725
HP433-3933	725
HP433-3934	725
HP433-4720	725
HP433-4721	725
HP433-4722	725
HP433-4723	725
HP433-4724	725
HP434-1006	723
HP434-1009	723
HP434-1012	723
HP434-1181	724
HP434-1182	724

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EDP Numerical Index

EDP Number	Page No.
HP434-1251	723
HP434-1575	724
HP434-1576	724
HP434-1577	724
HP434-1872	723
HP434-1960	724
HP434-1961	724
HP434-1962	724
HP434-2360	724
HP434-2361	724
HP434-2362	724
HP434-2363	724
HP434-2364	724
HP434-2502	723
HP434-2503	723
HP434-3122	723
HP434-3123	723
HP434-3150	724
HP434-3151	724
HP434-3152	724
HP434-3153	724
HP434-3752	723
HP434-3753	723
HP434-3930	724
HP434-3931	724
HP434-3932	724
HP434-3933	724
HP434-3934	724
HP434-4720	724
HP434-4721	724
HP434-4722	724
HP434-4723	724
HP434-4724	724
HP434-5002	723
HP434-5003	723
HP434-5006	723
HP434-6253	723
HP434-6256	723
HP434-6259	723
HP434-7506	723
HP434-7509	723
HP434-7512	723
HP435-1181	726
HP435-1182	726
HP435-1575	726
HP435-1576	726
HP435-1577	726
HP435-1960	726
HP435-1961	726
HP435-1962	726
HP435-2360	726
HP435-2361	726
HP435-2362	726
HP435-2363	726

EDP Number	Page No.
HP435-2364	726
HP435-3150	726
HP435-3151	726
HP435-3152	726
HP435-3153	726
HP435-3930	726
HP435-3931	726
HP435-3932	726
HP435-3933	726
HP435-3934	726
HP435-4720	726
HP435-4721	726
HP435-4722	726
HP435-4723	726
HP435-4724	726
HP441-0394	706
HP441-0394-BN	717
HP441-0469	705
HP441-0469-BN	716
HP441-0591	706
HP441-0591-BN	717
HP441-0625	705
HP441-0625-BN	716
HP441-0781	705
HP441-0781-BN	716
HP441-0787	706
HP441-0787-BN	717
HP441-0938	705
HP441-0938-BN	716
HP441-0984	706
HP441-0984-BN	717
HP441-1000	705
HP441-1000-BN	716
HP441-1094	705
HP441-1094-BN	716
HP441-1181	706
HP441-1181-BN	717
HP441-1250	705
HP441-1250-BN	716
HP441-1378	706
HP441-1378-BN	717
HP441-1406	705
HP441-1406-BN	716
HP441-1562	705
HP441-1562-BN	716
HP441-1575	706
HP441-1575-BN	717
HP441-1719	705
HP441-1719-BN	716
HP441-1772	706
HP441-1772-BN	717
HP441-1875	705
HP441-1875-BN	716
HP441-1968	706

EDP Number	Page No.
HP441-1968-BN	717
HP441-2031	705
HP441-2031-BN	716
HP441-2188	705
HP441-2188-BN	716
HP441-2362	706
HP441-2362-BN	717
HP441-2500	705
HP441-2500-BN	716
HP441-2756	706
HP441-2756-BN	717
HP441-2812	705
HP441-2812-BN	716
HP441-3125	705
HP441-3125-BN	716
HP441-3150	706
HP441-3150-BN	717
HP441-3438	705
HP441-3438-BN	716
HP441-3543	706
HP441-3543-BN	717
HP441-3750	705
HP441-3750-BN	716
HP441-3937	706
HP441-3937-BN	717
HP441-4062	705
HP441-4062-BN	716
HP441-4331	706
HP441-4331-BN	717
HP441-4375	705
HP441-4375-BN	716
HP441-4724	706
HP441-4724-BN	717
HP441-5000	705
HP441-5000-BN	716
HP441-5512	706
HP441-5512-BN	717
HP441-5625	705
HP441-5625-BN	716
HP441-6250	705
HP441-6250-BN	716
HP441-6299	706
HP441-6299-BN	717
HP441-6875	705
HP441-6875-BN	716
HP441-7087	706
HP441-7087-BN	717
HP441-7500	705
HP441-7500-BN	716
HP441-7874	706
HP441-7874-BN	717
HP441-8661	706
HP441-8661-BN	717
HP441-8750	705

EDP Number	Page No.
HP441-8750-BN	716
HP441-9843	706
HP441-9843-BN	717
HP450-1000	708
HP450-1181	708
HP450-1250	708
HP450-1575	708
HP450-1875	708
HP450-1969	708
HP450-2362	708
HP450-2500	708
HP450-3125	708
HP450-3150	708
HP450-3750	708
HP450-3937	708
HP450-4375	708
HP450-4724	708
HP450-5000	708
HP450-5512	708
HP450-5625	708
HP450-6250	708
HP450-6299	708
HP450-7087	708
HP450-7500	708
HP450-7874	708
HP450-8661	708
HP450-8750	708
HP450-9843	708
HP451-1000	710
HP451-1250	710
HP451-1575	710
HP451-1875	710
HP451-2362	710
HP451-2500	710
HP451-3125	710
HP451-3150	710
HP451-3750	710
HP451-3937	710
HP451-4375	710
HP451-4724	710
HP451-5000	710
HP451-6250	710
HP451-6299	710
HP451-7500	710
HP451-7874	710
HP453-1575	709
HP453-2362	709
HP453-3150	709
HP453-3937	709
HP453-4724	709
HP453-6299	709
HP453-7874	709
HP455-1000	715
HP455-1181	715

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EDP Number	Page No.
HP455-1250	715
HP455-1562	715
HP455-1575	715
HP455-1875	715
HP455-1968	715
HP455-2188	715
HP455-2362	715
HP455-2500	715
HP455-2756	715
HP455-2812	715
HP455-3125	715
HP455-3150	715
HP455-3750	715
HP455-3937	715
HP455-4331	715
HP455-4375	715
HP455-4724	715
HP455-5000	715
HP455-5512	715
HP455-5625	715
HP455-6250	715
HP455-6299	715
HP455-7500	715
HP455-7874	715
HP455-9843	715
HP456-2363	709
HP456-2364	709
HP456-3151	709
HP456-3152	709
HP456-3938	709
HP456-3939	709
HP456-4725	709
HP456-4726	709
HP456-4727	709
HP460-1000	707
HP460-1181	707
HP460-1250	707
HP460-1575	707
HP460-1875	707
HP460-1968	707
HP460-2362	707
HP460-2500	707
HP460-3125	707
HP460-3150	707
HP460-3750	707
HP460-3937	707
HP460-4375	707
HP460-4724	707
HP460-5000	707
HP460-5512	707
HP460-6250	707
HP460-6299	707
HP460-7087	707
HP460-7500	707

EDP Number	Page No.
HP460-7874	707
HP460-9843	707
HP700-0980	1133
HP700-1285	1133
HP700-1610	1133
HP700-1910	1133
HP700-2500	1133
HP700-2512	1133
VG434-1000	697
VG434-1001	697
VG434-1002	697
VG434-1003	697
VG434-1004	697
VG434-1005	697
VG434-1006	697
VG434-1007	697
VG434-1250	697
VG434-1251	697
VG434-1875	697
VG434-1876	697
VG434-2500	697
VG434-2501	697
VG434-2502	697
VG434-2503	697
VG434-2504	697
VG434-3125	697
VG434-3126	697
VG434-3750	697
VG434-3751	697
VG434-3752	697
VG434-3753	697
VG434-3754	697
VG434-3755	697
VG434-3756	697
VG434-3757	697
VG434-3758	697
VG434-3759	697
VG434-4375	697
VG434-4376	697
VG434-4377	697
VG434-4378	697
VG434-5000	697
VG434-5001	697
VG434-5002	697
VG434-5003	697
VG434-5004	697
VG434-5005	697
VG434-5006	697
VG434-5007	697
VG434-5008	697
VG434-5009	697
VG434-5010	697
VG434-5011	697
VG434-5012	697

EDP Number	Page No.
VG434-5013	697
VG434-5014	697
VG434-5015	697
VG434-5016	697
VG434-5017	697
VG434-5018	697
VG434-5019	697
VG434-5020	697
VG434-5021	697
VG434-6250	697
VG434-6251	697
VG434-6252	697
VG434-6253	697
VG434-6254	697
VG434-6255	697
VG434-6256	697
VG434-6257	697
VG434-7500	697
VG434-7501	697
VG434-7502	697
VG434-7503	697
VG434-7504	697
VG434-7505	697
VG434-7506	697
VG434-7507	697
VG434-7508	697
VG434-7509	697
VG434-7510	697
VG434-7511	697
VG436-1000	698
VG436-1001	698
VG436-1250	698
VG436-1251	698
VG436-1252	698
VG436-1875	698
VG436-1876	698
VG436-2500	698
VG436-2501	698
VG436-3125	698
VG436-3126	698
VG436-3750	698
VG436-3751	698
VG436-4375	698
VG436-4376	698
VG436-5000	698
VG436-5001	698
VG436-5002	698
VG436-5003	698
VG436-6250	698
VG436-6251	698
VG436-6252	698
VG436-7500	698
VG436-7501	698
VG436-7502	698

EDP Number	Page No.
VG441-1000	696
VG441-1000-BN	701
VG441-1001	696
VG441-1002	696
VG441-1003	696
VG441-1004	696
VG441-1005	696
VG441-1006	696
VG441-1007	696
VG441-1008	696
VG441-1009	696
VG441-1010-BN	701
VG441-1250	696
VG441-1250-BN	701
VG441-1875	696
VG441-1875-BN	701
VG441-2500	696
VG441-2500-BN	701
VG441-2501	696
VG441-2502	696
VG441-3125	696
VG441-3125-BN	701
VG441-3126	696
VG441-3127	696
VG441-3750	696
VG441-3750-BN	701
VG441-3751	696
VG441-3752	696
VG441-3753	696
VG441-3753	702
VG441-3754	696
VG441-3755	696
VG441-3756	696
VG441-3757	696
VG441-4375	696
VG441-4375-BN	701
VG441-4376	696
VG441-5000	696
VG441-5000-BN	701
VG441-5001	696
VG441-5002	696
VG441-5003	696
VG441-5004	696
VG441-5005	696
VG441-5006	696
VG441-5007	696
VG441-5008	696
VG441-5009	696
VG441-5010	696
VG441-5010-BN	701
VG441-5011	696
VG441-5012	696
VG441-5013	696
VG441-6250	696

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EDP Numerical Index

EDP Number	Page No.
VG441-6250-BN	701
VG441-6251	696
VG441-6252	696
VG441-6253	696
VG441-6254	696
VG441-6255	696
VG441-6256	696
VG441-6257	696
VG441-6258	696
VG441-6259	696
VG441-7500	696
VG441-7500-BN	701
VG441-7501	696
VG441-7502	696
VG441-7503	696
VG441-7504	696
VG441-7505	696
VG441-7506	696
VG441-7507	696
VG441-7508	696
VG441-7509	696
VG441-7510	696
VG441-7511	696
VG446-1000	699
VG446-1001	699
VG446-1002	699
VG446-1003	699
VG446-1004	699
VG446-1005	699
VG446-2500	699
VG446-2501	699
VG446-2502	699
VG446-3750	699
VG446-3751	699
VG446-3752	699
VG446-5000	699
VG446-5001	699
VG446-5002	699
VG446-5003	699
VG446-6250	699
VG446-6251	699
VG446-6252	699
VG446-6253	699
VG446-7500	699
VG446-7501	699
VG446-7502	699
VG446-7503	699
VG446-7504	699
VG464-1000	700
VG464-1001	700
VG464-1002	700
VG464-1003	700
VG464-2500	700
VG464-2501	700

EDP Number	Page No.
VG464-3750	700
VG464-3751	700
VG464-5000	700
VG464-5001	700
VG464-5002	700
VG464-5003	700
VG464-6250	700
VG464-6251	700
VG464-6252	700
VG464-6253	700
VG464-7500	700
VG464-7501	700
VG464-7502	700
VG464-7503	700
VG534-1000	704
VG534-1001	704
VG534-1002	704
VG534-1003	704
VG534-1004	704
VG534-1005	704
VG534-1006	704
VG534-1007	704
VG534-1010	704
VG534-1011	704
VG534-1012	704
VG534-1013	704
VG534-1017	704
VG534-1018	704
VG534-1019	704
VG534-1020	704
VG534-1875	703
VG534-1876	703
VG534-1877	703
VG534-1878	703
VG534-2502	703
VG534-2503	703
VG534-2504	703
VG534-2505	703
VG534-2506	703
VG534-2507	703
VG534-3122	703
VG534-3123	703
VG534-3124	703
VG534-3751	703
VG534-3752	703
VG534-3753	703
VG534-3755	703
VG534-3755	703
VG534-3757	703
VG534-3758	703
VG534-3759	703
VG534-3760	703
VG534-3764	703
VG534-3765	703

EDP Number	Page No.
VG534-3766	703
VG534-5000	703
VG534-5001	703
VG534-5002	703
VG534-5003	703
VG534-5004	703
VG534-5006	703
VG534-5007	703
VG534-5008	703
VG534-5009	703
VG534-5010	703
VG534-5011	703
VG534-5012	703
VG534-5013	703
VG534-5015	703
VG534-5016	703
VG534-5017	703
VG534-5018	703
VG534-5019	703
VG534-5020	703
VG534-5021	703
VG534-5024	703
VG534-5025	703
VG534-5026	703
VG534-5027	703
VG534-6250	703
VG534-6251	703
VG534-6252	703
VG534-6254	703
VG534-6255	703
VG534-6256	703
VG534-6258	703
VG534-6259	703
VG534-6260	703
VG534-6265	703
VG534-6266	703
VG534-6267	703
VG534-7500	703
VG534-7501	704
VG534-7502	704
VG534-7503	704
VG534-7504	703
VG534-7505	704
VG534-7506	704
VG534-7507	704
VG534-7508	703
VG534-7509	703
VG534-7510	703
VG534-7511	703
VG534-7515	703
VG534-7516	703
VG534-7517	703
VG534-7518	703
VG541-1000	702

EDP Number	Page No.
VG541-1005	702
VG541-1010	702
VG541-1011	702
VG541-1249	702
VG541-1250	702
VG541-1874	702
VG541-1875	702
VG541-2500	702
VG541-2501	702
VG541-3124	702
VG541-3125	702
VG541-3750	702
VG541-3751	702
VG541-3752	702
VG541-5000	702
VG541-5002	702
VG541-5007	702
VG541-5009	702
VG541-6250	702
VG541-6251	702
VG541-6255	702
VG541-6256	702
VG541-7501	702
VG541-7507	702
VG541-7512	702
VG541-7513	702

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Coating	Color	Application
WD1	Iridescent Blue	**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	**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	**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	**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	**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	**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	**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	**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.

Coating	Color	Application
TiN	Gold	**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	**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	**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	**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.
N	Silver Gray	**For tapping cast iron, cast aluminum, & plastic.** The case-hardened surface layer increases wear resistance in abrasive and tough materials.
CrN	Silver Gray	**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	**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	**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.

See OSG's Surface Treatment lineup: pp10-11

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